DRAFT
OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME
BELFAST ASPHALT PLANT

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Prepared by: AquaEco

Prepared for: Roadspan

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Key Contacts	Organisation / Person	Telephone	Website / Email
Responsible Person for Operator	Roadspan Tjaart van der Walt	082 699 3789	Tjaart_VanDerWalt@roadspan.co.za
Landowner	Henk Blignaut	076 303 5093	henmor@lando.co.za
Mandated Authority: Air Quality	Nkangala District Municipality Vusi Mahlangu	082 414 2905	mahlangumv@nkangaladm.org.za
Mandated Authority: Environment	DARDLEA (Nkangala Regional Office) Dineo Tswai		dtswai@mpg.gov.za

PREAMBLE

This Operational Phase Environmental Management Programme (OEMPr) meets the requirements of the National Environmental Management Act 107 of 1998 (NEMA) and the related Environmental Impact Assessment Regulations (GN R 982 of 14 December 2014), specifically Appendix 4. In addition to this, the OEMPr has been informed by the National Environmental Management: Air Quality Act 39 of 2004 and associated environmental legislation.

The underlying purpose of the OEMPr is informed by Section 28 of NEMA, which provides for a "*Duty of Care*" and reads "…*every person who causes, has caused or may cause significant environmental degradation (is) to take reasonable measures to prevent such degradation from occurring, continuing or recurring*".

This OEMPr has been compiled specifically for use by Roadspan at the Belfast Asphalt Plant, where it will be implemented during the operational phase, to ensure the operation of an environmentally sound and sustainable project.

Roadspan undertakes to implement this OEMPr towards ensuring environmental compliance and sustainable management.

Name of Duly Authorised Representative

Signature Date

Place

CONTENT

SECTION 1 - INTRODUCTION

This Operational Phase Environmental Management Programme (OEMPr) has been compiled as a structured management tool to assist with the minimisation of potential environmental impacts in the operational phase of Roadspan Belfast Asphalt Plant. **The OEMPr must be kept on-site and all senior personnel are expected to familiarize themselves with the content thereof**.

1.1 Environmental Authorisations

The Roadspan Belfast Asphalt Plant (hereafter Asphalt Plant) was established under the dispensation granting exemption from the need for an Atmospheric Emissions Licence (AEL) for temporary asphalt plants (*Declaration of Temporary Asphalt Plants as a Controlled Emitter and Establishment of Emission Standards* as per GN R 201 of 2014). In terms hereof, the plant is being operated for a period of 24 months, within the emissions standards and other criteria provided for in these regulations. This results in the concurrent exemption from the need for an Environmental Authorisation (EA) in terms of the EIA Regulations (GN R 982 of 2014), for the 24 month operating period.

If it becomes apparent that the plant will be operating outside of the 24 month period (i.e. as a permanent plant), application must be made for an AEL related to Subcategory 5.10 in the *List of Activities which Result in Atmospheric Emissions which have or may have a Significant Detrimental Effect on the Environment, including Health, Social Conditions, Economic Conditions, Ecological Conditions or Cultural Conditions* as per GN R 893 of November 2013), promulgated in terms of the *National Environmental Management: Air Quality Act 39 of 2004*. This AEL will concurrently trigger the need for an EA in terms of the EIA Regulations (GN R 982 of 2014).

Upon issuance of an AEL and EA as referred to above, the conditions contained in the respective authorisations will become binding and must be used to inform and update the content of this OEMPr.

1.2 Description of the Roadspan Belfast Asphalt Plant

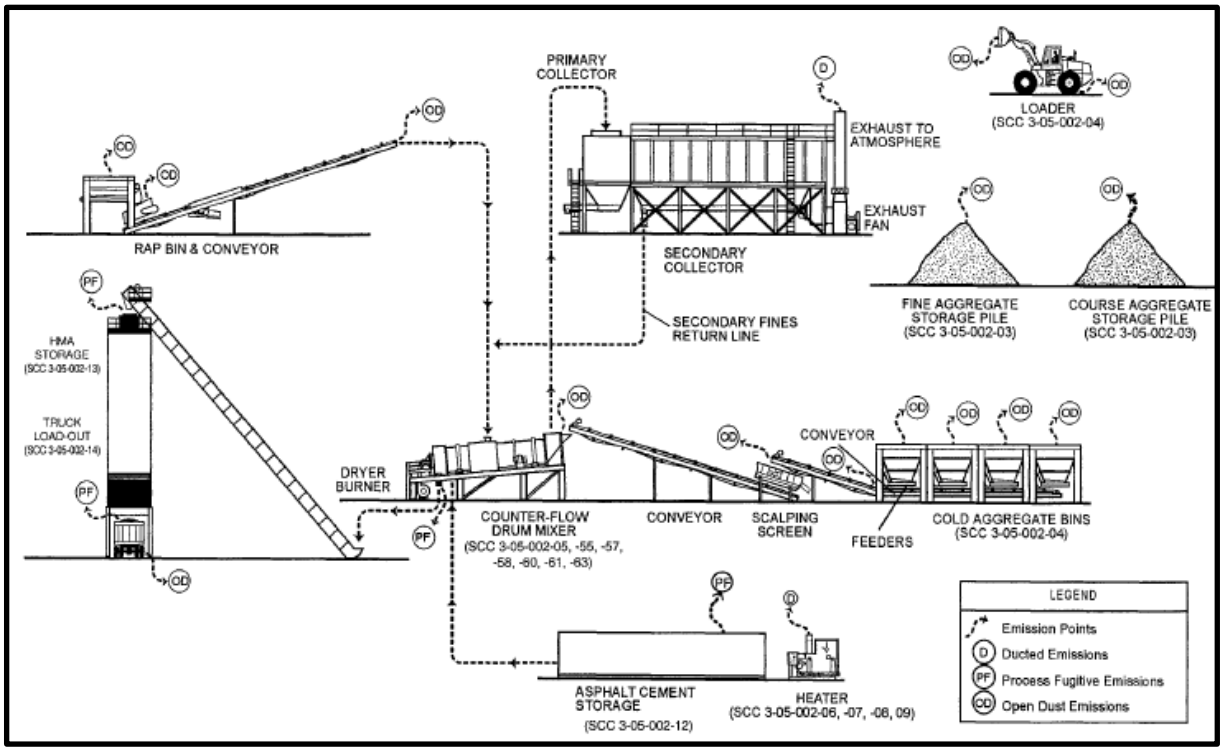
The Plant was established on a Section of Portion 75 Paardeplaats 380 – JT. This is a hot mix batch facility, which is used to combine bitumen with the aggregate, for the production of asphalt for road paving.

