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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED PROPOSED MATLOSANA AGRIHUB WHICH IS SITUATED AT PORTION 1 OF TOWNLANDS 424IP IN MATLOSANA LOCAL MUNICIPALITY UNDER DR KENNETH KAUNDA DISTRICT MUNICIPALITY NORTH WEST PROVINCE

PREPARED BY (EAP)

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JULY 2019

This document presents the Environmental Management Programme for the Matlosana Agri Hub Project and the information and assessment presented is based on the information supplied by the 'applicant', Department of Rural Development and Land Reform and environmental baseline data

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Report No: 1

Report title: Draft Environmental Management Programme for the Proposed Matlosana Agrihub

Prepared by: DIGES Group

Applicant: Department of Rural Development and Land Reform

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EXECUTIVE SUMMARY

1. BACKGROUND

The National Department of Rural Development and Land Reform introduced the implementation of an Agripark per district as part of the response for achieving the national goals of inclusive rural development and integration, employment creation, poverty eradication and inequality reduction. As such a Master Plan was developed for the Dr Kenneth Kaunda District Municipality Agri Park. The Master Plan was described as an operational network of agriculturally driven production, contracts and value adding business interventions. The Agri Park Master Plan indicates that the Agripark will consist of three major components which are the Farmer Production Support Units, an Agrihub and the Rural Urban Market Centre however this study will only focus on the Agrihub which comprises a poultry value chain, large and small stock meat processing plant and office park. In essence an Agri Hub is an agglomeration of agricultural production, packing, processing, storage and marketing of agricultural commodities in a central location such as an economic hub. It is a combination of a working farm and a municipal park that is located at the Urban Edge

The proposed project entailed the following:

- Construction of a Large and small stock meet processing plant on 50Ha
- Construction and operation of Poultry Value Chain on 10Ha
- Office Park on 15Ha

The proposed activities to be undertaken (together with the infrastructure to be provided) are listed as having detrimental impacts on the environment and as such requires that an Environmental Impact Assessment be undertaken prior to the commencement of the project. The Department of Rural Development and Land Reform has therefore appointed DIGES Group (herein after referred to as DIGES) to lodge an application with the Department of Environmental Affairs (DEA) for the proposed development in terms of Section 24 and 24D of the National Environmental Management Act (Act No.107 of 1998). The EIA has been undertaken to comply with the Environmental Impact Assessment Regulations (Government Notice R982) of December 2014 as amended on the 7th of April 2017 and an environmental authorisation for the following activities has been applied for:

Relevant Government Notice	Activity	Description	Applicability
R983	3	The development and related operation of facilities or infrastructure for the slaughter of animals with a (i) product throughput of poultry exceeding 50 poultry per day; (ii) product throughput of reptiles, game and red meat exceeding 6 units per day;	The large stock meat processing plant is proposed to comprise of a high throughput abattoir (100 cattle or equivalent per day) and meat processing plant, whilst the small stock meat processing plant will comprise of a low throughput poultry abattoir (max 2000 birds per day).
R983	*4*	The development and related operation of facilities or infrastructure for the concentration of animals in densities that exceed— (i) 20 square metres per large stock unit and more than 500 units per facility;	The poultry value chain will comprise of four (4) x 25 000 conventional broiler houses

R983	*8*	The development and related operation of hatcheries or agri-industrial facilities outside industrial complexes where the development footprint covers an area of 2 000 square metres or more.	The proposed development footprint is in excess of 2000 square meters
R983	9	The development of infrastructure exceeding 1000m in length for the bulk transportation of water or stormwater with an internal diameter of 0,36m or with a peak throughput of 120 litres per second or more	The current water supply line be upgraded to accommodate the required volume going to the AgriHub site.
R983	*25*	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	The development of the AgriHub and the associated processes will require an onsite waste treatment plant which will entail solid separation by screening, primary settlement, waste water balancing and ultra-filtration.
R984	*15*	The clearance of an area of 20 hectares or more of indigenous vegetation	The entire project footprint comprises of 75ha , of which an excess of 20 Ha is indigenous vegetation which will need to be cleared

Based on the information collected during the EIA in terms of impacts anticipated during the project cycle, a project specific Environmental Management Programme (EMPr) is to be developed. This Environmental Management Programme details the principles, practices and procedures to be implemented by the Department of Rural Development to manage, remedy and mitigate potential adverse environmental effects anticipated during construction and operation of the proposed facilities which constitute the Matlosana Agri Hub. As such, the scope of this document is to give guidelines to the Department of Rural

Development and Land Reform regarding the effective management of the environment during the entire project life cylce.

THE MANAGEMENT PROGRAMME HAS LONG-TERM OBJECTIVES TO ENSURE THAT:

- Environmental Management considerations are implemented from the start of the project and throughout the operational life-time of the Agri Hub;
- Precautions against damage and claims arising from damage are taken well in advance;
- The completion date of the contract is not delayed due to problems with landowners arising during the course of construction; and
- Regulatory requirements as well as the Environmental Authorisation are adhered to.

This document (hereafter referred to as the EMPr) sets the institutional framework for responsibilities and reporting of all environmental issues during the construction of the Agri Hub. It is important that the contractors' team and engineers be fully acquainted with the contents of this EMPr, to ensure that the potential negative impacts are avoided or identified in advance during construction and the specified mitigation measures detailed in this report are implemented, therein instilling a more proactive and less reactive work ethic throughout the project life cycle.

Should these recommended measures and corrective actions be adopted during the construction, operation/ maintenance and decommissioning phases of the proposed activity, DIGES finds that the predicted impacts of the proposed activities are within acceptable limits. On-going environmental monitoring and maintenance of the AgriHub should be carried out throughout its life cycle, and The Department of Rural Development and a dedicated Environmental Practitioner should identify and address new issues as they arise, and update or amend the management plan accordingly.

Project Description

The proposed project involves the following activities:

- Construction of a Large and small stock meet processing plant on 50Ha
- Construction and operation of Poultry Value Chain on 10Ha
- Office Park on 15Ha

Location

The proposed project is located within Dr Kenneth Kaunda District Municipality of the Northwest Province in the Matlosana Local Municipality, on Portion 1 of Farm Townlands 424IP

2. *REPORT LAYOUT*

To address the information required as set in the EIA Regulations of December 2014 as amended, the Environmental Management Programme will follow the structure or layout outlined below:

Section 1 of this EMPr details the purpose and scope of the EMPr and outlines the DRDLR environmental policy, and environmental objectives. The section also identifies the key legislative requirements applicable to the environmental aspects of the Project. It details the EMPr roles and responsibilities and the related training requirements for the construction phase of the Project

Section 2 presents the project description and the social and environmental management context of the Project. It details the main construction activities and methodologies of the Project.

Section 3 details the standard mitigation measures to be implemented on-site. Environmental management standards and specifications for managing the significant environmental aspects of the construction, operation and decommissioning phase are discussed.

Contents

LIST OF ABBREVIATIONS

CARA	Conservation of Agricultural Resources Act
EMPr	Construction Environmental Management Programme
CLO	Community Liaison Officer
CMS	Construction Method Statement
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
DME	Department of Minerals and Energy
EA	Environmental Authorization issued by DEA
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act
ECO	Environmental Compliance Officer
EIA	Environmental Impact Assessment
EO	Environmental Officer
GA	General Authorization
HA	Hectares
HSO	Health and Safety Officer
IEM	Integrated Environmental Management
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
ROW	Right Of Way
SAHRA	South African Heritage and Resources Agency
SANS	South African National Standards
SHEQ	Safety, Health, Environmental and Quality
WI	Work Instruction
WUL	Water Use License

DEFINITIONS

Alien Vegetation	Alien vegetation is defined as undesirable plant growth, which shall include, but not be limited to; all declared category 1, 2 and 3 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared undesirable.
Berm	A barrier designed to divert surface water flow. Berms will primarily be used along roads/tracks to prevent concentrated flow of water over particular areas, thereby reducing erosion of roads.
Bund	An impervious material, which forms the perimeter and floor of a compound and provides a barrier to retain liquid. Bunds are designed to contain spillages and leaks of liquids used, stored or processed above ground and to facilitate clean-up operations.
Batch Plant	Site for the mixing and production of concrete or plaster, and associated equipment and materials.
Construction Camp	is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), ablution facilities, waste and wastewater management.
Contractor	Construction companies as well as their sub-consultants and suppliers appointed to undertake the construction activities on behalf of Eskom Holdings SOC Ltd.
Corrective action	Action to eliminate the cause of a detected nonconformity.
Developer	Developer of the project, Eskom Holdings SOC Ltd.
Endemic	the natural distribution of an organism (plant or animal) restricted to the local environmental conditions within an area.
Environment	The aggregate of surrounding objects, conditions and influences that influence the life and habits of man or any other organism or collection of organisms.
Environment Authorization	A written statement from the Department of Environmental Affairs that records its approval of a planned undertaking to construct the 400kV power line from Foskor to Spencer 400kV power line and the conditions of such an approval.
Environmental Control Officer	An external environmental consultant appointed by Eskom Holdings SOC Ltd to periodically monitor the level of implementation of the EMPr and suitable environmental management practices on site during the construction phase of the project.
Environmental Impact	A positive or negative change to the environment that results from the construction, operation and decommissioning of the activity. The impact can be direct or indirect result of the activities.
Environmental Management Programme (EMPr)	A programme that seeks to achieve a required environmental end state and describes how activities, that could have a negative impact on the environment, will be managed and monitored and impacted

	areas rehabilitated.
Environmental Management System (EMS)	Part of an organisation's management system used to develop and implement its environmental policy and manage its environmental aspects.
Environmental Policy	Overall intentions and directions of an organisation related to its environmental performance as formally expressed by top management.
Erosion	The process by which material, such as rock or soil, is worn away or removed by wind or water.
Environmental Officer (EO)	A staff member of the DRDLR who is appointed to ensure the day to day implementation of the EMPr and suitable environmental management practices are implemented on site for the duration of the construction phase of the project.
General Waste	Domestic, commercial, non-hazardous waste and builders' rubble.
Hazardous Substance	Any substance that is of risk to health and safety, property or the environment. Hazardous substances have been classified under the SANS 10228-B The identification and Classification of Dangerous Goods and Substances'.
Heritage Site	A site that contains either archaeological artefacts, graves, buildings older than 60 years, meteorological or geological fossils, etc.
Landowner	The individual or company that owns the land through which the servitude crosses.
LIHRA	The Provincial statutory body responsible for heritage resource management in Limpopo Province.
Method Statement	They indicate how compliance with the Environmental Specification will be achieved. The Contractor shall submit a written Method Statement to the ECO for approval, covering those activities which are identified in this document and/ or by the ECO as being potentially harmful to the environment.
"No-go" Areas	Areas identified as being environmentally sensitive, delineated on plan, demarcated on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.
Non-conformity	Non-fulfilment of a requirement. A "non-conformance" is interpreted to include legal non-compliance, deviations from policy, objectives and targets not met, accidents, ineffective procedures, and deviations from specified conditions and from other requirements of the environmental management system.
Preventive action	Action to eliminate the cause of a potential non-conformity
Pollution	The direct and indirect alteration of the physical, chemical or biological properties of a resource which results in it being less fit for any beneficial purpose for which it may reasonably be expected to be used.
Project Manager	Person representing Eskom Holdings SOC Ltd who is responsible for technical and contractual implementation of the works to be undertaken.

