



ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED  
TOWNSHIP ESTABLISHMENT IN OKAKARARA, OTJOZONDJUPA  
REGION.



OCTOBER 2019

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## LIST OF ABBRECIATIONS

<b>TERM</b>	<b>DEFINITION</b>
ECO	Environmental Control Officer
RoD.	Record of Decision
EO	Environmental Officer
RE	Resident Engineer
ELO	Environmental Liaison Officer
PPE	Personal Protective Equipment
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
USTs	Underground Storage Tanks

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# **1. INTRODUCTION AND BACKGROUND**

The EMP is a working document which consists of a set of mitigation measures that will be implemented to eliminate, offset or reduce adverse environmental impacts to acceptable levels during the various phases (i.e. construction, operations and decommissioning). This document is prepared for ACH Trading cc who proposes to establish more than 11 units of the upper low to medium single residential houses and the creation of streets and infrastructure on the Remainder of Portion 12 of the Farm Okakarara Townlands No.517. at Okakarara town to cater to the demand for housing in Okakarara Town, Otjozondjupa Region.

Ouholamo Trading and Environmental Solution cc had conducted an Environmental Impact Assessment (EIA) and prepared an Environmental Management Plan (EMP) for the construction, operation and decommissioning phases of the proposed development. The proposed Project will be located within the Portion 12 of the Farm Okakarara Townlands No.517, Okakarara Constituency, Otjozondjupa Region, Namibia. The site is located south of the C22 National Road which is connected to the B1 National Road from Otjiwarongo. The Portion is further located southwest of main town and west of portion 6 (Ellis Park Eco Village). The Environmental Impact Assessment has been conducted to meet the requisites of Namibia's Environmental Management Act (No. 7 of 2007) and Petroleum Products and Energy Act (Act No. 13 of 1990).

## **1.1. Overview of the project**

The proposed project will establish the upper low to medium single residential houses and the creation of streets and infrastructure on the Remainder of Portion 12 of the Farm Okakarara Townlands No.517. at Okakarara town to cater to the demand for housing in Okakarara Town, Otjozondjupa Region. The activity involves the constructions of bulk services and social and economic facilities such as Sewer Water Reticulation, Electricity supply, Roads, Drinking water and the Constructions of Buildings as well as the

maintenances of the site during operational phase such as Waste Disposal from the site to the recognized disposal site and the Noise Pollution control as well as technical maintenance of the afore-mentioned services. The proposed site is about 100m from the existing infrastructure which should make it more easily to be integrated into the bulk service infrastructure. With regard to services, running water will be supplied to each erven. Currently, the portion does not have services. The services such as electricity and sewer will be connected from the main town and the proponent will carry the cost for service installations. The land is currently semi-developed with 6 houses built on the portion and to be incorporated into the project. The land is zoned as “undetermined” but earmarked for residential township establishment.

The project is expected to employ 100-120 skilled, semi-skilled and unskilled people during the construction phase. The project is proposed to be located in a semi-developed land with the capacity of 2.5 ha.

## 1.2. Details of the EAP the Preparer

This EMP Report was prepared by the following environmental consultants:

Name of representative of the EAP	Education qualifications	Professional affiliations
Elina SP Vakuwile	B-tech Environmental Management	Environmental Scientist (EAPAN Member)

See Appendix I for preparers' resumes

## 2. PURPOSE OF THE EMP

The Environmental Management Plan (EMP) is the tool that can provide the assurance that the proponent has made suitable provisions for mitigation. The EMP describes the methods and procedures for mitigation and monitoring the impacts identified in the EIA report. The overall aims of this EMP are to:

- ❖ Ensure that the project complies with the goals of the Namibian Environmental Management Act 2007, (No. 7 of 2007), and;
- ❖ To describe action plans for achieving the mitigation measures described in the EIA for construction, operational and decommissioning phases of the activities associated with the development of the proposed Fuel retail facility.
- ❖ To indicate responsibilities of staff regarding the implementation of the described action plans. That is to allow employees and contractors to become familiar with the environmental procedures to be followed and facilitate their compliance with the recommendations made within this document;