An asphalt plant is an assembly of mechanical and electronic equipment, where aggregates are blended, dried, heated, and mixed with bitumen to produce hot mix asphalt that meet specified requirements. The primary components of the plant are:

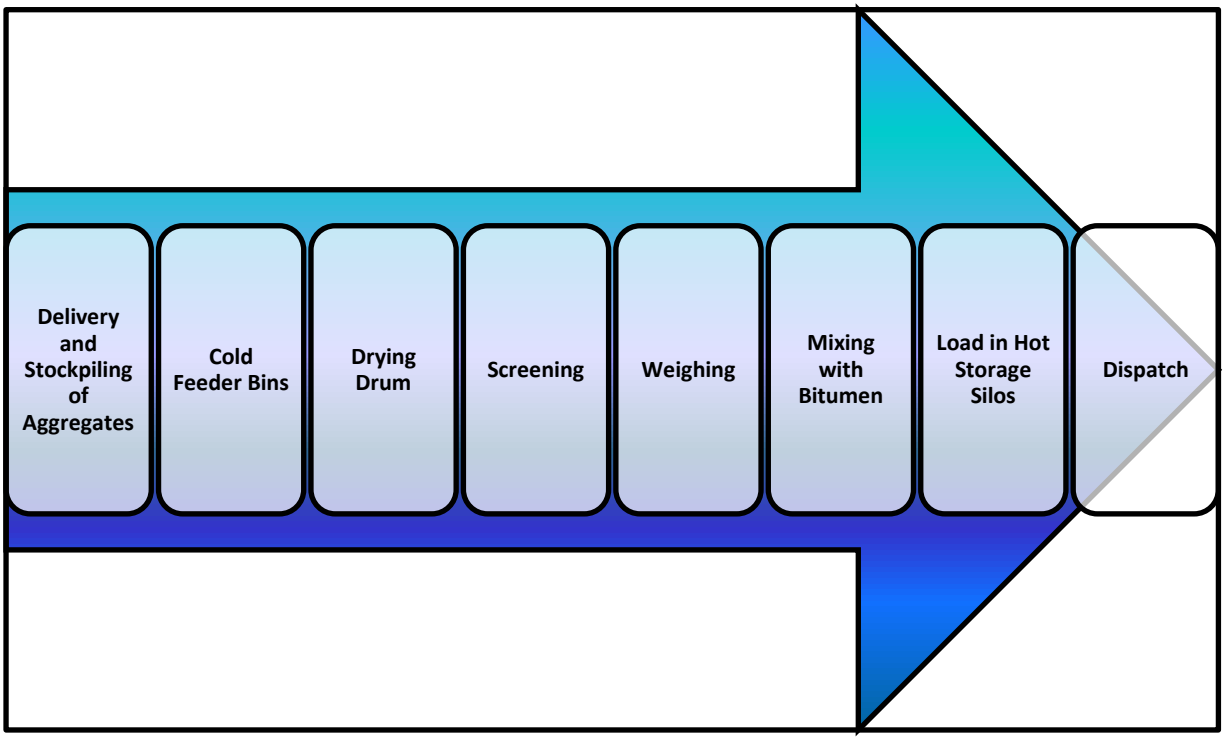
- Storage tanks for asphalt binders and bitumen.
- Storage tanks for burner oil fuels used in heating the asphalt components.
- Cold feed bins into which aggregate (stone and sand) is fed.
- A screen that separates aggregate classes before being weighed.
- A drier drum which dries the aggregates.
- A wet scrubber and stack to remove dust and emissions.
- A drum mixer for the mixing of aggregates with bitumen.
- Hot storage silos for the storage of prepared asphalt.
- A loading area where asphalt can be loaded from the storage silos into trucks.

The process of asphalt manufacture can be summarised as the drying, heating and screening of raw aggregate before it is mixed in specific quantities with heated bitumen. From here it is stored and loaded for dispatch to road and asphalt surfacing projects. Reclaimed asphalt pavement (RAP) may be included into the mix as a recycled product.

The following diagram has been sourced from the United States Environmental Protection Agency and shows a basic process flow in an asphalt plant similar to that which is established at the Plant.



This manufacturing process can also be illustrated diagrammatically as follows:



Aggregate is transported to the site via trucks from the existing legalised quarries. Bitumen is transported to the plant by existing roads from commercial suppliers, while prepared asphalt is dispatched to paving contracts by existing roads.

No crushing of aggregate is done at the Asphalt Plant. Aggregates are stockpiled in heaps and bitumen stored in bunded tanks.

1.3 Objectives and Purpose

This OEMPr's purpose lies in the provision of a structured management tool that can be used in the operation of the asphalt plant, to achieve sustained minimization of potential environmental harm and improvement of environmental performance, through cost-effective and continually assessed measures.

This OEMPr refers to a wide range of interventions that can be made to improve or optimise performance in environmental management and promotes the minimisation of unavoidable environmental impacts and the prevention of avoidable impacts associated with the Asphalt Plant.