Risk	The probability of an event occurring multiplied by the consequences of that event.
SAHRA	South African Heritage Resource Agency - the statutory body responsible for heritage resource management.
Site	Areas that will be utilised by the contractor for the duration of the duration of the contract. This shall include the 400kV servitude, Spencer and Foskor substation, access roads to be used, construction lay-down areas, materials storage and delivery requirements, contractors' offices, operational demarcation.
Slope	Means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units.
Storm-water	Water resulting from natural precipitation and/or accumulation and includes rainwater.
Topsoil	The upper outermost layer of soil (300mm) which has the highest concentration of organic matter.
Water body	Means a body containing water and includes dams and wetlands, whether ephemeral or permanent.
Watercourse	Means any river, stream and natural drainage channel whether carrying water or not.
Works	The construction operations and all related and incidental works, such as site works, earthworks, installation of services, rehabilitation etc, carrying to completion of the development.
Working area	Means the land and any other place on, under, over, in or through which the Works are to be executed or carried out, and any other land or place made available by the Employer in connection with the Works. The Working Area shall include the site office, construction camp, stockpile and laydown areas, assembly areas, batching areas, the construction corridor, all access routes and any additional areas to which the Project Manager permits access.
Work Force	The entire project team including people employed by the DRDLR directly, his Principal Agent or the Contractor, persons involved in activities related to the project, or person present at or visiting the construction area, including permanent contactors and casual labour.

SECTION 1: INTRODUCTION AND BACKGROUND INFORMATION

1.1 INTRODUCTION

The Department of Rural Development and Land Reform (DRDLR) is proposing to develop the Matlosana Agri hub within Matlosana Local Local Municipality which include the following

- Construction of a Large and small stock meet processing plant on 50Ha
- Construction and operation of Poultry Value Chain on 10Ha
- Office Park on 15Ha

In order to ensure that the Environmental Management Programme (EMPr) is site specific a field investigation was undertaken by members of DIGES Group. The results and recommendations that were made for the EIR as part of obtaining the required environmental authorisation have been included within this EMPr.

The proposed activities to be undertaken (together with the infrastructure to be provided) are listed as having detrimental impacts on the environment and as such requires that an Environmental Impact Assessment be undertaken prior to the commencement of the project. The Department of Rural Development and Land Reform has therefore appointed DIGES Group (herein referred to as DIGES) to lodge an application with the Department of Environmental Affairs (DEA) for the proposed development in terms of Section 24 and 24D of the National Environmental Management Act (Act No.107 of 1998). The EIA will be undertaken to comply with the Environmental Impact Assessment Regulations (Government Notice R982) of December 2014 as amended on the 7th of April 2017.

1.2 DETAILS OF ENVIRONMENTAL IMPACT ASSESSMENT PRACTITIONER (EAP)

Section 13 of EIA Regulations, Government Notice No. R982 as amended clearly indicates that an Environment Assessment Practitioner (EAP) should be independent and have expertise in conducting Environmental Impact Assessments, including knowledge of the Act, and any guidelines that have relevance to the proposed activity.

DIGES Group is a black owned BBB-EE consultancy company established in 2004 that offers services in the geo-environmental sector. The company has successfully completed many Environmental Impact Assessments for different developments.

Declaration of Independence

DIGES Group is an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998). In addition, remuneration for services provided by DIGES is not subjected to or based on the approval of the proposed development by the Competent

The details for the project EAP and compiler of this report are given below as per Section 2(a) of Appendix 2 of the EIA Regulations R982 as amended.

Tafadzwa Kelvin Dzimbanhete *(Cert. Sci. Nat)*

- *BSc (Hons) Environmental Science and Technology (CUT, 2007),*
- *Post Graduate Diploma in Management (NWU, 2013)*
- *Certificate EIA(CEM-NWU, 2018)*
- *MSc Water Sciences, NWU, Current)*

A dedicated and passionate Environmentalist with valuable theoretical and experiential acumen in the areas of environmental conservation and administration. I have 12 years' experience gained through direct involvement in a number of conservation initiatives. Currently a Senior Environmental Consultant of DIGES Group responsible for leading, administrating and completing assessments on Environmental Impact Assessments, as well as overseeing studies, interpreting technical reports and appendices regarding the same.

I leverage academic skills gained through an honours level degree in Environmental Science & Technology and Post Graduate Diploma in Management and Certificates in Project Management and EIA; alongside the proficient ability to actively and valuably participate in the development, design and implementation of environmental / conservation management policies and consultation initiatives; thereby supporting the highest standards of Environmental Management and Sustainable Development, in all undertakings.

1.3 PURPOSE OF THE EMPR

In terms of the National Environmental Management Act (Act 107 of 1998, NEMA) as amended and its EIA Regulation, it is necessary to undertake environmental investigations as an integral part of project planning in order to obtain environmental authorisation for a proposed activity that may have a potentially negative effect on the environment. As such, an Environmental Impact Assessment (EIA) has been undertaken to identify and assess the aspects of construction, operation and decommissioning of the proposed AgriHub that could have an environmental impact. This EMPr identifies the project management structure, roles and responsibilities concerning managing and reporting on the environmental impacts of the construction, operation and decommissioning phase.

The purpose of this EMPr is therefore to describe the environmental management and monitoring procedures to be implemented during the Project's life span. The EMPr will enable the project team to construct the power line with the least adverse environmental effects. Overall implementation of this EMPr will ensure:

- Compliance with the conditions of resource consents and designations;
- Compliance with environmental legislation;
- Adherence to Eskom's environmental objectives; and
- Ensuring Environmental risks associated with the Project are properly managed.

This document will therefore define details of who, what, where and when environmental management and mitigation measures are to be implemented. It will also cover all anticipated construction,

operation and decommissioning elements and present a framework of principles, environmental policy, objectives and performance standards as well as processes for implementing good environmental management.

1.4 ASSUMPTIONS

The EMPr is based on the assumptions described below.

- The main works to be carried out will be limited to activities typically defined as large and small stock meat processing plant, poultry value chain and the construction of an office park
- The works will be carried out on Portion of the farm Townlands 424IP
- It is assumed that the Applicant has provided adequate details with regards to the activities to be carried out and the processes to be followed during the construction and operation phase;
- Information used to inform the assessment was limited to data and GIS coverage is available at a local, regional and national level at the time of the assessment. It is assumed that this data encompasses the site conditions;
- It is assumed that the specialists' reports are factual and give a correct indication of the environment and how the project activities will affect these resources.

1.5 EMPR

All environmentally sensitive areas are have been identified and the relevant environmental management strategies to minimise negative impacts in these areas are dealt with . To identify specific areas on the study area the project team used specialists' reports, topographical maps and aerial photographs. The table below indicates the team of specialists involved in the Environmental Impact Assessment and the compilation of this EMPr.

Specialist	Company	Consultant
Agriculture Engineering	Luriware Pty Ltd	Tendai Mutenje
Archaeology	Vhufa Hashu Heritage Consultants	Richard Munyai
Biodiversity	Plantago Lancelota	Divhani Mulaudzi
Geotechnical Investigation	Phathoxon	Nicholas Mpateni

The following documents are applicable for the project, and should be read in conjunction with this EMPr:

- EIR Report for the proposed Matlosana Agrihub
- The Environmental Authorisation once issued by the Department of Environmental Affairs (DEA).

2 POLICY AND REGULATORY FRAMEWORK

Environmental laws are formulated for realizing sustainable development strategy, preventing adverse impacts on the environment from implementation of plans and construction projects, and promoting coordinative development of the economy, society and environment. Most of South Africa's environmental law and principles are regulated by legislation with the Constitution of the Republic of South Africa and the National Environmental Management Act (NEMA) being the cornerstone of environmental law.

Relevant Government Notice	Activity	Description	Applicability
R983	3	The development and related operation of facilities or infrastructure for the slaughter of animals with a (i) product throughput of poultry exceeding 50 poultry per day; (ii) product throughput of reptiles, game and red meat exceeding 6 units per day;	The large stock meat processing plant is proposed to comprise of a high throughput abattoir (100 cattle or equivalent per day) and meat processing plant, whilst the small stock meat processing plant will comprise of a low throughput poultry abattoir (max 2000 birds per day).
R983	*4*	The development and related operation of facilities or infrastructure for the concentration of animals in densities that exceed— (i) 20 square metres per large stock unit and more than 500 units per facility;	The poultry value chain will comprise of four (4) x 25 000 conventional broiler houses
R983	*8*	The development and related operation of hatcheries or agri-industrial facilities outside industrial complexes where the development footprint covers an area of 2 000 square metres or more.	The proposed development footprint is in excess of 2000 square meters

R983	9	The development of infrastructure exceeding 1000m in length for the bulk transportation of water or stormwater with an internal diameter of 0,36m or with a peak throughput of 120 litres per second or more	The current water supply line be upgraded to accommodate the required volume going to the AgriHub site.
R983	*25*	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	The development of the AgriHub and the associated processes will require an onsite waste treatment plant which will entail solid separation by screening, primary settlement, waste water balancing and ultra-filtration.
R984	*15*	The clearance of an area of 20 hectares or more of indigenous vegetation	The entire project footprint comprises of 75ha , of which an excess of 20 Ha is indigenous vegetation which will need to be cleared

This document has been compiled in accordance with the Integrated Environmental Management (IEM) philosophy (DEAT, 2004a) and Appendix 4 of the EIA Regulations R982 of 2014 as amended. This philosophy aims to achieve a desirable balance between conservation and development (DEAT, 1992). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a code of practice for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental and management tools that are appropriate for the various levels of decision-making. One such tool is an Environmental Management Programme.