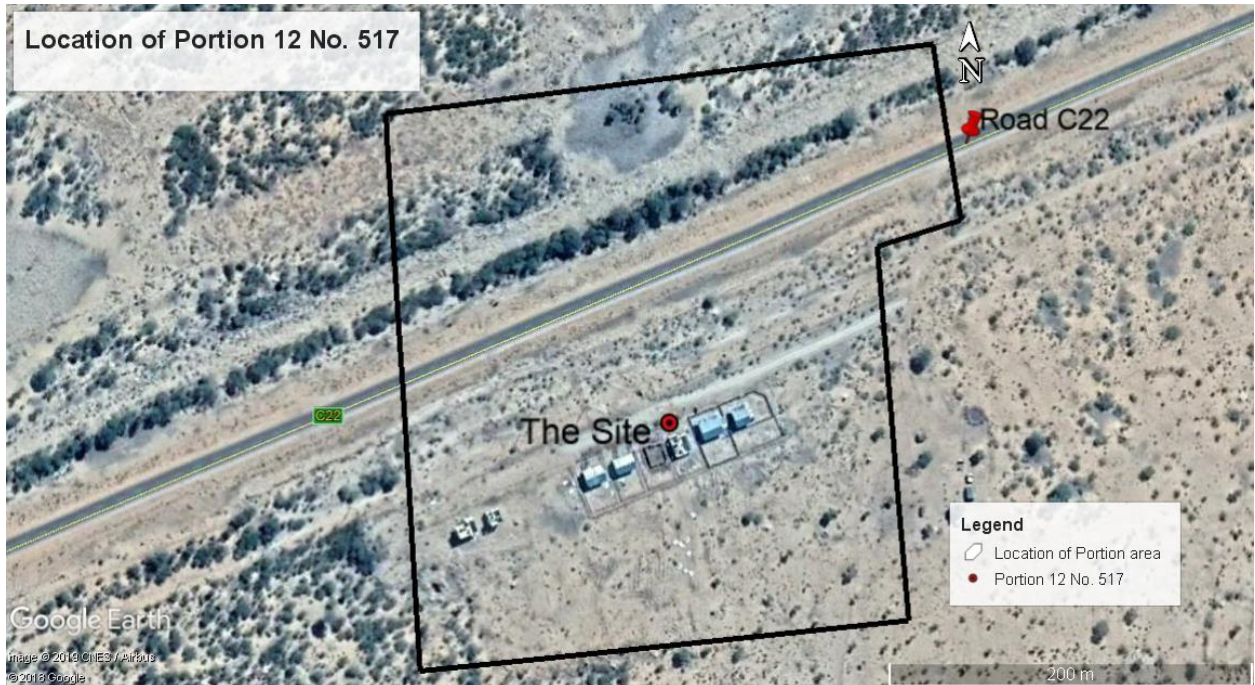
This EMP is to be submitted to the Environmental Commissioner in the Ministry of Environment and Tourism as part of the application to receive an environmental clearance certificate for the proposed project. The EMP covers the same project scope as included in the EIA. The detailed description of the proposed development is contained in (Section 7) of the EIA report. The detailed description of the affected environment is also included in the EIA report (see section 9).

### **3. PROJECT DESCRIPTION**

#### **3.1. Locality of the project**

The proposed Project will be located within the Portion 12 of the Farm Okakarara Townlands No.517, Okakarara Constituency Otjozondjupa Region, Namibia. The site is located south of the C22 National Road which is connected to the B1 National Road from Otjiwarongo. The Portion is further located southwest of main town and west of portion 6 (Ellis Park Eco Village). The coordinates for the proposed project are Latitude: 20°35'47.07"S and Longitude: 17°26'33"E. See locality map (Figure 1).





**Figure 1: Locality Map**

### **3.2. Description of the Proposed project Activities**

The site is currently owned by ACH Trading cc the proponent of the proposed project. The proposed development entails township establishment and related infrastructure of more than 11 erven on 2.5 hectares on the Remainder of Portion 12 of the Farm Okakarara Townlands No.517. See the layout plan attached.