The objectives of this OEMPr are derived from:

- The need for the operation to be in compliance to legislative obligations.
- The need for resource protection and conservation.
- The need for resource use to be equitable, responsible and sustainable.
- The need for the operation to be recognized as environmentally responsible and sustainable.
- The need for norms and standards against which the operation can be held accountable.
- The need to illustrate adequate environmental due diligence.

Specifically, this OEMPr aims to:

- Set out environmental management guidelines to be followed during the operational phases of the project.
- Be relevant to the nature and technology of the Asphalt Plant.

- Be reasonable and practical and provide for ease of implementation.
- Provide cost effective options for environmental management.
- Be flexible and sustainable.
- Provide a mechanism for environmental self-regulation.
- Fall within the legal requirements for the establishment of the operation.
- Provide clear standards for performance and monitoring.

The purpose of the OEMPr is to provide the guidelines and requirements that will ensure that the operation of the Asphalt Plant does not impact negatively on the natural systems and surrounding areas in a significant manner. These guidelines should ensure that the environmental impacts of the operational phase are managed, mitigated and kept to a minimum, through clearly defined actions.

1.4 Location and Surrounding Environment

The Asphalt Plant is located in Belfast, Mpumalanga on a section of Portion 75 of Paardeplaats 380 – JT. The site has been completely modified by historic use as a construction and/or industrial site. Immediately surrounding the site is a mix of peri-urban development and pockets of natural veld.

1.5 Defined Roles and Responsibilities in the OEMPr

A number of individuals and entities will fulfil various roles and responsibilities to ensure the effective implementation of this OEMPr. The key roles and responsibilities are detailed below.

Roadspan / WBHO (Management):

- Take overall responsibility for adherence to and implementation of the OEMPr and any Environmental Authorisations or Licences that may follow.
- Appoint a suitably qualified person to take responsibility over implementation of the OEMPr, whom will act specifically as the Environmental Officer (EO).

- Take responsibility for the repair and rehabilitation of any environmental damage that may occur as a result of the asphalt plant and related activities, with due consideration that financial provision must be made for the costs of rehabilitation.
- Where applicable, inform the relevant authorities (DARDLEA and Nkangala District Municipality) of any changes and/or deviations in the operation, including decommissioning.

The Environmental Officer (EO):

- Ensure that all contractors (and their staff members) associated with the operation, are sensitised to this OEMPr before commencement of their tasks and works. Each of these contractors must be furnished with a copy of the OEMPr.
- Monitor and record environmental compliance in accordance with the OEMPr and any Environmental Authorisations or Licences that may follow. This is to include regular internal auditing.
- Take the lead in coordination and/or executing the required air quality and other monitoring and reporting.
- Record environmental incidences and non-compliances to the OEMPr and any Environmental Authorisations or Licences that may follow.
- Maintain and update environmental management records, including a complaints register and records of environmental compliance that must be kept on site. It is good practice to keep a diary of environmental matters and photographic records (where possible).
- Provide on-going advice in environmental management during operations of the aggregate handling and asphalt plant operations. This includes responsibility over any decommissioning.
- Take the lead in dealing with any environmental emergencies or incidents and suspend works that pose an immediate or urgent threat to the environment.
- Immediately consult with the South African Heritage Resources Agency (SAHRA) if any historical artefacts (both archaeological and/or paleontological) are discovered during operations.
- Take charge of revising and updating the OEMPr if required.

- Coordinate and facilitate environmental awareness at the Asphalt Plant and take charge of any environmental training or induction needs for personnel and contractors.
- Develop method statements for particular environmental challenges.
- Take the lead in liaison with any environmental authorities and other stakeholders in the environmental management sphere.

Contractors and Service Providers:

- Ensure that all their staff members are sensitised to this OEMPr before commencement of their tasks and works.
- Report issues of non-compliance and environmental challenges to the EO.

The Competent Environmental Authorities (DRADLEA & Nkangala District Municipality) may:

- Periodically inspect the Asphalt Plant.
- Periodically check compliance with the conditions of any Environmental Authorisations or Licences that may follow, and the provisions of the OEMPr.
- Review and evaluate compliance reports and/or audits.
- Review and amend the conditions of any Environmental Authorisations or Licences that may follow.

Other parties may:

- Be provided with the OEMPr if any environmental concerns or questions are raised, so that this may be used as a benchmark for environmental management and to evaluate compliance.

1.6 Environmental Awareness Plan and Training

In order to ensure that all contractors, subcontractors, service providers and other personnel are aware of their responsibilities towards the environment in the operational phase, the following awareness plan will be implemented by the appointed EO:

- All new contractors, subcontractors, service providers and other personnel must be taken through an environmental awareness talk by the EO, when they first arrive on site.
- The talk should cover the content of the OEMPr and basic environmental housekeeping such as waste minimisation and litter, fire safety, no-go areas, use of ablution facilities etc. Aspects such as the importance of compliance, roles and responsibilities, benefits of performance, emergency procedures and consequences of non-compliance should also be included.
- Each attendee must sign a register of attendance.
- The session should be sensitive to the recipient's level of education, culture and language.
- All attendees should be exposed to a six-monthly refresher session.
- Pertinent environmental issues should be discussed in all project and/or progress meetings.
- Pertinent environmental issues and the solutions to these issues should be communicated through informative posters and other visual aids.

1.7 Structure of the Management Plan

This OEMPr is structured into distinct sections for ease of reference and use. The structure is as follows:

Section 1	Introduction, Description, Objectives, Awareness, Roles etc.
Section 2	Operational Phase Environmental Management
Section 3	Decommissioning Phase
Section 4	Social Environment
Section 5	Monitoring, Reporting and Auditing
Section 6	Environmental Emergency Response
Section 7	Conclusion

1.8 Status and Legal Context

Although this OEMPr in itself is not a legal document, it is an important tool and guideline to facilitate legal compliance, to assist with environmental management required under the conditions of lease, and its implementation may become a condition of any Environmental Authorisations or Licences that may follow.