Construction and operation of the project must comply with a range of international, national, provincial and local legislation, regulations, strategies and policies in order to provide for the management of environmental effects.The following laws, principles and regulations have also been formulated to promote environmental sustainability including the interaction of the living and non-living environment which also have relevance to this project are discussed below:

2.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

Section 24 of the Constitution of South Africa guarantees basic human rights and provides guiding principles for society. The environmental rights in the constitution states:

"Everyone has the right –

a) to an environment that is not harmful to their health or well-being; and
b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -
   (i) prevent pollution and ecological degradation;
   (ii) promote conservation;
   (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The Bill of Rights in Chapter 2 of the Constitution entrenches the right to information, the right to freedom of expression, the right to participate in political activity, the right to administrative justice and fundamental science, cultural, legal, economic and environmental rights. In addition, the Constitution requires all legislature to facilitate public involvement in the legislative and other policy processes. Citizens have the right to engage in public initiatives and processes on an ongoing basis.

2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998)

The National Environmental Management Act (NEMA) aims to improve the quality of environmental decision-making by setting out principles for environmental management that apply to all government departments and organisations that may affect the environment. NEMA also creates a framework for facilitating the role of civil society in environmental governance (see below).

The Principles of National Environmental Management state that - (DEAT 1998b)

- Environmental management must place people and their needs at the forefront of its concern.
- Development must be socially, environmentally and economically sustainable.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.
- Environmental justice must be pursued.
- Equitable Services Access to environmental resources to meet basic human needs and ensure human well-being must be pursued.

- Responsibility for the environmental health and safety consequences of a project or activity must exist throughout its life cycle.
- The participation of all interested and affected parties in environmental governance must be promoted.
- Decisions must consider the interests; needs and values of all interested and affected parties.
- The social, economic and environmental impacts of activities, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
- Decisions must be taken in an open and transparent manner, and Services Access to information must be provided in accordance with the law.
- The environment is held in public trust for the people, the beneficial use of which environmental resources must serve the public interest and the environment must be protected as the people's common heritage.
- The costs of remedying pollution, environmental degradation and consequent adverse health effects must be paid for by those responsible for harming the environment.
- Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

2.2.1 Environmental Impact Assessment (EIA) Regulations

The Environmental Impact Assessment Regulations emanate from Section 24 (5) and 44 of NEMA and they set out the processes that must be followed to obtain an Environmental Authorization. Listing Notice 1 and Listing Notice 2) provide lists of activities that require a Basic Assessment and EIA respectively whilst Listing Notice 3 lists activities that would require authorization if carried out in a specified geographical area. The EIA Regulations and listings have been amended as of the 7th of April 2017. The proposed activities that the Department of Rural Development and Land Reform intends to undertake for the proposed Agrihub are listed in Listing Notice 1and 2, it is also imperative to note that the proposed development also triggers a Waste management Activity which is discussed in the following section which are detailed below:

TABLE 2-1: LIST OF ACTIVITIES FOR THE PROPOSED AGRIHUB AND ASSCIATED INFRASTRUCTURE

The following series of IEM Guidelines will be used during the entire EIA process:

- DEAT (2002), Scoping, Integrated Environmental Management, Information Series 2;
- DEAT (2002), Stakeholder Engagement, Integrated Environmental Management, Information Series 3;
- DEAT (2002), Specialists Studies, Integrated Environmental Management, Information Series 4;

- DEAT (2002), Impact Significance, Integrated Environmental Management, Information Series 5;
- DEAT (2002), Ecological Risk Assessment, Integrated Environmental Management, Information Series 6;
- DEAT (2004), Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7; and
- DEAT (2004), Criteria for determining alternatives, Integrated Environmental Management, Information Series 11.

In addition to the two laws indicated above, the following laws, regulations and documents in Table 2-2 also have relevance to the project:

TABLE 2-2: LEGISLATIVE FRAMEWORK

Name	Overview	Permits/Licenses
INTERNATIONAL		
Convention of Biological Diversity (CBD)	South Africa is a signatory to the CBD, which requests countries to: • Establish a system of protected areas to conserve biodiversity; • Develop guidelines for the selection, establishment and management of protected areas; and • Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species.	
Biosphere reserves: The Seville Strategy and the Statutory Framework of the World Network. UNESCO, Paris (UNESCO, 1996)	The primary objectives of biosphere reserves are the conservation of biological diversity; sustainable use and fair and equitable sharing of benefits arising from the utilization of genetic resources (in accordance with the Convention on Biological Diversity).	
NATIONAL		
Environmental Conservation Act (Act No. 73 of 1989)	This Act was superseded by NEMA as the primary environmental framework act. The purpose of the Act is to provide for effective protection and controlled utilisation of the environment.	
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	This Act controls the management and conservation of South African biodiversity within the framework of NEMA. The Act lists species that are threatened or require protection to ensure their survival in the wild, while regulating the activities, which may involve such listed threatened or	A list has been published under Section 56 (1) of critically endangered, endangered, vulnerable and protected species and as such a permit is required prior to undertaking restricted activities in areas with the species.

Name	Overview	Permits/Licenses
	protected species and activities which may have a potential impact on their long-term survival. The Act has listed flora and fauna species.	
National Spatial Biodiversity Assessment, 2004	The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.	
National Forest Act (Act No.	This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees	Protected and indigenous tree cutting permits in terms of the Section 15(1) of the Act. The protected trees that shall not be cut are listed in Schedule A of Notice No. 1602 of 23 December 2016.
National Environmental Management: Protected Areas Act (Act No.57 of 2003)	The Act makes provision for the protection and conservation of ecologically viable areas that show the country's biodiversity, natural landscapes. It also takes into account the declaration of the various categories of protected areas and envisages a national register of protected areas, with a simplified classification system of Special Nature Reserves, National Parks, Nature Reserves and Protected Environments. In addition, the Act brings in the concept of biological diversity protection and ecosystem management.	
National Water Act (Act No 108 of 1997)	This Act aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. Section 21 states the water uses that require a licence or authorisation.	General Authorization is required from the Department of Water and Sanitation in terms of Section 39 of NWA for water use as defined in Section 21(c) and 21(i).

Name	Overview	Permits/Licenses
The National Environmental Management: Air Quality Act (Act No.39 of 2004)	The main objective of the Air Quality Act (NEMAQA) is the protection of the environment and human health, in a sustainable (economic, social and ecological) development framework, through reasonable measures of air pollution control.	Schedule of activities that require and atmospheric emission license has been published. The proposed AgriHub are not listed as having detrimental impacts on air quality.
The Hazardous Substance Act (Act No. 15 of 1973)	The Hazardous Substances Act (HAS, No. 15 of 1973) was promulgated to provide for the control of substances which may cause injury, ill-health or death. Substances are defined as hazardous if their inherent nature is: toxic, corrosive, irritant; strongly sensitising, flammable and pressure generating (under certain circumstances) which may injure cause ill-health, or death in humans.	Minimum requirements of dealing with hazardous wastes should be followed when dealing with hazardous substances.
Conservation of Agricultural Resources Act (Act No. 43 of 1983)	The Conservation of Agricultural Resources Act ([CARA] Act 43, 1983) provides for the: o Protection of wetlands; and o Requires the removal of listed alien invasive species. This Act also requires that any declared invader species must be controlled according to their declared invader status.	
The National Heritage Resources Act (Act No. 25 of 1999)	*Section 34 (1)):* No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the South African Heritage Resources Agency (SAHRA), or the responsible provincial resources authority. *Section 35 (4):* No person may, without a permit issued by the SAHRA or the responsible heritage resources authority, destroy or damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.	Permits are required for any development that may affect heritage resources such as graves and old buildings. The need for permits can only be ascertained when the Heritage specialists undertakes a final walk-down after the project has been authorized.

Name	Overview	Permits/Licenses
	*Section 36 (3)*No person may, without a permit issued by SAHRA or a provincial heritage authority, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.	
Civil Aviation Act (Act No. 13 of 2009)	This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. All proposed developments or activities in South Africa that potentially could affect civil aviation must thus be assessed by SACAA in terms of the SA 71 CARs and South African Civil Aviation Technical Standards (SA CATS) to ensure aviation safety.	The Obstacle Evaluation Committee (OEC) which consists of members from both the SA CAA and South African Air Force (SAAF) fulfils the role of streamlining and coordinating the assessment and approvals of proposed developments or activities that have the potential to affect civil aviation, military aviation, or military areas of interest.
Promotion of Access to Information Act (Act No. 2 of 2000)	The Act maintains and protects South Africans' right to access any information held by the State and/or information held by another person that is needed to protect or exercise any rights. Access to information will be granted once certain requirements have been met. The Act also recognizes that the right of access to information may be limited if the limitations are reasonable in an open and democratic society.	
Promotion of Administrative Justice Act (Act No.3 Of 2000)	The Promotion of Administrative Justice Act (PAJA) aims to make the administration effective and accountable to people for its actions. It promotes South African citizens' right to just administration. Section 33 of the Constitution	

Name	Overview	Permits/Licenses
	guarantees that administrative action will be reasonable, lawful and procedurally fair and it makes sure that people have the right to ask for written reasons when administrative action has a negative impact on them.	
Occupational Health and Safety Act 85 Of 1993	The act aims to provide for the health and safety of persons at work and for the health and safety of persons about the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or about the activities of persons at work.	
National Energy Act Of 2008 & Electricity Regulation Act	The purpose of the act is to ensure that diverse energy resources are available, in sustainable quantities and at an affordable price and to provide for integrated energy planning, increased generation and consumption of renewable energies, contingency energy planning, holding of strategic fuel stocks and carriers, provide appropriate energy infrastructure, data on energy demand, supply and generation and establish institutions responsible for energy research.	
White Paper on Energy Policy 1998	The policy has five objectives for energy sector which are: o increased access to affordable energy services; o improving energy governance; o stimulating economic development, managing energy related environmental impacts; o securing diversity through diversity; and	

Name	Overview	Permits/Licenses
	o The need to provide alternative sources of energy including renewable.	
Strategic Integrated Projects	The South African Government adopted an Infrastructure Plan and from the spatial analysis of the country's needs carried out, 17 Strategic Integrated Projects (SIP) have been identified that cover a wide range of economic and social infrastructure. This project addresses one of the SIPs namely: **SIP 10:** Electricity transmission and distribution for all Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.	
Spatial Planning and Land Use Management Act (Act No. 16 of 2013	This act is a framework act for all spatial planning and land-use management legislation in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in this field.	
Provincial, Local and District Municipalities Documents The following provincial and district plans and guidelines are applicable to the proposed project and as such the requirements in these documents are considered in this report:		

3 ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr provides mitigation and management measures for the two phases namely construction and operation as depicted in the figure below