## **4. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK**

The following are the legal instruments that govern or advocate the construction and operation of a Service Station:

- ❖ The Namibian Constitution
- ❖ Environmental Assessment Policy (1994)

- Cradle to Grave Responsibility
- Precautionary Principle
- The Polluter Pays Principle
- Public Participation and Access to Information
- ❖ Environmental Management Act of Namibia (2007)
- ❖ Environmental Management Act Regulations (2012)
- ❖ National Heritage Act No. 27 of 2004
- ❖ Water Resource Management Act on Namibia (2004)
- ❖ Petroleum Products and Energy Act of Namibia (Act No. 13 of 1990)
- ❖ Pollution Control and Waste Management Bill (guideline only)
- ❖ Atmospheric Pollution Prevention Ordinance of Namibia (No. 11 of 1976)
  - Hazardous Substances Ordinance (No. 14 of 1974)
  - Public Health Act (Act 36 of 1919)

## **5. ROLES AND RESPONSIBILITIES**

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP. The contractor in this report refers to the ACH Trading cc (proponent) and its appointed contractors.

### **5.1. Competent Authority**

The Department of Environmental Affairs: Ministry of Environment and Tourism is responsible for the review of the EMP documents it is the competent authority.



## **5.2. ACH Trading cc**

The role of the applicant is as follows:

ACH Trading cc as it is the applicant, should hire suitably qualified person(s) and assign them with the responsibility to ensure implementation of the EMP, and should:

- ❖ Know the contents and implications of the EIA and monitor the implementation of EIA findings using the EMP.
- ❖ Revise the EMP as required and inform the relevant parties of the changes.
- ❖ The applicant should Review report regarding the implementation of the EMP and make payments to the Contractor if the EMP is being implemented in a satisfactory manner.
- ❖ Give warnings and impose fines and penalties on the Contractor if the Contractor neglects to implement the EMP satisfactorily.
- ❖ Protect the environment and rehabilitate the environment as prescribed in the EIA.

## **5.3. ACH Trading (Project Manager)**

The Applicant will appoint the Project Manager. The role of the project manager will be:

- ❖ Liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting the conditions documented in the environmental clearance certificate.
- ❖ Bear the overall responsibility for managing the project contractors and ensuring that the environmental management requirements are met.
- ❖ Inform the contractors of the EMP and Environmental clearance certificate obligations.
- ❖ Approve all decisions regarding environmental procedures and protocols that must be followed.
- ❖ Have the authority to stop any construction in contravention with the EMP and Record of Decision.

- ❖ In consultation with the Environmental Control Officer (ECO) has the authority to issue fines for transgressions of basic conduct rules and/or contravention of the EMP.
- ❖ Maintain open and direct lines of communication between the proponent, Contractor and Interested and Affected Parties (I&APs) with regards to environmental matters.
- ❖ Attend regular site meetings and inspections where required.

#### **5.4. ACH Trading (Environmental Control Officer)**

An Environmental Control Officer (ECO) should be employed by the Contractor. This person should be available for the duration of the construction period and should have appropriate training and experience in the implementation of the EMP and overseeing construction process. This ECO will implement EMP at all levels and sections (sub-contractors) during the construction of the Ayesha Service Station. The responsibilities of the ECO include the following:

- ❖ Assist the Project Manager and Contractor in finding environmentally responsible solutions to challenges that may arise.
- ❖ Monitor performance of the contractors and ensure compliance with the EMP and associated method statements.
- ❖ Liaison between the contractors, authorities and other key stakeholders on all environmental concerns as well as to communicate all amendments of the EMP to the relevant stakeholders.
- ❖ Validating regular site inspection reports which are prepared by the Contractor's Environmental Officer (EO).
- ❖ Checking the EO's record of environmental incidents as well as corrective and preventative actions taken.
- ❖ Checking the EO's public complaints register in which all complaints are registered and actions taken thereof.
- ❖ Issuing site instructions to the contractors ECO for corrective actions required.

- ❖ Conduct monthly audits to ensure that the system for implementing the EMP is effective.

### **5.5. Resident Engineer (RE)**

The Resident Engineer (RE) will be appointed by the 'Consultant' and will be required to oversee the construction programme and construction activities performed by the Contractor. The RE is expected to liaise with the Contractor and ECO on environmental matters, as well as any relevant engineering matters where these may have environmental consequences.

### **5.6. Contractor's Safety Officer**

- ❖ Implement the recommendations in the EIA and satisfy the conditions in the Record of Decision.
- ❖ Ensure that safety is practiced for all activities on site.
- ❖ Prepare and implement safety procedures.
- ❖ Communicate all safety related issues.