The OEMPr must form part of all tender and contract documents issued to subcontractors, while the rates included in any costing or bill of quantities must allow for compliance with the OEMPr.

It is of utmost importance that this OEMPr be read in conjunction with any Environmental Authorisations or Licences that may follow. Should these contain requirements (conditions) that contradict any points in this OEMPr, those in the authorisations and licences supersede those in this OEMPr. This OEMPr may therefor need to be updated once these authorisations and licences are issued. This OEMPr is a dynamic document that should be reviewed and updated.

This OEMPr has been informed by the following primary environmental laws (non-extensive list):

The National Environmental Management Act 107 of 1998 (NEMA)

This Act embraces the notion of sustainable development as contained in the Constitution in that everyone has the right:

- to an environment that is not harmful to their health or well-being; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures

It aims to provide for co-operative environmental governance by establishing principles for decision-making on all matters relating to the environment.

Appendix 4 of the EIA Regulations (GN R 982 of 2014), promulgated in terms of NEMA, provides guidance to the structure of Environmental Management Programmes and has therefore been used as the legislative guideline for the content of this OEMPr.

National Environmental Management: Air Quality Act 39 of 2004

The key aim of this act is to regulate air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation, and provide for national norms and standards.

National Environmental Management: Waste Act 39 of 2004

The key aim of this act is responsible waste management, minimisation and disposal for the prevention of environmental damage, and provision of national norms and standards.

National Environmental Management: Biodiversity Act 10 of 2004 (NEM:BA)

This Act controls the management and conservation of South African biodiversity. Amongst others, it deals with the protection of species and ecosystems, as well as the sustainable use of indigenous biological resources.

National Water Act 36 of 1998 (NWA)

This Act gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed.

National Heritage Resources Act 25 of 1999

This Act deals with the protection and management of South Africa's heritage resources. Any graves, buildings and structures older than 60 years, fossils, paleontological materials or archaeological materials must be dealt with in terms of this legislation.

1.9 Code of Conduct

The following code of conduct is fundamental to the environmental management of the Roadspan Belfast Asphalt Plant. All parties (particularly all contractors, service providers and employees) are to abide by this code for responsible environmental management.

All parties accept that potential negative and positive impacts may result from the implementation and operation of the Roadspan Belfast Asphalt Plant. It is therefore a core objective of Roadspan to ensure that all potentially negative impacts are

minimised through dedicated management, the implementation of economically sounds and environmentally responsible mitigation measures and the enhancement of the positive socio-economic and other impacts of the project. In this manner, Roadspan strives to contribute positively to use of the surrounding environment and to improve the quality of life for all.

Roadspan, all its employees, each contractor and service provider, authorities and other interested and/or affected parties commit by means of this code to taking all such measures as may be required to mitigate and monitor potentially negative impacts, to ensure responsible and sustainable use of the environment.

1.10 Method Statements

Method statements are written methodologies related to implementation and achievement in aspects covered by this OEMPr, or in dealing with new environmental challenges that may arise. These should be compiled by the EO prior to any activities that may impact on the environment, and will typically provide information on:

- Operational procedures
- Start date and duration of the procedure
- Materials, equipment and labour to be used
- Compliance / non-compliance with the OEMPr specification
- Measures to prevent or contain potential impacts
- Emergency procedures in case of any accident / incident which could occur during the procedure

Method statements may require sanction by management, the landowner or the delegated authorities, as applicable. Once compiled, these method statements should be filed on site and referenced in the management of sensitive environmental issues.

1.11 Transgressions and Non-Compliance

This OEMPr is informed by a range of environmental laws, each of which contain liabilities related to environmental damage, pollution or disruption. Non-compliance, could result in fines and imprisonment. It is therefore strongly recommended that the OEMPr be implemented diligently and that the EO implement appropriate internal checks, balances and possibly a penalty system. In the event of such a penalty system, the details thereof must be made clearly known to all personnel and contractors beforehand.

Transgressions and potential environmental impacts that are severe, must be reported to the delegated authorities. These are the Mpumalanga Agriculture, Rural Development, Land and Environmental Affairs and Nkangala District Municipality.

1.12 Author of the Management Plan

This OEMPr has been compiled for the Asphalt Plant by Mr. Etienne Hinrichsen of AquaEco. AquaEco was founded in the 1990's as company dedicated to facilitating development through effective and goal orientated statutory authorisation processes and environmental management. In this, AquaEco has consulted and undertaken environmental assessments on a range of private and government projects.

AquaEco are the leaders in environmental authorisation processes for asphalt and road projects and have, amongst others, been appointed by the South African Roads Federation as coordinator for their training programmes in environmental management for roads and asphalt projects.

As author, Mr. E Hinrichsen holds both a BSc and M.Phil degree and is currently completing a part-time degree in environmental law. He has more than 15 years of experience in environmental planning and assessment and has worked across southern Africa. He is a member of the Environmental Law Association (South Africa) and the International Association of Impact Assessors (SA), with registration to the South African Council for Scientific Professions.

SECTION 2 – OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT

This section deals with operations related environmental aspects that apply to the Asphalt Plant, and its surrounding environment.

2.1 Access, Security and Traffic

For reasons of public safety and for security against theft and vandalism, it is important to control access to the operation and to manage traffic in the immediate surrounds:

- Adequate provision must be made for safe access for all vehicles and personnel.
- Adequate provision must be made for access control to ensure that unauthorised people do not access the site and to ensure the safety of the community at large. Prohibition of entry for unauthorised persons must be displayed and enforced.
- Facilities and stores must be kept locked after hours and when the facilities are not occupied.
- Management and contractors need to be pro-active in order to curtail theft and crime.
- It is recommended that an operational security plan be developed. This plan should take into account protection of the operation from both internal and external crime elements, as well as the protection of surrounding communities.
- All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant.
- Care should be taken that public roads to and from the asphalt plant do not become unnecessarily congested through the haulage of materials. Public road surfaces should remain free of spilled materials at all times and road surfaces may not be damaged by the haulage activities of the operations.