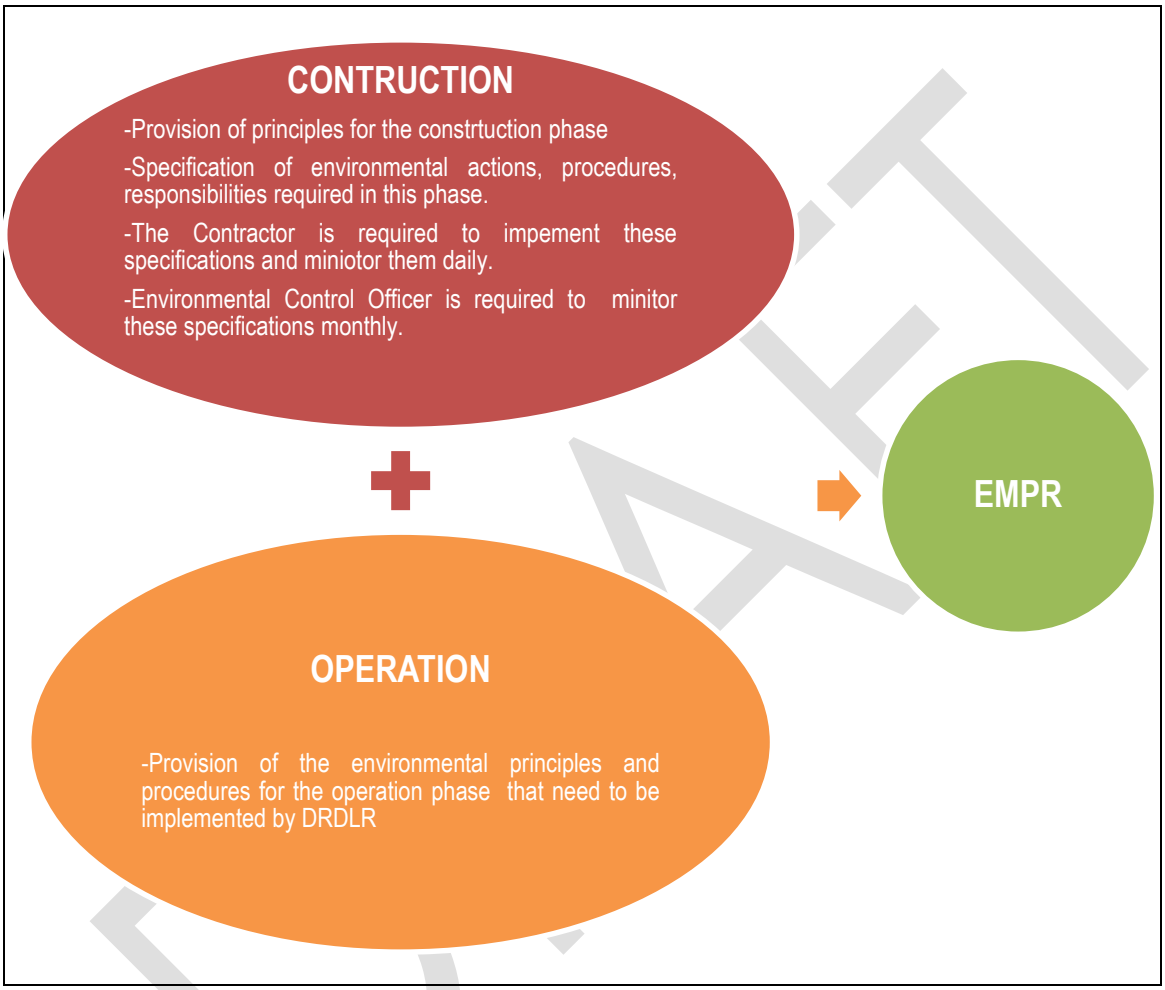

FIGURE 1: PHASES OF THE EMPR

3.1 OBJECTIVES OF THE EMPR

The EMPr has been compiled to provide recommendations and guidelines for environmental monitoring throughout the construction, operational and decommissioning phase of the proposed project. This is done to ensure that all relevant factors are considered, and to ensure for environmentally responsible development. This EMPr informs all relevant parties DRDLR, Contractor, the Environmental

Control Officer (ECO) and all other staff employed for the project as to their duties in the fulfilment of the legal requirements for the construction, operation and decommissioning phases of the project with particular reference to the prevention and mitigation of anticipated potential environmental impacts. The objectives include the following actions:

- Identifying construction activities that might have detrimental impacts on the environment;
- To outline mitigation measures and environmental specifications which are required to be implemented for all phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- To identify measures that could optimize beneficial impacts;
- To create management structures that addresses the concerns and complaints of the Interested and Affected Parties with regards to the development;
- To establish a method of monitoring and auditing environmental management practices during all phases of the development;
- Ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management (IEM);
- Ensure that safety recommendations are complied with;
- Provide an outline of the legal requirements;
- To assign roles and responsibilities to parties involved regarding the implementation of this EMPr;
- To identify measures that could optimize beneficial impacts;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project; and
- Specify time periods within which the measures contemplated in the environmental management programme must be implemented, where appropriate.

3.2 Environmental Monitoring

A monitoring programme should be in place not only to ensure compliance with the EMPr through the construction activities, but also to monitor any environmental issues and impacts which have not been accounted for in the EMPr that are, or could result in significant environmental impacts for which corrective action is required. A monitoring programme should be implemented for the duration of the construction phase of the project. This programme must include:

- Daily site visits and monitoring must be conducted by the Environmental Site Agent to ensure daily implementation of the EMPr conditions and provide corrective actions where required;
- Monthly site audits that must be conducted by the external Environmental Control Officer for the duration of the construction phase; and
- Compilation of a monthly audit report which must document findings and recommend corrective action to be taken. Subsequent reports will provide feedback on whether previous non-conformance raised has been resolved, thereby ensuring continual improvement of the site's environmental performance.

3.3 Checking and Corrective Action

Checking and corrective action form part of the environmental management function and is aimed at ensuring that the necessary environmental management activities are being implemented and that the desired outcomes are achieved.

3.4 Contractor Management

During the procurement process, an environmental briefing is required that alerts the Contractor to the environmental management expectation during the project. A copy of the EMPr must be provided to the Contractors who will be bidding for the construction work of the project. This is to ensure that the Contractors are made aware of the EMPr requirements and budget accordingly for the bid. The appointed Contractor is required to develop a method statement indicating how he is going implement and ensure compliance with the conditions of the EMPr. The method statement document must be approved by DRDLR project manager before the Contractor mobilises. When the construction activities have been completed the DRDLR project manager is required to conduct the site inspection in order to sign off the site prior the Contractor leaving the sites.

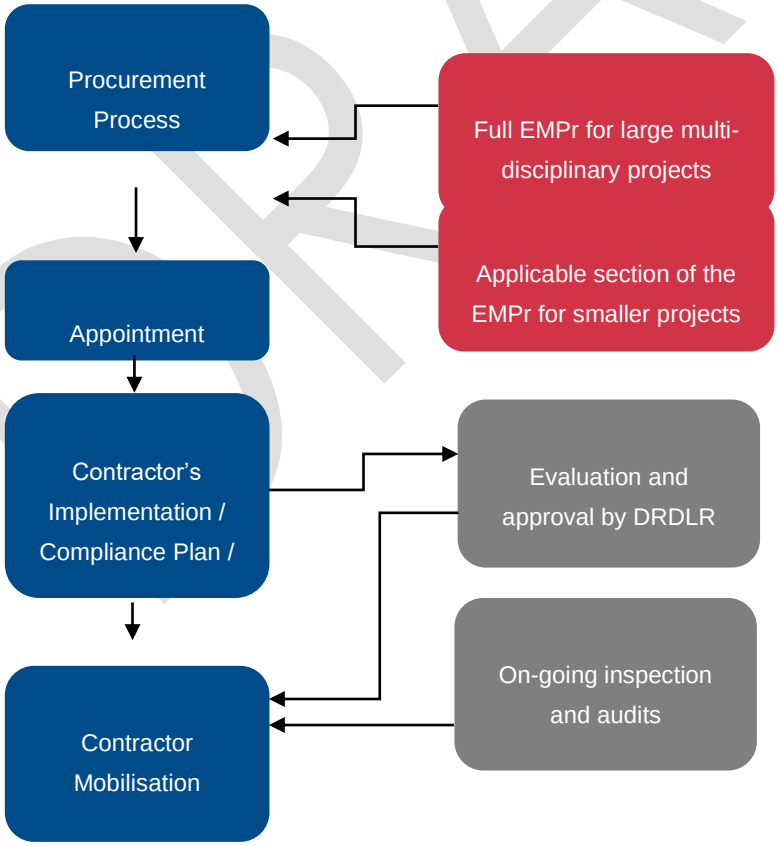

FIGURE 2: DIAGRAM ILLUSTRATING THE CONTRCATOR MANAGEMENT PROCESS

4 ENVIRONMENTAL MANAGEMENT PROCEDURES

4.1 FUNCTIONS AND RESPONSIBILITIES

The figure below provides an indication of the organisational and team structure for the project.