### **5.7. Contractors**

The contractor should appoint the Contractor's representative who is suitably qualified to implement the EMP. The responsibilities of the Contractor include:

- ❖ Compliance with the relevant legislation and the EMP.
- ❖ Preparation and submission to the proponent through Project Manager the following Management Plans prior to commencing work:
  - ❖ Environmental Awareness Training and Inductions;
  - ❖ Emergency Preparedness and Response;
  - ❖ Waste Management; and
  - ❖ Health and Safety.

- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement; the ECO is to provide the course content and the following topics, at least but not limited to, should be covered:
  - The importance of complying with the relevant Namibian, International and Kyoto protocols
  - Roles and Responsibilities, including emergency preparedness.
  - Basic Rules of Conduct (Do's and Don'ts).
  - EMP: aspects, impacts and mitigation;
  - Fines for Failure to Adhere to the EMP;
  - Health and Safety Requirements.
- ❖ Record keeping of all environmental awareness training and induction presentations; and
- ❖ Attend regular site meetings and environmental inspections.

## **6. MANAGEMENT PRINCIPLES**

These guideline principles will form the basis for environmental management on site. Should these principles require modification or additions during the project this should be done at the discretion of the responsible person, who will ensure that any modifications are communicated, explained to and discussed with all affected parties (i.e. the authorities, ACH Trading/developer, the contractors and service providers, and any affected party who requests this information).

The environmental operational procedures and environmental issues are identified and managed, under different phases of the project. The different phases are:

- ❖ Construction Phase;
- ❖ Operational Phase; and
- ❖ Decommissioning Phase

## **6.1. Environmental Issues to be managed**

### **6.1.1. Pre-Construction Phase**

The Ministry of Environment and Tourism (MET) Department of Environmental Affairs must be notified:

- Within 30 days, of change of ownership / developer.
- Of any change of address of the owner / developer.
- One month prior to commencement of construction activities.
- One month prior to commencement of operation.

### **6.1.2. Construction and Operational Phases**

Unless otherwise indicated, the responsibilities of the construction contractor(s) and service providers will adhere to specified EMP actions for the construction phase. During the operational phase, ACH Trading will ensure that the following actions are implemented by establishing accountability and responsibility between the different role players.

## **6.2. Consultation with Interested and Affected parties (IAPs)**

During these two phases the Construction and Operational Phases, it is of great value to establish an open communication channel between the ACH Trading (Proponent)/ the developer, the contractors and IAPs such that any queries, complaints or suggestions can be dealt with quickly and by the appropriate person(s).

## **6.3. Record Keeping**

It is recommended to keep records for all incidents or records for all environmental issues that might occur during all the phases of the project. Therefore, all records related to the implementation of this EMP (e.g. audit reports, incident reports, etc.) must

be filed by ACH Trading cc in a safe place where they can be easily retrieved. Those records should be kept for two years and should, at any time, be available for scrutiny by relevant authorities such as Ministry of Urban and Rural Development or Ministry of Environment and Tourism.

#### **6.4. Photographs**

It is recommended that the appointed Contractor's Project Manager/ Environmental Consultant or Environmental Liaison Officer to have the responsibilities of taking photographs prior to, during and immediately after construction, as a visual reference. These photographs should be stored with other records related to this EMP.

### **7. MANAGEMENT OF THE ENVIRONMENTAL IMPACTS**

#### **7.1. The Construction Phase**

In order to ensure compliance with the Policies, Legal and Administrative framework and other relevant legislations listed in section 4 of this report and well described in section 6 of the EIA report, the following actions are applicable to the general construction of the project (Housing project) as well as the installation phase of the bulk services. If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur.

## Employment Creation

Impacts	Description	Mitigation	Monitoring	Responsible Body
Employment Creation		<p>The contractor must appoint an Environmental Liaison Officer to monitor the situation with a direct hands-on approach.</p> <p>The contractor must make use of local labour where possible in order to stimulate the local economy.</p> <p>When recruiting, the responsible contractor should ensure gender equality is taken into consideration that both men and women are employed equally and treated equally.</p> <p>Equity, transparency, should be put into account when hiring and recruiting and that Public Participation i.e. Community Leaders or Community committees should also take part in the recruiting process for decision makings.</p> <p>No employment applications may take place at the entrance to the site, formal employment channels must be used.</p>	Monitored once off by the ELO	Appointed Contractor/ ELO