2.2 Sensitive Environmental Areas

The Asphalt Plant does not fall in close proximity to any sensitive environmental areas. However the following must be adhered to:

- All natural features such as trees and rock outcrops should be protected and not harmed or removed unnecessarily.
- All fossils, archaeological and paleontological materials, graves and burial grounds, wetlands, mountain catchments and forests are protected by law and may not be disturbed in any manner without authorisation to do so.
- Effluent discharge or waste dumping into the surrounding environment is not permitted.

2.3 General Infrastructure and Housekeeping

All structures must be maintained in a good order, kept clean, free of vermin and in a safe condition for employees:

- Unauthorised access to buildings, plant, machinery and stores must be controlled from a safety perspective and to prevent theft and vandalism.
- Buildings, plant and machinery must be regularly maintained so that they remain structurally safe and aesthetically acceptable.
- Responsible rodent and vermin control programs must be employed in buildings and storage areas.
- Sufficient ventilation must be provided in buildings and stores.
- Buildings, plant and stores must be equipped with the necessary firefighting and first aid equipment and the applicable emergency contact numbers clearly displayed.
- Where possible, buildings should be designed and equipped with rainwater harvesting mechanisms and water saving devises.
- Where possible buildings should be designed and equipped with energy saving devises and means for the use of alternative energy resources such as solar power.
- Environmentally sustainable management solutions are to be implemented in an ongoing basis for all essential services (electricity, water, wastewater and waste) as detailed in the sections that follow.
- Personnel should not be allowed to overnight on the premises (except for security personnel).

- Operational activities, stockpiling of any materials and the storing of machinery or equipment must be accommodated within the operational footprint.
- Aggregates and other input materials must be obtained from a *bona fide* source, which holds the required authorisations in this regard.

2.4 Management of Stormwater

The stormwater management measures that are to be implemented during the operational phase, include:

- The topography and sensitivity of all areas across the project site should be inspected at least annually (especially prior to commencement of the summer rains) to ensure that potential stormwater surges can be managed.
- Stormwater cut-off trenches or structures should be provided for and these should be maintained, especially after any severe rainfall.
- Stormwater trenches may be improved by stone packing, establishment of vegetation and other means of slowing water surges.
- It is recommended that all stormwater attenuation from directly underneath or adjacent the asphalt plant or workshop areas be fitted with oil and silt traps to prevent stormwater contamination. If this water is contaminated it may not be released into the environment and must be collected for appropriate treatment and/or disposal.
- Where applicable, silt screens (geo-fabric or shade cloth) can be used to filter out suspended solids from stormwater runoff.
- No wastewater may be directed to stormwater channels. No potential contaminants may be placed in any areas where it can cause pollution to stormwater.
- Following any heavy storms or rains, the integrity of the stormwater channels must be inspected and repaired where required. The terminal discharge points of the stormwater channels should also be checked for damage.
- Any exposed soils should be protected against stormwater and erosion wherever possible.
- The site may not be subjected to blanket clearing, while exposed soils should be protected against stormwater and erosion wherever possible.

- Exposed areas should be rehabilitated with vegetation.
- Material stockpiles must be protected against stormwater damage.

2.5 Management of Soils and Erosion

This section must be considered with the previous section on stormwater management. Ignorance of the importance of soil and stabilisation management can cause significant damage and negative environmental impacts. In this regard:

- Insofar as it is practically possible, all exposed soils must be stable, protected against erosion and maintained as a suitable growth medium.
- Where vegetation is removed or soils disturbed, this should be done in a phased manner to prevent unnecessary destabilisation and erosion.
- When undertaking any earthworks, the topsoil must be stripped separately and retained for later re-use. Topsoil stockpiles must be stable, less than 2 meters high and free of invasive alien vegetation.
- Following the exposure of any soils, shaping or other activities, a suitable vegetation cover must be established immediately after the works have been completed. Where appropriate, straw stabilisation, brush packing or hydro seeding with environmentally compatible grasses and plants may be used to prevent erosion.
- Barren soils should be tilled, treated with fertiliser or compost and vegetation cover encouraged and irrigated.
- Any erosion must be treated without delay. Where applicable, anti-erosion compounds may be used to prevent erosion.
- Paths and roads must be formalised and stabilised against erosion by means of suitable materials, compaction and functional design. Stormwater cut off trenches must be used to prevent erosion.
- Soil that has been contaminated with fuels, oils or other chemicals must be removed for disposal at a suitable waste disposal site or contained for onsite treatment and remediation.

2.6 Management of Vegetation

Although the vegetation on and around the Asphalt Plant has been highly modified by agriculture and urban sprawl, responsible practices must be implemented to protect the undelaying soils and the landscape in general:

- Where any vegetation stripping is required, this is to be kept to a minimum.
- The operational footprint of the plant should not be allowed to encroach beyond that which has been approved.
- Indigenous plants and trees should be used in the landscaping surrounding the asphalt plant.
- Cut, trimmed, mowed and felled vegetation must either be removed to a suitable disposal site or mulched or composted on site for further application. Cut vegetation can also be used as brush pack in the control of erosion.
- An active alien invasive vegetation control programme must be implemented in which alien plant species are removed, chemical treatments applied where appropriate and follow-up monitoring and control applied, as required.

2.7 Management of Fauna

During operations, the approach to fauna must include:

- Where animals do not pose a risk to the onsite activities and where they are not prone to harm or injury, these animals should be granted freedom of movement and existence.
- Infrastructure must be maintained in such a manner so as to prevent injury, harm or death to any animals.
- Under no circumstances may animals be shot, trapped, killed, bewildered, injured, poisoned or harmed. Humane trapping of animals may only be carried out by a mandated authority or professional under permit.
- Acceptable deterrents may be used to discourage animals from entering into or inhabiting the project site.