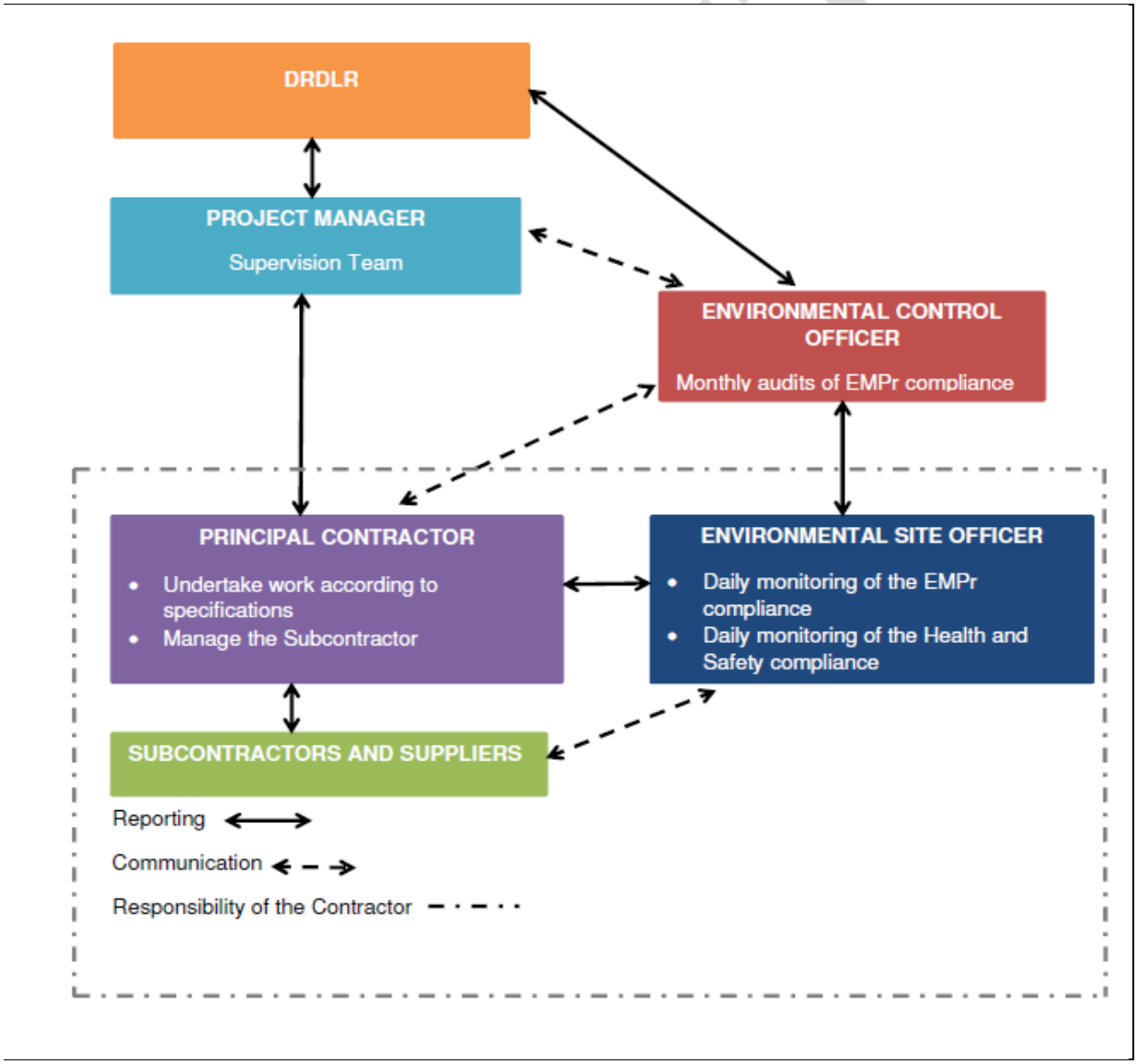

FIGURE 3: PROJECT ORGANISATIONAL STRUCTURE

4.1.1 DRDLR Project Manager

The DRDLR project manager is ultimately responsible for ensuring compliance with the environmental specification and upholding the environmental commitment to 100% compliance with all National legislation and Standards that relates to management of this environment. The following responsibilities are to be fulfilled by the project manager.

- Arrange information meetings for or consultations with stakeholders about the impending construction activities;
- May on the recommendation of the Environmental Officer order the Contractor to suspend any or all works on site if the Contractor or his Sub-Contractor/Supplier fails to comply with the said specifications; and
- Maintain a register of complaints and queries by members of the public at the site office.
- Enforce the environmental specification on site;
- Monitor compliance with the requirements of the specification;
- Assess the Contractor's environmental performance in consultation with the Environmental Officer from which a brief monthly report of environmental performance is drawn up for record purposes and to be reported to project meetings; and
- Ensure the documentation, in conjunction with the Contractor, regarding the state of the site prior to construction activities commencing. This documentation will be in the form of photographic record.

4.1.2 The Contractor (including Sub-Contractors)

The *Contractor is required to:*

- Provide information on previous environmental management experience in terms of the relevant forms contained in the Contract Document;
- Supply method statements timeously for all activities requiring special attention as specified and / or requested by the Environmental Site Agent for the duration of the Contract;
- Be conversant with the requirements of this EMPr. Brief all his staff about the requirements of the environmental specification;
- Comply with requirements of the Environmental Site Officer in terms of this specification and the project specification, as applicable, within the time period specified;
- Ensure any Sub-Contractors/Suppliers who are utilised within the context of the contract comply with the environmental requirements of the project, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf;

- Bear the costs of any damages / compensation resulting from non-adherence to the said specifications or written site instructions;
- Comply with all applicable legislation; and
- The Contractor will conduct all activities in a manner that minimizes disturbance to the natural environment as well as directly affected residents and the public in general.

4.1.3 Environmental Control Officer

The ECO will:

- Be fully conversant with the EMPr;
- Be familiar with the recommendations and mitigation measures of the associated EMPr for the project;
- Monitor the implementation of the EMPr during the construction and rehabilitation phases;
- Ensure site protection measures are implemented on site;
- Monitor that the Contractor, Sub-Contractors, construction teams and DRDLR are in compliance with the EMPr at all times during the construction and rehabilitation phases of the project;
- Monitor all site activities monthly for compliance;
- Conduct monthly audits of the site according to the EMPr, and report findings to the project Manager and Contractor;
- Recommend corrective action for any environmental non-compliance at the site;
- Compile a monthly report highlighting any non-compliance issues as well as progress and compliance with the EMPr conditions;
- Conduct once-off training with the Contractor on the EMPr and general environmental awareness.

It must be noted that the responsibility of the ECO is to monitor compliance and give advice on the implementation of the EMPr and not to enforce compliance. Ensuring compliance is the responsibility of the Contractor and the Environmental Site Agent.

4.1.4 Environmental Site Officer

The ES Officer *will be responsible for undertaking of the following:*

- Compilation of a comprehensive project Health and Safety Risk Assessment (HSRA);
- Compilation of health and safety specifications based on risks identified;
- Reviewing and approval of health and safety plan(s) submitted by appointed Contractor(s);
- Conducting daily inspections;
- Compiling daily reports and monthly safety, health and environment audit reports;
- Assisting the Contractor in the investigation of major accident/incidents;

- Monitoring of site activities for compliance to the occupational health and safety standards and EMPr conditions;
- Monitoring the Contractor(s') environment, health and safety performance;
- Be fully conversant with the EMPr and all relevant environmental legislation applicable to the project, and ensure compliance with them;
- Compilation of Method Statements together with the Contractor that will specify how potential environmental impacts in line with the requirements of the EMPr will be managed, and, where relevant environmental best practice and how they will practically ensure that the objectives of the EMPr are achieved;
- Convey the contents of this EMPr to the construction site staff and discuss the contents in detail with the Contractor;
- Take appropriate action if the specifications contained in the EMPr are not followed;
- Ensuring that the list of transgressions issued by the ECO is available on request; and
- Maintain an environmental register which keeps a record of all environmental incidents which occur on the site during construction.

4.2 Training and Environmental Awareness

It is important to ensure that the Contractor has the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm. Training needs should be identified based on the available and existing capacity of site personnel (including the Contractors and Sub-Contractors) to undertake the required EMPr management actions and monitoring activities. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard. The environmental training is aimed at:

- Promoting environmental awareness;
- Informing the Contractor of all environmental procedures, policies and programmes applicable;
- Providing generic training on the implementation of environmental management specifications; and
- Providing job-specific environmental training in order to understand the key environmental features of the construction site and the surrounding environment.

Training will be done in a verbal format and facilitated by the Environmental Control Officer. The training will be a once-off event; however the Contractor should make provision for weekly training or Toolbox Talks which can correlated with construction activities undertaken in

particular week. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimised and environmental compliance maximized.

4.3 Reporting Procedures

4.3.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

An Environmental File which includes:

- Copy of the EMPr;
- Copy of Environmental Authorisation;
- Copy of all other licences/permits;
- Copy of all rehabilitation plans;
- Copy of the Stormwater Management Plan;
- Environmental Method statements compiled by the Contractor;
- Non-conformance Reports;
- Environmental register, which shall include:
  - Communications Register–including records of Complaints, and, minutes and attendance registers of all environmental meetings;
  - Monitoring Results – including environmental monitoring reports, register of audits, Non-Conformance Reports (NCR); and
  - Incident book – including copies of notification of Emergencies and Incidents, this must be accompanied by a photographic record.
- Safe disposal certificate for all types of waste disposed of site;
- Environmental training records;
- Waste disposal Receipts;
- Material Safety Data Sheets for all hazardous substances;
- Dust suppression register;
- Water Quality Monitoring reports (if necessary);
- Written Corrective Action Instructions;
- Method Statements; and
- Notification of Emergencies and Incidents.

4.3.2 Public Complaints Register

- Contain environmental complaints and correspondence received from the public to the Contractor;
- Nature of complaint;
- Cause of complaint;
- Party/parties in responsible for complaint;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.

4.3.3 Environmental Incidents Register

- Nature of incident;
- Causes of incident;
- Party/parties responsible for causing incident;
- Immediate actions undertaken to stop/reduce/contain the causes of the incident;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the incident;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions; Copies of all correspondence received regarding incidents; and
- Detail the control measures which will be implemented to ensure sound environmental management.

4.3.4 Non-Conformance Report

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMPr. This will be issued by the ECO to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the non-conformance issues.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR. The following information should be recorded in the NCR:

- Details of non-conformance;

- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects;
- Nature of the risk;
- Actions agreed to by all parties following consultation to adequately address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account;
- Agreed timeframe by which the actions documented in the NCR must be carried out; and
- ECO should verify that the agreed actions have taken place by the agreed completion date, when completed satisfactorily; the ECO and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

4.3.5 Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions / incidents that could cause environmental impacts. Such incidents may include:

- Accidental discharges to water (i.e. into the watercourse) and land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- Construction employees shall be adequately trained in terms of incidents and emergency situations;
- Details of the organisation (i.e. manpower) and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. the fire department / on-site fire detail, spill clean-up services) shall be listed;
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and

- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor and their Sub-Contractor(s) must comply with the environmental emergency preparedness and incident and accident-reporting requirements as per the relevant legal requirements.

4.3.6 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific method statements should be developed for each set of tasks. A Method Statement details how and when a process will be carried out, detailing possible dangers/risks, and the methods of control required. As a minimum the following information need to be included in the method statement:

- Type of construction activity;
- Timing and location of the activity;
- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to / from site;
- How equipment/material will be moved while on site;
- Location and extent of construction site office and storage areas;
- Identification of impacts that might result from the construction activity;
- Methodology and/or specifications for impact prevention / containment;
- Methodology for environmental monitoring;
- Emergency/disaster incident and reaction procedures (required to be demonstrated); and
- Rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken in non-compliance of the approved Method Statements and the following Method Statements are required to be generated:

- Bunding;
- Blasting (if required);
- Construction site and off ice/yard establishment;
- Cement mixing / concrete batching/bentonite mixing;

- Contaminated water;
- Dust management ;
- Environmental awareness course(s);
- Environmental monitoring;
- Erosion control;
- Fire, hazardous and/or poisonous substances including their storage;
- Personnel, public and animal safety;
- Rehabilitation of modified environment(s);
- Solid and liquid waste management;
- Sources of materials (including MSDSs);
- Top-soil management;
- Stormwater Management; and
- Wash areas.