## EMP Training

Impacts	Description	Mitigation	Monitoring	Responsible Body
EMP Training	Lack of EMP awareness and the implications thereof	<p>The proponent must appoint an Environmental Liaison Officer to conduct an awareness program with all contractors to inform them about the content of the EMP.</p> <p>All contractors appointed for the project must ensure that all personnel are aware of necessary health, safety and environmental considerations applicable to their respective work.</p> <p>A copy of the EMP must be available on site</p>	Monitored once off by the ELO	Appointed Contractor/ ELO/ ACH Trading

**Impacts on Traffic** – The site is adjacent to the main district road C22 National Road which is connected to the B1 National Road from Otjiwarongo. The Construction related activities such as heavy vehicles entering and exiting the site during loading and off-loading of construction equipment are expected to have a minimal impact on the movement of traffic along the C22 road.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Traffic	Traffic congestion	<p>Ensure that unnecessary traffic is reduced.</p> <p>Drivers of the vehicles should be licensed and proficient in driving those vehicles.</p> <p>Drivers under the influence of narcotics and alcohol should not be allowed to operate those</p>	Regular visual inspection.	ACH Trading/ Appointed Contractor/ ECO

		<p>vehicles and must be removed from the site.</p> <p>Flag men and traffic controllers should be appointed to regulate traffic flow of vehicle construction.</p>		
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**Health and Safety-** Minor, serious or fatal injury to staff employed to work on the development are expected if not mitigated.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Health and Safety	During construction phase, there is a possibility of injuries to occur if no measures are taken into consideration.	<p>All contractors, consultants and labourers must ensure that the necessary personal protective equipment (PPE) is worn on site.</p> <p>Official training in the correct fit, use, care, storage and limitations of all Personal Protective Clothing, Respiratory and Hearing Equipment must be given to the employees.</p> <p>Ensure all open excavations are clearly marked and all the appropriate health and safety signage are displayed on site.</p> <p>The Contractor shall provide a standard first aid kit at the site office and at the camp.</p> <p>The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents.</p>	Regular visual inspection by EO	ACH Trading / Appointed Contractor/ ECO/ EO

**Safety and Security** – In terms of safety, crimes and prostitutions are the key factors needs to be looked at. This is simply because, whenever there is a new development especially constructions, many people migrates from their settlements looking for jobs as construction workers and after construction, most of them they hardly go back to their settlements where they came from therefore, they end up committing crimes or leads to the high rates of prostitutions in the area.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Safety and Security	During the construction and decommissioning phase, earthmoving equipment will be used on site. This increases the possibility of injuries. Presence of equipment may encourage criminal activities (theft).	<p>The responsible contractor must ensure that all staff members are briefed about the potential risks of injuries on site.</p> <p>The contractor is further advised to ensure that adequate emergency facilities, including first aid kits, are available on site.</p> <p>Ensure that the contact details of the police or security company and ambulance services are available on site.</p> <p>The site must be fenced off to prevent unauthorized access during construction.</p> <p>All visitors must report to the site office.</p>	Security System Monitoring. Safety Procedures. First Aid Training by ECO.	ECO/ ACH Trading

**Dust Pollution** – These are expected to be site specific, short-termed and will most probably pose a negligible nuisance and health threat to those residing nearby. The construction of the proposed project will have impact on the surrounding air quality as construction vehicle will be frequenting the site and surrounding.

Impacts	Description	Mitigation	Monitoring	Responsible Body
<p><b>Dust</b></p> <p><i>Main causes of air pollution are dust from vehicle movements and stockpiles, vehicle emissions and fires</i></p>	<p>Dust may be generated during the construction/decommissioning phase and might be aggravated when strong winds occur.</p>	<p>Vehicles travelling to and from the construction site must adhere to the speed limits so as to avoid producing excessive dust.</p> <p>It is recommended that regular dust suppression be included in the construction phase, when dust becomes an issue.</p> <p>A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas.</p> <p>Loads could be covered to avoid loss of material in transport, especially if material is transported off site.</p>	<p>Regular visual inspection by E</p>	<p>ACH Trading / Appointed Contractor</p>