- No animals may be poisoned. The only exception to this is in the responsible control of vermin, in which case recognised poisons may be used in the prescribed methods.
- Operators must ensure that storage areas do not become overrun with rodents or other pests. A responsible control program for such vermin must be implemented.

2.8 Management of Heritage Aspects

In the unlikely event that any archaeological remains, including (but not limited to) fossils, coins, ceramics, stone artefacts, bone remains, rock art, rock engravings and any antiquity be discovered, they must be immediately reported to the EO and the South African Heritage Resources Agency (SAHRA), and not disturbed further until the necessary approval has been obtained.

2.9 Integrated Waste Management

As the Asphalt Plant generates various waste streams, an integrated waste management approach must be followed in which all forms of waste are actively reduced, re-used or recycled, before being disposed of in a controlled in legal manner:

- In all instances, adequate provision must be made for the collection, storage and disposal of the following waste streams, based on the integrated approach of reduction, re-used and recycling wherever possible:
    - General waste (office waste, non-hazardous process waste).
    - General waste from the asphalt manufacturing process.
    - General organic waste from landscape maintenance.
    - Waste water from sewerage and other waste water sources.
    - Hazardous waste materials and chemicals.
- Specific bins for recycling should be supplied and used accordingly for materials such as scrap metal, paper, glass, plastics and used oil.
- Waste management must be formalised and not randomly applied when convenient. This will ensure that waste does not cause pollution and potential environmental degradation.

- Waste must be collected into suitable weather, wind and animal proof waste containers and removed to a legally registered disposal site on a regular basis. Waste containers may not be allowed to overfill.
- No loose litter will be permitted on the project site or the surrounding areas (especially applicable to windblown litter).
- The culture of integrated waste management through reduction, collection and disposal must be instilled with all employees by means of guidance and education.
- Vegetation matter from landscaping activities must be removed to a suitable disposal site or composted for later use.
- Hazardous waste (e.g. expired chemicals, fuels, oils and paints) must be disposed of via an approved hazardous waste disposal site. Proof of disposal must be retained in this regard.
- Used oil should be directed to recycling through the services of a suitable oil recycling company.
- No burial, burning or dumping of any waste may be permitted on the project site or surrounds.
- A record of waste disposal (proof of receipt) at recognized waste disposal sites must be kept up to date.
- Reject asphalt products (RAP) must be recycled into the asphalt process insofar as this is possible, while dust and fines expelled from the process, must be re-used (if possible) or otherwise contained and disposed at a recognised waste disposal site. It is recommended that such wastes be watered down or treated with a binder to prevent it from causing dust at the asphalt plant or waste disposal sites.
- Only RAP containing bitumen binders should be considered for reuse (no asphalt containing coal tar should be considered for re-use).
- Delivery trucks may not rinse or clean their load beds anywhere on the project site. Any release agents sprayed onto the load beds must be contained within the vehicles.

2.10 Ablution Facilities

Ablution facilities and sewerage management is important in preventing pollution and in providing a safe and sanitary environment. All employees must be provided with guidance

around the correct use of ablution facilities, as this is important in maintaining a hygienic environment and in curbing the spread of disease.

- Adequate provision must be made for ablution facilities for men and women, and for the management of these facilities. One toilet must be provided for every 15 personnel members or contract workers.
- Sewerage infrastructure must be maintained and the layout thereof mapped in as-built plans.
- Sewerage pipes must be buried at an appropriate depth so that they do not interfere with the surface activities, while remaining practically accessible for maintenance and repair.
- If a conservancy tank system or soakaway system is used, this must be legally compliant and monitored to ensure that it remains functional and to ensure that groundwater contamination does not take place. Such monitoring must include:
    - Checking for changes to the local soil conditions and vegetation surrounding the system.
    - Annual monitoring of the surrounding groundwater quality to ensure that no contamination of the aquifer is occurring.
- If portable facilities are to be used, these must be secured against blowing over and they must be regularly emptied.
- No sewage or wastewater may be dumped in stormwater systems or otherwise disposed of on the site in an un-formalised or un-licenced manner.
- Ablution facilities must be kept in a clean, neat and in a hygienic condition.

2.11 Management of Water

This section should be read in conjunction with the section on Stormwater Management. Although the operational manufacture of asphalt does not require water, water is required for dust suppression, landscaping, washing and drinking purposes.

- Adequate (in volume and quality) water supplies that are supplied in a legally compliant manner, must be provided for drinking purposes.

- Water for construction and landscaping must be used sparingly. Where water is used for dust suppression, smaller volumes should be used at more regular intervals as opposed to dosing areas with large volumes that may lead to runoff and erosion.
- Water must be used wisely. Taps must be closed when not in use, while taps and pipes must be maintained to prevent leakage.
- Non-hazardous (grey) wash water may be led into open landscapes and/or used for dust suppression, where there is no potential for environmental risk.
- If water has been contaminated, it may not be released into the environment. This water must be kept in conservancy tanks for re-use or disposal at suitable disposal sites.
- Ongoing efforts must be made to re-use water.
- No water source shall be polluted in any way. Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion and from direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous or tar products.

2.12 Management of Dust

This section must be considered with the section on soils and erosion. Dust at the Asphalt Plant is mainly generated from aggregate stockpiles, the hauling and handling of aggregates, vehicular traffic on exposed soils and work areas and via stack emission.

- A bag house system must be implemented and maintained to ensure that stack emissions of dust remains within acceptable levels (see also stack monitoring under the following section on air quality).
- Insofar as practically possible, conveyors, aggregates hoppers and cold feed bins should be covered to prevent dust generation.
- Material hauling routes must be as short as possible, maintained and managed to limit dust generation. Watering, compaction and dust binders must be used if necessary.