4.4 Public Communication and Liaison with I&APs

DRDLR must ensure that the adjacent landowners are informed and updated throughout the construction phases. Sufficient construction signage should be erected around the site (including at the entrance), informing the public of the construction activities taking place. The signboards should include the following information:

- The name of the Contractor; and
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

5 EMPR: CONSTRUCTION PHASE

5.1 Site Clearing

Site clearing must take place in a phased manner, as and when required. Areas which are not to be maintained within two months of time must not be cleared to reduce erosion risks. The area to be cleared must be clearly demarcated and this footprint strictly maintained. Spoil that is removed from the site must be removed to an approved spoil site or licensed landfill site. The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent, viz steep areas.

5.2 Site Establishment

Site establishment shall take place in an orderly manner and all required amenities shall be installed at the camp site before the main workforce move onto site. The construction camp shall have the necessary ablution facilities at the commencement of construction activities. The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed other than in supplied facilities.

The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at a licensed landfill site. A certificate of disposal shall be obtained by the Contractor and kept on file. Under no circumstances may solid waste be burnt on site.

5.3 Facility Design Mitigation Measures

ASPECT/IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY OF MONITORING REQUIREMENT

PLANNING & DESIGN OF THE AGRIHUB	1. All animal holding areas (or any area in whichanimals are kept) must be lined (with an impervious material, placed within the soil profile if necessary) in order to prevent the pollution of soils and groundwater under the holding area and in areas adjacent to the site. 2. The lining would prevent water polluted by animal waste that enters the soils within the holding areas from moving into the surrounding soils as interflow, thus potentially polluting surface water and groundwater. 3. All animal handling holding areas and other areas of the agrihub in which animals are kept must include perimeter drainage features that are linked to the agrihub stormwater drainage system in order to prevent the ingress of any stormwater from these areas that could be polluted by animal waste. 4. A stormwater management system that is able to handle all stormwater generated on the facility must be included. The design must result in zero discharge of any polluted stormwater into the adjacent environment, unless it is treated to DWS standards. The design must ensure that the agrihub area becomes a controlled drainage area, from which all contaminated runoff must be collected and conveyed to an effluent treatment or collection system. 5. Internal Drains (Government of South Australia, 2006): a) Drains must be lined with material of sufficiently low permeability to minimise the potential for leaching of contaminants into the soil or underground water resources. b) Drains must have sufficient flow capacity to avoid overtopping.	**Project Manager, Contractor, ES Officer**	Daily

	c) Drains must be free flowing to avoid excessive sediment build up. They must be maintained in a clean weed free condition. d) Drains must have sufficient bed gradient to effectively convey suspended sediments to the sedimentation system without excessive scouring of the drain bed. e) Flow velocities will be affected by the drain cross section profile, dimensions, slope and drain bed material. Maximum permissible flow velocities to prevent scouring will depend on the drain bed material. 6. Diversion banks or drains must be installed around specific facilities to prevent uncontaminated water entering the plants. 7. It is recommended that agrihub runoff collected in holding ponds. All such ponds / lagoons must be completely lined to prevent any ingress of polluted water into the soil. 8. No animal waste must be dumped into the environment, but must either be disposed of at a landfill facility or be used for a secondary purpose (such as irrigation) in a controlled manner. 9. The agrihub should use sedimentation basins or traps that allow solids to settle in smaller more accessible locations, which are conducive to rapid drying and frequent collection through the use of conventional equipment such as a wheel loader and spreader trucks. Settling ponds should be cleaned out promptly after rainfall events to restore their capacity		

	and remove wet manure to reduce odour and fly breeding sites. 10. During solid manure collection soiled manure is frequently placed in stockpiles outside of feed pens while waiting reloading. The purpose of a stockpile should be to allow pens to be cleaned regularly even though spreader trucks or cropland is not available. This must only occur within the portion of the facility that falls within the controlled drainage system. The volume of stockpiles should be kept to a minimum since manure is a perishable commodity and should be used promptly. No manure stockpiles should be indefinitely created. 11. No cattle that die while being held in the facility must be dumped into the surrounding environment.		

5.4 Construction Traffic and Access

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY OF MONITORING REQUIREMENTS
CONSTRUCTION TRAFFIC AND ACCESS Impact that construction traffic and access has on the site and surrounds	**Construction traffic** 1. Construction routes must be clearly defined. 2. Access of all construction and material delivery vehicles should be strictly controlled, especially during wet weather to avoid compaction and damage to the topsoil structure. 3. Wheel washing and damping down of un-surfaced roads must be implemented to reduce dust. 4. Vehicles and equipment shall be serviced regularly to avoid the contamination of soil from oil and hydraulic fluid leaks etc. 5. Servicing must be done off-site.	**Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY OF MONITORING REQUIREMENTS
	6. Oil changes must take place on a concrete platform or on a drip tray. 7. Soils compacted by construction shall be deep ripped to loosen compacted layers and re-graded to even running levels. **Access** 8. Temporary access roads that might be required must be rehabilitated prior to the Contractor leaving the site. 9. Strategic positioning of entry and exit points to ensure as little impact/ effect as possible on the traffic flow and local communities. 10. The main routes to the site must be clearly signposted. **Road maintenance** 11. Contractors should ensure that access roads are maintained in good condition by attending to potholes, corrugations and stormwater damage as soon as these develop. 12. If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have spilt. **General** 13. The Contractor shall meet safety requirements under all circumstances. All equipment transported shall be clearly labelled as to their potential hazards according to specifications. All the required safety labelling on the containers and trucks used shall be in place.		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY OF MONITORING REQUIREMENTS
	14. The Contractor shall meet these safety requirements under all circumstances. All equipment transported shall be clearly labelled as to their potential hazards according to specifications. All the required safety labelling on the containers and trucks used shall be in place. 15. The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken in the event of an accident.		

5.5 Construction Camp

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
CONSTRUCTION CAMP Impacts relating to the construction camp	***Site of construction camp*** 1. Choice of site for the Contractor's camp requires the ECO's permission and must take into account location of local residents and / or ecologically sensitive areas, including flood zones and slip / unstable zones. A site plan must be submitted to the ECO and project manager for approval. 2. The construction camp may not be situated within the 1:100 year flood line or on slopes greater that 1:3. 3. If the Contractor chooses to locate the camp site on private land, he must get prior permission from both the project manager and the landowner. 4. The size of the construction camp should be minimized (particularly	**Contractor, ES Officer**	**Daily**

	where natural vegetation or grassland has had to be cleared for its construction). ***Site of construction camp*** 5. The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion. 6. Suitable control measures over the Contractor's yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented. 7. No development, or activity of any sort associated with camp, is allowed below the 1:100 year flood line of any water system. ***Storage of materials (including hazardous materials)*** 1. Choice of location for storage areas must take into account prevailing winds, distances to water bodies, general on site topography and water erosion potential of the soil. 2. Storage areas must be designated, demarcated and fenced. 3. Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by unauthorised persons. 4. Fire prevention facilities must be present at all storage facilities. 5. Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage should include a bund wall high enough to contain at least 110% of any stored volume, and this should be sited away from drainage lines		

	in a site with the approval of the ECO. 6. These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources. 7. Clear signage must be placed at all storage areas containing hazardous substances / materials. 8. Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. 9. The Contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training. 10. All excess cement and concrete mixes are to be contained on the construction site prior to disposal off site. 11. Any spillage, which may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and DEA, as well as local authorities if so required. ***Drainage of construction camp*** 1. Run-off from the camp site must not discharge into neighbours' properties or into adjacent watercourses. ***End of construction*** 1. Once construction has been completed on site and all excess material has been removed, the storage area shall be rehabilitated. If the area was		

	badly damaged, re-seeding shall be done. 2. Such areas shall be rehabilitated to their natural state. Any spilled concrete shall be removed and soil compacted during construction shall be ripped, levelled and re-vegetated. 3. Only designated areas must be used for storage of construction materials, soil stockpiles, machinery and other equipment. 4. Specific areas must be designated for cement batching plants. Sufficient drainage for these plants must be in place to ensure that soils do not become contaminated. 5. The construction camp must be kept clear of litter at all times. 6. Spillages within the construction camp need to be cleaned up immediately and disposed of in the hazardous skip bin for correct disposal. 7. No open fires are allowed within the construction camp and no wood from surrounding vegetation may be used to create a fire.		

5.6 SOILS

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
SOILS Impact that construction activities will have on soil	***Topsoil*** 1. The Contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. 2. Care must be taken not to mix topsoil and subsoil during stripping. 3. Removed polluted topsoil should be transported to a licensed landfill site. 4. Remove and store topsoil separately in areas where excavation/degradation takes place. Topsoil should be used for rehabilitation purposes in order to facilitate re-growth of species that occur naturally in the area. ***Soil stripping*** 1. No soil stripping must take place on areas within the site that the Contractor does not require for construction works or areas of retained vegetation. 2. Subsoil and overburden should, in all construction and lay down areas, be stockpiled separately to be returned for backfilling in the correct soil horizon order. 3. Construction vehicles must only be allowed to utilise existing tracks or pre-planned access routes. **Erosion:** 1. No vehicles should be allowed to cross rivers or streams in any area	**Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	other than an approved crossing, designated to prevent any impact (particularly erosion) in a surrounding habitat. ***Stockpiles*** 1. Stockpiles should not be situated such that they obstruct natural water pathways and drainage channels. 2. Stockpiles should not exceed 2 m in height. 3. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth. Stockpiles may further be protected by the construction of berms or low brick walls around their bases. 4. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding. ***5.*** Where contamination of soil is expected, analysis must be done prior to disposal of excess soil to determine the appropriate disposal route. **Fuel storage** 1. Topsoil and subsoil to be protected from contamination. 2. Fuel and material storage must be away from stockpiles. 3. Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil. 4. Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material.		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	5. Contaminated soil must be contained and disposed of site at an approved landfill site. ***Concrete mixing (if required)*** 1. Concrete mixing must only take place within designated areas. 2. Ready mixed concrete must be utilised where possible. 3. No vehicles transporting concrete to the site may be washed on site. 4. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated run-off from the batch plant must not be allowed to get into the stormwater system or any other watercourses. ***Earthworks*** 1. Soils compacted during the construction phase should be deeply ripped to loosened compacted layers and re-graded to even running levels. Topsoil should be re-spread over landscaped areas.		