**Noise Impact** – Earthmoving equipment will be utilised during the construction phase and noise may thus be generated. Properties nearby (<150m) the site may be impacted. Construction noise can interfere with student’s learning and studying, might degrade social interactions, disrupt speech communication, can also lead to emotional distress or annoyance, or lead to physical health problems such as permanent loss of memory or a psychiatric disorder if in excessive noise pollution.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Noise Impact	Noise pollution due to construction equipment and heavy machinery on site.	<p>Construction should be limited to working hours only (07H00- 19H00).</p> <p>Provide ear plugs and ear muffs to staff undertaking the noisy activity or working within close proximity thereof.</p> <p>Noise pollution should be addressed and mitigated at an early stage of construction phase.</p>	Strict operational times. Regular inspection. By E and ECO	ACH Trading / Appointed Contractor/ ECO

**Generation of Waste-** Illegal dumping of construction wastes attracts vagrants.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Generation of waste	<p>This can be in a form of contaminated soil and building rubble.</p> <p>Excavated soil from the installation of the bulk infrastructure.</p> <p>Littering</p>	<p>To avoid contaminating the soil and underground ecosystem, no wastewater should be disposed on soil.</p> <p>Ensure that no excavated soil, refuse or building rubble generated on site are placed or dumped on surrounding properties or land.</p> <p>The contractor should provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste;</p> <p>Bins/skips shall not be used for any purpose</p>	<p>Bins and / or skips should be emptied regularly and waste should be disposed of at a registered landfill site.</p> <p>Engineer / ECO.</p>	ACH Trading / Appointed Contractor/ECO/Engineer

		<p>other than waste collection and shall be emptied on a regular basis.</p> <p>The Contractor shall ensure that all litter is collected from the work and camp areas daily.</p> <p>Soil from excavation activities must be reused as fill elsewhere on the site</p> <p>Ensure all hazardous materials are transported to a hazardous waste site for disposal by a licensed removal contractor.</p> <p>Strictly, no burning of waste on the site or at the disposal site is allowed as it possess environmental and public health impacts;</p> <p>Waste handling procedures must be cleared with the Okakarara Town Council and the construction contractor should be informed about this.</p>		
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### Ecological Impacts

Impacts	Description	Mitigation	Monitoring	Responsible Body
Ecological Impacts	No conservation worthy vegetation and fauna exists at the site	Some vegetation should be planted at the site to minimize surface run-off	Visual inspection by ACH Trading cc	ACH Trading

**Groundwater Contamination** – Leakages from equipment and machinery might occur during the construction phase.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Groundwater contamination	<p>Minimal groundwater contamination can be caused by leakages of fuel from machinery and heavy-duty vehicles during construction/decommissioning phase. Care must be taken to avoid contamination of soil.</p> <p>Stormwater</p>	<p>Proper toilet facilities should be installed at the construction site and at the camping site or alternative arrangements.</p> <p>Drain tanks and pipelines prior to removal. Prevent spillages of any chemical.</p> <p>Drainage must be controlled to ensure that runoff from the site will not culminate in off-site pollution or result in damage to properties downstream of any stormwater discharge.</p> <p>The stormwater drainage network system must be kept separate from the waste water (water containing waste) system.</p> <p>Fuel (diesel and petrol) and oil containers shall be in good condition and placed in a bunded area or on plastic sheeting covered with sand (temporary bunding).</p>	Regular visual inspection by Engineer	ACH Trading/ Appointed Contractor



### Increased Informal Settlement and Associated Problems

Impacts	Description	Mitigation	Monitoring	Responsible Body
Increased Informal Settlement and Associated Problems		This can be mitigated by giving employment preference to locals that can proof normal residence in the area.	Monitored once off by the ELO	Appointed Contractor/ ELO

### Increased Spread of HIV/ AIDS

Impacts	Description	Mitigation	Monitoring	Responsible Body
	The spending power of locals and expatriates working for the developer and/or its contractors are likely to increase, and this might be a perfect opportunity for sex workers to explore. Migrant labourers from other regions and expatriates are normally vulnerable and may use the services rendered by the sex workers.	A key initiative should be to educate workers. <i>See section 10 (Socio-economic Environment) for details on region statistics.</i>  Distribute condoms  Recruits people from the area	Monitored once off by the ELO/ ACH Trading	ACH Trading/ Appointed Contractor