- Insofar as practically possible, aggregate stockpiles should be placed downwind of any areas sensitive to dust.
- Insofar as practically possible, aggregate stockpiles must be kept stable, watered if necessary or covered if they are prone to dust generation.
- No crushing of aggregates will be permitted at the Asphalt Plant.
- Dust must be managed by ensuring that vehicles only use existing roads and maintain low speeds on site.
- Dust and fines expelled from the asphalt making process, must be re-used (if possible) or otherwise contained and disposed at a recognised waste disposal site. It is recommended that such wastes be watered down or treated with a binder to prevent it from causing dust at the asphalt plant or waste disposal sites.
- Priority must be given to continuous monitoring of ambient dust deposition rates for the full duration of the project. Recommended monitoring regimes include:
    - Four monitoring stations positioned near stockpiles, material handling operations and major transport routes.
    - Three monitoring stations positioned at nearest receivers.
    - One background monitoring station.

2.13 Management of Air Quality

This section should be read in conjunction with the above section on dust management. Given that asphalt plants produce gaseous emissions from fuel burning and from volatile components in the heating and mixing of materials, the management of emissions and air quality are important considerations.

- It is recommended that a baseline air quality assessment be completed prior to the production of any asphalt. This assessment should consider measurement of dust fallout (PM10), nitrogen oxides (NO_x), sulphur oxides (SO_x), carbon monoxide (CO), total volatile organic compounds (TVOC's), carbon dioxide (CO_2) and poly-aromatic hydrocarbons (PAH).
- As a newly established plant, annual measurement and reporting of stack emissions must be done to meet the promulgated air quality standards:

  - Particulate Matter (PM10) < 50 mg/Nm3
  - Sulphur Dioxide (SO2) < 1 000 mg/Nm3
  - Volatile Organic Compounds (TVOC's) < 150 mg/Nm3
- An emissions inventory and annual modelling regime must be maintained throughout the lifetime of the project.

[Refer GN 201 of March 2014 for Temporary Asphalt Plants and GN 893 of Nov 2013 (Category 5.10) for Permanent Asphalt Plants]

- It is recommended that the stack height be at least 12 m to aid with dispersion of emissions.
- All emission abatement equipment (wet scrubbers or baghouse filters) must be inspected regularly and maintained to ensure that the above emission standards can be met.
- To reduce sulphur dioxide emissions, low sulphur fuels should be used for the combustor.
- To reduce NO_x emissions, fuels lower in nitrogen may be considered, however, at temperatures greater than 1300°C, conversion from high-nitrogen fuels to low-nitrogen fuels may not substantially reduce NO_x emissions as thermal NO_x contributions will be more significant. Consequently, NO_x emissions are generally inversely related to CO emissions.
- If it is found that any people surrounding the plant compliant about odours, the causative factors should be investigated and abatement measures such as ozone and additives such as Ecosorb should be considered.

2.14 Management of Greenhouse Gas Emissions

This OEMPr does not include comprehensive details on the management of greenhouse gas emissions. However, as global warming becomes more pertinent, the reporting and management of greenhouse gasses is becoming increasingly essential. Therefore, the following basic points have been included as a recommendation to introducing greenhouse gas measurement at the Asphalt Plant:

- As the determination of greenhouse gas emissions is based on applying conversion factors to all operational activities that cause emissions, directly or indirectly, the first step is the recording of all relevant contributor data. In this regard, it is recommended that the following data be collected by the EO:
    - Electricity usage
    - Other energy sources – fuel, gas etc.
    - Travel by category – travel by personnel and for goods delivery, dispatch and services
    - Waste generation – volume by category.
- At this initial stage the recording of this data will be an adequate first step. At a later stage this data can be used to draw up an inventory, which can be converted into a greenhouse gas determination by multiplication with emissions factors for each category.

2.15 Management of Fire

The potential risk for fire must be minimised, while the necessary emergency procedures and emergency equipment to deal with fire, must be on-hand and in a working order at all times.

- An appropriate number of fire extinguishers must be available on site.
- All “hot” works (welding, gas cutting, etc.), must be done with a working fire extinguisher close on hand.
- Employees that smoke should be made aware of the fire risks associated with smoking.
- If required, provision must be made for the establishment and maintenance of fire breaks around the asphalt plant.
- A fire contingency plan must be developed and made known to all employees. This plan must include the location and operation of firefighting equipment, the identification of a responsible and trained staff member that will act as the fire marshal, the contact numbers of firefighting and emergency services and the site evacuation procedures.

- Contact numbers for the nearest firefighting and emergency services must be clearly displayed in an accessible area.

2.16 Management of Noise and Light

Noise generation in the operational phase is not expected to be excessive and disturbance to surrounding people is unlikely, given the location of the Asphalt Plant. The the following noise abatement measures should be implemented:

- If required, provision of a baffle and noise screens.
- If required, provision of absorptive linings to the interior of engine compartments.
- Ensuring that machinery is properly maintained (fasten loose panels, replace defective silencers etc.).
- Switch off machinery immediately when not in use.
- It is recommended that noise levels do not exceed 70 dB (A)Leq 60 above residual background levels.

Given the location of the Asphalt Plant it is not expected that light pollution will be significant. Lighting for security and operational purposes at night should be curtailed to that which is necessary for safe and secure operations, while flood or spot lighting should face inward to the operational area.

2.17 Management of Visual Impacts

As the Asphalt Plant is located in an industrial and manufacturing area that has been disturbed by historical use, the visual impacts are not expected to be significant. However, the following measures should be implemented:

- Insofar as it is practically possible, the plant should be of a colour that blends in with the surrounding landscape.
- Insofar as it is practically possible, the landscape around the plant should be rehabilitated and indigenous trees planted to screen the plant off. Access roads could also be screened off with indigenous trees.

- Dust suppression should be applied to limit the visual impact of dust.
- Where possible, the height of all stockpiles should be limited to prevent them from becoming a visual hindrance.