5.7 Ground and Surface Water Pollution

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
GROUNDWATER POLLUTION	***Sanitation***	**Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
Impact that construction activities could have on groundwater	1. Adequate sanitary facilities and ablutions must be provided for construction workers. 2. The facilities must be regularly serviced and emptied to reduce the risk of surface or groundwater pollution. ***Hazardous materials*** 1. Use and or storage of materials, fuels and chemicals which could potentially leak into the groundwater must be controlled. 2. All storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund wall must be high enough to contain 110% of the total volume of the stored hazardous material with an additional allocation for potential stormwater events. 3. Any hazardous substances must be stored at least 20 m from any of the water bodies on site. 4. The ES officer should be responsible for ensuring that potentially harmful materials are properly stored in a dry, secure, ventilated environment, with concrete or sealed flooring and by means of preventing unauthorised entry. 5. Contaminated wastewater must be managed by the Contractor to ensure existing water resources on the site are not contaminated. All wastewater from general activities in the camp shall be collected and removed from the site for appropriate disposal at a licensed commercial facility. ***Cement mixing*** 1. Cement contaminated water must not enter the water system as this		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	disturbs the natural acidity of the soil and affects plant growth. ***Public areas*** 1. Food preparation/consumption areas should be provided at the construction camp with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis. 2. The Contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines. 3. No washing or servicing of vehicles on site. ***Water resources*** 1. Site staff shall not be permitted to use any other open water body or natural water source adjacent to or within the designated site for the purposes of washing of construction tools or for any construction or related activities. 2. Municipal water (or another source approved by the ECO) should instead be used for all activities related to construction such as washing of equipment or, dust suppression, concrete mixing, compacting, etc. 3. No surface water feature or associated buffer zone must be physically transformed / affected by the proposed facility. These areas must be clearly demarcated as no-go areas. This applies particularly to Option 1 which is located very close to the seep wetland to the north of the		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	watercourse on the southern boundary of the site.		

5.8 WETLANDS

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
WETLANDS Impacts include the potential clearing and compaction of wetland vegetation and soil for the construction of temporary accesses / haulage roads.	1. No construction activities must occur within any wetland or buffer area. 2. No infrastructure must be located within the 100m buffer zone of any surface water feature located on, or outside of the development site boundaries. 3. No storage areas for any materials, in particular hazardous materials (such as fuel), parking areas for vehicles or any temporary toilets should be located within a buffer zone. 4. No access roads must be constructed through any surface water facility or its buffer unless an existing road / track is being upgraded. 5. It is recommended that the existing tracks on the site be upgraded to allow vehicular access.	**Contractor, ES Officer**	**Daily**

5.9 STORMWATER

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
STORMWATER Impact that construction activities could have on hydrology	1. No stormwater attenuation facilities must be located within a buffer. 2. Measures must be taken to ensure that stormwater is controlled as far as possible and that all silt and other foreign materials are prevented from entering any surface water feature located adjacent to the construction area during the construction phase. 3. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids, silt or chemical pollutants. 4. Silt fences should be used to prevent any soil entering the stormwater drains. 5. Temporary cut of drains and berms may be required to capture stormwater and promote infiltration. 6. Promote water saving mind set with construction workers in order to ensure less water wastage. 7. New stormwater infrastructure construction must be developed strictly according to specifications from ES officer and ECO in order to ensure efficiency. 8. Hazardous substances must be stored at least 20 m away from the buffer area surrounding any water bodies on site to avoid pollution. 9. The installation of the stormwater system must take place as soon as possible after commencement of the construction activities, to attenuate stormwater from the construction as well as the operational phase. 10. Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water path ways over the site. (i.e. these materials	**Contractor, ES Officer**	**Daily**

	must not be placed in stormwater channels, drainage lines or rivers). 11. There should be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.		

5.10 AIR QUALITY

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
AIR POLLUTION Vehicle activities associated with the transport of equipment to the site; preparation of the surface areas which may be	***Dust control*** 1. Frequent and effective dust-suppression is advised, particularly along dirt roads. Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. 2. Retention of vegetation where possible will reduce dust travel. 3. Excavations and other clearing activities must only be done during agreed working times and	**Contractor, ES Officer**	**Daily**

required prior to the set up of new infrastructure; and the removal of construction equipment from site after the set up of new equipment	permitting weather conditions to avoid drifting of sand and dust into neighbouring areas. 4. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the landowner or neighbouring communities. 5. A speed limit of 40 km/h must not be exceeded on dirty roads (if any). 6. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor. ***Odour control*** 1. Regular servicing of vehicles in order to limit gaseous emissions (to be done off-site). 2. Regular servicing of on site toilets to avoid potential odours. 3. Allocated cooking areas must be provided/ where possible construction workers must bring their own lunch boxes. ***Rehabilitation*** 1. The Contractor should commence rehabilitation of exposed soil surfaces as soon as practical, after completion of earthworks. ***Fire prevention*** 1. The Contractor must ensure that any grass left in a natural state during the construction of a sub-transmission should be cut in order to prevent veld fires, especially during the dry months. 2. No open fires shall be allowed on site under any circumstance. 3. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of fire fighting equipment must be assessed and		

	evaluated through a typical risk assessment process. It may be required to increase the level of protection, especially during the winter months.		

5.11 Flora and Fauna

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
FLORA & FAUNA Impacts on flora relating to the destruction of threatened and protected flora species and destruction of sensitive pristine habitat types	**Flora** 1. Removal of vegetation/ plants that are not interfering with the construction activities is prohibited and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible. 2. Disturbance of vegetation must be limited to areas of construction. 3. The removal or picking of any protected or unprotected plants shall not be permitted and no horticultural specimens (even within the demarcated working area) shall be removed, damaged or tampered with unless agreed to by the ES officer and ECO. 4. Use of branches of trees and shrubs for fire making purposes is strictly prohibited. 5. The establishment and re-growth of alien vegetation must be controlled after the removal of grass. 6. Remaining indigenous bulbous geophytes and Aloes should be retained or replanted wherever possible. Where herbicides are used	**Contractor , ES Officer**	**Daily**

	to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. 7. Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act, No. 43 of 1983 and should be addressed on a continual basis. 8. Disturbed areas of natural vegetation as well as cut and fills must be rehabilitated immediately to prevent soil erosion. 9. Re-seeding shall be done on disturbed areas as directed by the ES officer and ECO. **Fauna** 10. The opening up of existing vegetal areas, thereby creating corridors along which animals can move, may result in increased predation levels of small mammals, reptiles, amphibians, arachnids and scorpions. The limitation of disturbance of vegetation cover as well as rocky outcrop, logs, stumps, termite mounds within sensitive areas will ameliorate these impacts. 11. The Contractor must ensure that no faunal species are disturbed, trapped, hunted or killed during the construction phase. 12. All necessary mitigation measures must be implemented to minimise impacts on the environment.		

5.12 NOISE

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
NOISE Construction activities (excavating and site clearing); construction vehicles; and construction staff	1. The construction phase must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of residential areas in close proximity to the development. 2. Construction site yards, workshops, and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the Contractor(s), the sites must be evaluated in detail and specific measures designed into the system. 3. Truck traffic should be routed away from noise sensitive areas, where possible. 4. Construction noise levels must be kept within acceptable limits. 5. Noisy operations should be combined so that they occur where possible at the same time. 6. Blasting operations (if required) are to be strictly controlled with regard to the size of explosive charge in order to minimise noise and air blast, and timings of explosions. The number of blasts per day should be limited, blasting should be undertaken at the same times each day and no blasting should be allowed at night. 7. Construction activities are to be contained to reasonable hours during the day and early evening (07H00-17H00). 8. With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the Contractor and ES officer should liaise with local residents on how best to minimise impact, and the local communities should be kept informed of the nature and duration of intended activities. 9. As construction workers operate in a very noisy environment, it must be ensured that their working	**Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	conditions comply with the requirements of the Occupational Health and Safety Act (Act No 85 of 1993). 10. Noisy activities to take place during allocated construction hours only as per section 25 of the Noise Control Regulations of the Environment Conservation Act, 1989 (Act No. 73 of 1989). 11. Noise from labourers must be controlled. 12. Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site. 13. The Contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible labour shall be transported to and from the site by the Contractor or his Sub-Contractors by the Contractors own transport.		

5.13 Waste Management

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
WASTE MANAGEMENT	***Construction rubble*** 1. Construction rubble shall be disposed of in pre–agreed, demarcated spoil dumps that	**Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
Waste produced during construction includes: general construction rubble, hazardous waste (used oil, cement and concrete etc.)	have been approved by Albert Luthuli local municipality. ***Litter management*** 1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site. 2. A housekeeping team should be appointed to regularly maintain the litter and rubble situation on the construction site. 3. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent Contractor can be appointed to conduct this recycling. 4. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ES officer shall monitor the neatness of the work sites as well as the Contractor campsite. 5. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly form the site by the local council. 6. All waste must be removed from the site and transported to a landfill site as approved by the relevant Municipality. 7. Waybills providing disposal at each site shall be provided to the ES officer and ECO's inspection. ***Hazardous waste*** 1. All waste hazardous materials must either be stored in a bunded or lined area or as otherwise advised by the ES officer and ECO, and then disposed of off at a licensed		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	landfill site. Hazardous waste may not be stored on site in excess of a 90 calendar day period. 2. Contaminants to be stored safely to avoid spillage. 3. Machinery must be properly maintained to keep oil leaks in check. 4. Labelled containers must be provided to store used oils, as well as hazardous waste containers for oily rags, oil filters etc. and must be disposed of at a suitable approved register dumpsite. ***Sanitation*** 1. The Contractor shall install mobile chemical toilets on the site. 2. No indiscriminate sanitary activities on site shall be allowed. 3. Ablution facilities shall be within 100 m from workplaces but not closer than 50 m from any natural water bodies or boreholes. There should be enough toilets available to accommodate the workforce. Male and females must be accommodated separately where possible. 4. Toilets should be no closer than 100 m or above the 1:100 year flood line from any natural or manmade water bodies or drainage lines or alternatively located in a place approved of by the ES officer and ECO. 5. Potable water must be provided for all construction staff. ***Remedial actions*** 1. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site using oil absorbents.		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	2. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site. 3. The ES officer and ECO must determine the precise method of treatment of polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil. 4. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. 5. If necessary, oil absorbent sheets or pads must be attached to leaky machinery or infrastructure. 6. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. 7. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.		