**Heritage Impacts** – There are no known heritage areas or artefacts deemed to be impacted by the construction.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Heritage Impacts		During construction, the contractor might come across archaeological features or objects that possess cultural values. If archaeological remains or objects with cultural values (e.g. Pottery, bones, shells, ancient clothing or weapons, ancient cutlery, graves etc) are uncovered at the exploration camp or surrounding, it should be barricaded off and the relevant authorities should be contacted immediately.	Regular visual inspection by Engineer / ECO/ELO.	ACH Trading / Appointed Contractor/ECO/Engineer /ELO

**Stimulation of Skills Transfer**

Impacts	Description	Mitigation	Monitoring	Responsible Body
Stimulation of Skills Transfer		As the construction and operation of the development requires specialised work and skills it can be expected that experts will be training locals in certain skills during development and operation.	Monitored once off by the ELO/ ACH Trading	ACH Trading / Appointed Contractor

## 7.2. Impacts Associated with Operational Phase

Specific impacts identified, associated with the operational phase are:

### Traffic

Impacts	Description	Mitigation	Monitoring	Responsible Body
Traffic	Potential impact due to increase in traffic	<p>Sidewalks for pedestrians should be provided.</p> <p>Appropriate road signs and markings should be provided throughout the layout.</p> <p>Signs should be provided at intersections particularly at higher order intersections.</p>	Regular inspection By Engineer and EO	ACH Trading

### Health Impacts

Impacts	Description	Mitigation	Monitoring	Responsible Body
	The operations of fuel retail facility can cause serious health and safety risks to workers on site. Occupational exposures are normally related to the dermal contact with fuels	<p>Adequate measures must be brought in place to ensure safety of staff on site, and includes:</p> <p>1) Proper training of operators; Relevant operational staff must receive training on</p>	Monitoring should be carried out on a regular basis, including	Ayesha Service Station / ECO/ ELO

	<p>and inhalation of fuel vapours during handling of such products.</p>	<p>the correct operation of the storage tanks, as well as maintenance and repair procedures when leaks are detected.</p> <p>2) First aid treatment;</p> <p>3) Medical assistance;</p> <p>4) Emergency treatment; Fire extinguishers and sand bags must be readily available onsite and easily accessible.</p> <p>5) Prevention of inhalation of fumes;</p> <p>6) Protective clothing; The correct PPE should be used on the site.</p> <p>Telephone numbers of emergency services shall be posted conspicuously in the office for use in emergency situations.</p> <p>Appropriate Health &amp; Safety signage must be placed on and around the tank.</p>	<p>accident reports.</p>	
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## Waste management

Impacts	Description	Mitigation	Monitoring	Responsible Body
<p><b>Waste management</b></p>		<p>During the operations phase, the Okakarara Town Council waste management will service the proposed residential area.</p> <p>Okakarara Town Council to develop a formal waste collection strategy and that the waste is to be collected regularly by disposed of at authorized dumping site or disposal site.</p> <p>Illegal dumping should be prohibited.</p> <p>The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown the spill.</p> <p>The Contractor shall notify the relevant authorities of any spills that occurs.</p>	<p>Regular inspection By EO from Okakarara Town Council</p>	<p>Okakarara Town Council</p>

### Commercialization of the area

Impacts	Description	Mitigation	Monitoring	Responsible Body
Commercialization of the area	The project will be a social and financial upliftment for the community.	Residents to be provided with all the basic amenities and utilities required by the community for them to live in a quality life style.  Jobs emanating from the construction and operation of the proposed development will be outsourced to small medium enterprises in the area.	ACH Trading	ACH Trading

### Improved aesthetic look of the area

Impacts	Description	Mitigation	Monitoring	Responsible Body
Improved aesthetic look of the area	The development of this project at this site is essential to improve the aesthetics of the area while turning it into an environmentally friendly settlement with improved infrastructure services	Create awareness among the residents about energy conservation and other resources as well as to implement measures to prevent or minimize any adverse effects on the environment.  Public open space and park erven should be revegetated to look greener and to minimize soil exposure to erosion.	Regular visual inspection by Operator	ACH Trading / Operator

		<p>Ensure proper and regular maintenance of the area.</p> <p>To mark the area with appropriate roadwarning signs (e.g. the road curves tothe left/right)</p> <p>No illegal dumping of waste should be allowed</p>		
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**Storm water**