5.14 HEALTH AND SAFETY

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
HEALTH AND SAFETY (Safety of workers and the public exposed to construction activity hazards	***Worker safety*** 1. Implementation of safety measures, work procedures and first aid must be implemented on site. 2. A health and safety plan in terms of the Occupational Health and Safety Act (Act No. 85 of 1993) must be drawn up to ensure worker safety. 3. Workers should be thoroughly trained in using potentially dangerous equipment. 4. Contractors must ensure that all equipment is maintained in a safe operating condition. 5. A record of health and safety incidents must be kept on site. 6. Any health and safety incidents must be reported to the project manager immediately. 7. First aid facilities must be available on site at all times. 8. Workers have the right to refuse work in unsafe conditions. 9. A record shall be kept of drugs administered or precautions taken and the time and dates when this was done. 10. Material stockpiles or stacks, such as, pipes must be stable and well secured to avoid collapse and possible injury to site workers. ***Worker facilities*** 1. Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness. 2. Fires are not to be allowed.	**DRDLR, Contractor, ES Officer**	**Daily**

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	Protective gear 1. Personal Protective Equipment (PPE) and clothing must be made available to all construction staff and must be compulsory. Hard hats and safety shoes must be worn at all times and other PPE worn where necessary i.e. dust masks, ear plugs etc. 2. No person is to enter the site without the necessary PPE. ***Site safety*** 1. The construction camp must remain fenced for the entire construction period. 2. Potentially hazardous areas such as trenches are to be demarcated and clearly marked 3. Adequate warning signs of hazardous working areas. 4. Uncovered manholes and excavations must be clearly demarcated 5. Emergency numbers for local police and fire department etc. must be placed in a prominent area. 6. Fire fighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank. 7. Suitable conspicuous warning signs languages must be placed at all entrances to the site. 8. All speed limits must be adhered to (40km/h) ***Hazardous Material Storage*** 1. Staff that will be handling hazardous materials must be trained to do so.		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	2. Any hazardous materials (apart from fuel) must be stored within a lockable store with a sealed floor. 3. Storage areas containing hazardous substances / materials must be clearly sign-posted. 4. All storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material. 9. For transformer oil containers which may be required to be temporary stored on site for a period of not more than 21-calendar days, the following is proposed: • Oil dam and drainage system be built before the installations of transformers on site; • Drip-trays be placed underneath the nozzles to contain any leakage that may occur; • Impermeable plastics be placed underneath the tank / containers instead of building a bund-wall; • Drip-trays and containers be checked daily and should there be any leakage captured in drip-trays, that must be emptied into the already built oil drainage system linked to the oil dam; and 5. Oil Spill Clean-up and Rehabilitation Standards prescribed by statutory requirements will be maintained and adhered to at all times. 6. The provisions of the Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practise must be adhered to. This applies to solvents and other chemicals possibly used in the construction time.		

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
	Procedure in the event of a petrochemical spill 1. The individual responsible for or who discovers the petrochemical spill must report the incident to the Project Manager, ES officer or Contractor. 2. The problem must be assessed and the necessary actions required undertaken. 3. The immediate response must be to contain the spill. 4. The source of the spill must be identified, controlled, treated or removed. ***Fire management*** 1. Fire fighting equipment should be present on site at all times as per Occupational Health and Safety Act 85 of 1993. 2. All construction staff must be trained in fire hazard control and fire fighting techniques. 3. All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances. 4. Open fires are prohibited on site.		

5.15 SECURITY

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
SECURITY Issues associated with security during construction for workers and surrounding land users.	1. Access to the construction site should be strictly controlled by a security company. 2. 24 hour security on-site. 3. No person shall enter the site unless authorised to do so by the Contractor, project manager and ES officer. 4. If any fencing interferes with the construction process, such fencing shall be deviated until construction is completed. The deviation of fences shall be negotiated and agreed with the landowner in writing. 5. Trespassing on private / commercial properties adjoining the site is forbidden. 6. Secure the site in order to reduce the opportunity for criminal activity in the locality of the construction site.	**Contractor, ES Officer**	**Daily**

5.16 SOCIAL ENVIRONMENT

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
SOCIAL ENVIRONMENT Social impacts of construction activities will have on the site and surrounds)	1. All contact with the affected parties by the project team shall be courteous at all times. The rights of the affected parties shall be respected at all times. 2. A complaints register should be kept on site. Details of complaints should be incorporated into the audits as part of the monitoring process. This register is to be tabled during monthly site meetings.	**Project Manager, Contractor, ES Officer**	**Daily**

	3. No interruptions other than those negotiated shall be allowed to any essential services. Damage to infrastructure shall not be tolerated and any damage shall be rectified immediately by the Contractor. A record of all damage and remedial actions shall be kept on site. ***Influx of Construction workers*** 1. Inform local businesses that construction workers will move into the area to enable local businesses to plan for the extra demand. 2. Ensure that the local community communicates their expectations of construction workers' behaviour with them. 3. Ensure that employment procedures / policy are communicated to local stakeholders, especially community representative organisations and ward councillors. 4. Have clear rules and regulations for access to the camp / site office to control loitering. Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company. Construction workers could also be issued with identification tags. 5. If required, a communication forum should be established with neighbouring residents during the construction period. This forum can meet once a month to discuss any issues and progress on the construction. 6. Employment opportunities should first be offered to the local community if the skills are available within the community.		

5.17 Cultural and Heritage Artefacts

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
CULTURAL AND HERITAGE ARTEFACTS Impact that the construction has on potential heritage and archaeological artefacts that could be found in the study are	1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) 2. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area. 3. The Contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ES officer and ECO so that appropriate action can be taken. 4. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources. 5. If anything is noticed, work in that area should be stopped and the findings be reported to a museum, preferably one at which an archaeologist is available. The archaeologist should then investigate and evaluate the find. 6. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits must be obtained from the South African Heritage Resources Agency.	**Contractor, ES Officer**	**Daily**

6 DECOMMISSIONING PHASE OF CONSTRUCTION ACTIVITIES

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
DECOMMIS-SIONING	***Removal of equipment*** 1. All structures comprising the construction camp are to be removed from site. 2. The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc., and these shall be cleaned up. 3. All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and regressed. ***Temporary services*** 1. The Contractor must arrange the cancellation of all temporary services. 2. A copy of all waste disposal certificates from waste disposal service providers are to be presented to the Project Manager. 3. Temporary roads must be closed and access across these, blocked. 4. All areas where temporary services were installed are to be rehabilitated to the satisfaction of the Project Manager. ***Associated infrastructure*** 1. Surfaces are to be checked for waste products from activities such as concreting and cleared in a manner approved by the ES officer and ECO. 2. All surfaces hardened due to construction activities are to be	**Contractor, Project Manager, ES Officer**	**Daily**

	ripped and imported material thereon removed. 3. All rubble is to be removed from the site to an approved disposal site as approved by the ES officer and ECO. Burying of rubble on site is prohibited. 4. The site is to be cleared of all litter. 5. The Contractor is to check that all watercourses are free from building rubble, spoil materials and waste materials. 6. Fences, barriers and demarcations associated with the construction phase are to be removed from the site. 7. All residual stockpiles must be removed to spoil or spread on site as directed by the ES officer and ECO. 8. All leftover building materials must be returned to the depot or removed from the site. 9. The Contractor must repair any damage that the construction works has caused to neighbouring properties, specifically, but not limited to, damage caused by poor storm water management. ***Waste disposal*** 1. Disposal of waste must be in accordance with relevant legislative requirements. 2. Waste must be disposed of in the appropriate manner at a licensed disposal site. ***Erosion*** 1. Rehabilitation of areas affected by construction activities should ideally commence at the start of the raining season (September-October). 2. Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances resulted from construction.		

	3. All areas of incomplete construction should be completed and prepared for final rehabilitation and re-vegetation; 4. All areas where topsoil was removed or placing of mono poles should be landscaped in order to reflect surrounding conditions. 5. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in construction areas, implying that topsoil might need to be supplemented in some areas until such time that a layer of vegetation has stabilised the soil.		

7 EMPR: OPERATIONAL PHASE

ASPECT / IMPACT	MITIGATION	RESPONSIBILITY	FREQUENCY / MONITORING REQUIREMENTS
MAINTENANCE OF THE AGRIHUB	1. All applicable standards, legislation, policies and procedures must be adhered to during operation. 2. Emergency numbers must be visibly displayed at the near the water mains and sumps in case of an emergency and the community need to be encouraged to use the emergency numbers to minimise the extent of the incidence. 3. Any oil spillages that might occur should be removed as soon as possible and disposed at the appropriate hazardous landfill site. 4. Regular inspection of the agrihub must take place to monitor their status.	**Project Manager**	**Annually**
ACCESS ROADS Access roads used for maintenance might impact on vegetation and water bodies	1. Use should be made of existing roads as far as possible, ensuring proper maintenance/upgrade. Alternative methods of construction / access to sensitive areas are recommended. 2. No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. 3. Vehicular traffic shall not be allowed in permanently wet areas, no damage shall be caused to wet areas. Where necessary, alternative methods of construction shall be used to avoid damage to wet areas.	**Project Manager**	**Annually**
FAUNA AND FLORA Disturbance of vegetation and animals.	1. Indigenous vegetation must be maintained on site on an annual basis and all exotics removed as they appear and disposed of appropriately. 2. No faunal species must harmed by maintenance staff during any routine maintenance.	**Project Manager**	**Annually**
WASTE	1. Disposal of waste must be in accordance with relevant legislative requirements.	**Project Manager**	**Annually**

Waste generation will have a negative impact on the environment, if not controlled adequately.	2. Burning of waste material will not be permitted.		
SAFETY There is the potential risk of electrocution (people and livestock) if access to the site is not controlled.	1. Safety and security issues should be addressed as a priority by DRDLR. It is recommended that the landowners and affected community members be contacted in advance to ensure that they are forewarned of the construction and maintenance activities planned in the area.	**Project Manager**	**Annually**

8 CONLUSION

Should these recommended measures be adopted in the planning, construction, operation/ maintenance and decommissioning phases of the proposed activity, DIGES finds that the predicted impacts of the proposed activities are within acceptable limits.

It should be noted however, that environmental management is dynamic and as such the EMPr must be flexible in order to accommodate changing circumstances and requirements. Ongoing environmental monitoring of the Agrihub should be carried out throughout its life cycle, and such should be conducted by a dedicated Environmental Control Officer, to identify and address new issues as they arise, and to update or amend the management plan accordingly.