Impacts	Description	Mitigation	Monitoring	Responsible Body
Storm water	Storm water usually runs off the areas and flow into the water bodies without any kind of treatment. This can pollute the water bodies like creeks, lakes and rivers and have adverse effects on their chemical as well as biological nature. It is in this nature that plans for storm water collection has been proposed in such way so as to accommodate the entire amount of outflow that may occur after development.	<p>Storm water drains will be collected through network of storm drains from gardens, parking areas, paved and unpaved areas, and roadways.</p> <p>All along the roads storm water drains would be provided to collect water during rains.</p> <p>They would be adequately sized to prevent over flooding of the site.</p>	Strict operational times. Regular inspection. By Engineer (Technical team) and ECO	Okakarara Town Council & ACH Trading



**Increase Noise Pollution-** Disturbance of surrounding residents.

Impacts	Description	Mitigation	Monitoring	Responsible Body
Increase Noise Pollution		A noise control policy must be compiled and enforced to control the level of noise at the facility, paying particular reference to the immediate neighbours since the site is for residential use. Sound volumes should be kept low if public address systems are used on the site.	Strict operational times. Regular inspection. By Okakarara Town Council	Okakarara Town Council

**Land use**

Impacts	Description	Mitigation	Monitoring	Responsible Body
<b>Land use</b>	The proposed development will result in a change in land use, with some loss of grazing taking place. However, it will impact positively on the current housing shortage within the Okakarara area because it will aim to address the number of informal settlements as well as providing houses to previously disadvantaged individuals who cannot afford houses. It is expected that more than 11 new units will be built on the proposed site, providing as many families with housing.	Land use will be changed from agricultural to residential use. However, the development will be compatible with the surrounding land use on completion of the construction phase.  Houses should be sold to local previously disadvantaged individuals who cannot afford houses or locals with low incomes.  No informal settlements should occupy the land.	Monitored by the Project Manager	ACH Trading/ Okakarara Town Council

### **7.3. Impacts Associated with Decommissioning Phase**

The decommissioning phase of this development (Housing development) is very difficult to visualise at this point in time. However impacts associated with this phase will be similar to that of the construction phase.

During the decommissioning phase, rubble and waste will be created, as buildings and other structures are being demolished. These should be contained and disposed of at an approved waste facility and not dumped in the surrounding areas. These should be done in recognition with the Okakarara Town Council's waste management regulations and guidelines.

An environmental assessment should be made and an Environmental Impact Assessment (EIA) may be required. Special disposal of decommissioned equipment and hazardous and contaminated materials will be required.

## 8. ENVIRONMENTAL MONITORING PLAN

Environmental monitoring plan is part of the EMP performance assessment and will need to be compiled and submitted as determined by the Environmental Commissioner. The process of monitoring performances against the objectives and documenting all environmental activities is part of internal and external auditing. This will be coordinated by the Environmental Control Officer (ECO) / External Consultant / Suitable qualified in-house resource person. Tables 3 outline the type of information that shall need to be recorded on a regular basis by the Environmental Control Officer (ECO) as part of the monitoring process of the activities and the effects.

Mitigation	Compliance	Follow-up action required	By whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the EMP on site?					
How effective is the awareness training?					
Do people understand the contents of the EMP?					
If not, where are the weaknesses?					
Ask 3 people at random various questions about the EMP.					

## **9. CONCLUSION**

This Environmental Management Plan is to be implemented at all the phases of this project. If this EMP is implemented properly, it will help to minimise the adverse impacts on the environment. In order to achieve that, this Environmental Management Plan should be used as an on-site reference document during all the phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site. It is the proponent's responsibility to ensure that this EMP is made binding on the contractor by including the EMP in the contract documentation. It is advised that contractors should thoroughly familiarise themselves with the requirements of the EMP and appoint an environmental officer/s to oversee the implementation of the EMP on a day-to-day basis. By law, all parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken (Refer to Polluter Pays Principle under the Environmental Assessment Policy (1994)). If this project is mitigated, as per the above EMP, then the project will result in limited negative environmental impacts that can be mitigated through implementation of this EMP.

## **10. RECOMMENDATIONS**

All Contractors and sub-Contractors taking part in any of the phases should be made aware of the contents of the EMP and of the Environmental Impact Assessment (EIA), so as to plan their activities accordingly in an environmental sound manner. It is unanimously concluded that the housing development go ahead without any objections.