2.18 Electricity and Communications

Communication networks and electrical installations must be managed and maintained in a condition that is safe to the environment and the people working in and around the Asphalt Plant:

- Bulk electricity and communication service providers must be sensitised to the OEMPr when providing services at the Asphalt Plant.
- Installations of and modifications to internal electricity networks must be performed by qualified electricians, who must ensure the safety of such works.
- Electrical reticulation must be captured in as-built plans that are to be kept on site.
- Infrastructure, operations and activities at the Asphalt Plant may not interfere with overhead or any other electrical and communication networks.
- Measures should be implemented to reduce electricity usage – reduction of unnecessary lighting and the use of energy efficient methods and devises is advised.

2.19 Chemicals and Other Dangerous Goods

The use of all chemicals, dangerous goods and fuels must be done in a responsible manner to ensure environmental safety:

- Care must be taken in the handling of all chemicals and hydrocarbon fuels (petrol, diesel, oils, etc.), as these are potential environmental pollutants. In certain instances, the methods of storage are prescribed by the South African National Standards (SANS), or by other legislation such as the Occupational Health and Safety Act 85 of 1993 and NEMA.
- The above ground storage of large volumes of fuel is subject to South African National Standards (SANS) and authorization in terms of NEMA, depending on

volume. Storage tanks must also be certified and meet any criteria set by local fire and emergency services.

- The use of chemicals must be responsible and in accordance with the prescribed application methods. Material Safety Data Sheets (MSDS) must be readily available and referenced during use and disposal.
- Only recognised and registered chemicals may be used for operational activities and as herbicides or pesticides. Environmental poisoning must be prevented at all costs.
- Chemicals must be stored in a dry, well ventilated, secure and lockable area, which is in compliance with the Occupational Health and Safety Act 85 of 1993 and other applicable legislation. Only authorised employees may have access to such stores.
- Hazard warning signs indicating the nature of the stored materials must be displayed on storage facilities or containment structures.
- Chemicals must be recorded in a chemical register, indicating the date of purchase, use and expiry. Expired products and empty chemical containers must be disposed of responsibly at a recognised disposal site for these materials and according to the directions provided in the MSDS.
- Bund walls for fuel and burner oil storage must be constructed to contain at least 110% of the total capacity of the storage tanks. Bund walls must be constructed of impermeable material or lined if required. A suitable material should be placed in the base of the bund to soak up any accidental spillages.
- Fuel dispensing must be done through automatic shut-off nozzles.
- No fuel or chemical storage should be positioned near or in water prone areas.
- Gas and LPG cylinders shall be stored in a secure, well-ventilated area.
- All storage tanks, containers and related equipment should be regularly maintained to ensure safe storage and dispensing. Defective hoses, valves and containment structures should be promptly repaired.
- Care must be taken to ensure that fuel driven devises do not leak. Any leaks must be repaired without delay and the necessary hydrocarbon absorbents used on contaminated areas.
- Servicing of vehicles should not be done on site. Where this becomes necessary, the servicing should be done on an impermeable surface and measures taken to prevent soil and water contamination by oils, fuels and other servicing materials.

- Mixing or handling areas for chemicals and filling areas for fuels must allow for the containment, treatment or removal of any spillage. Non-spill funnels should be used and these may not be cleaned in a manner that causes environmental contamination.
- Vehicle and equipment fuelling should be undertaken on an impermeable surface or over drip pans to ensure spilled fuel is captured and cleaned up.
- Mobile fuel units used to refuel plant on site must make use of drip trays.
- Absorbents and remedial (*mop-up*) materials must be available and used on any spills. Any substrate contaminated by the spillage of hydrocarbons or other pollutants must be removed from site and disposed of at a registered waste disposal site.
- When any paints are used, these must be used in a manner that does not cause any surrounding water and/or soil contamination. Paintbrushes and used containers may not be washed in a manner that causes similar contamination.
- Care must be taken in the use of solvents such as Toluene in any on site laboratory. Use of these and other hazardous chemicals will require a ventilation chamber.
- Protective gear and clothing must be provided to employees that work with dangerous chemicals (as per the Occupational Health and Safety Act 85 of 1993).
- Working firefighting equipment must be available in and around any chemical and hydrocarbon fuel stores.

SECTION 3 – EXPANSION, MODIFICATION OR DECOMMISSIONING PHASE

3.1 Expansion and Modification

The expansion or modification of the Asphalt Plant must be planned to minimise potential environmental impacts. In addition to this, applicable statutory authorisations for modifications, upgrades and expansion activities may be required prior to commencement thereof:

- Plans for modification, expansion or upgrading must be checked for environmental compatibility.

- Local (Nkangala District Municipality) and provincial (Mpumalanga Agriculture, Rural Development, Land and Environmental Affairs) authorities must be consulted to ascertain any statutory requirements.
- Where new construction activities take place, a Construction Phase Environmental Management Programme (CEMPr) must be implemented.

3.2 Transfer and Decommissioning

This section deals with the basic steps that are required in the event of project termination:

- As the Asphalt Plant is subject to specific statutory authorizations, the following authorities must be informed of decommissioning:
    - The Mpumalanga Agriculture, Rural Development, Land and Environmental Affairs
    - The Emakhazeni Local Municipality and Nkangala District Municpality.
- If required, a closure plan that meets the criteria of Appendix 5 of the EIA Regulations (GN R 982 of 2014) must be compiled before decommissioning.
- All infrastructure must be responsibly removed, unless the operational is sold for continued use or if the infrastructure is due to be used for another purpose.
- Transferring any environmental authorisations to another entity will require notification to the authorities above.
- If infrastructure is demolished and removed, all rubble, including piping, fencing and cabling from any demolition activities must be appropriately disposed of, before the area is stabilized and (if required) vegetated.
- To ensure that decommissioning and rehabilitation is acceptable, an external audit should be conducted after decommissioning.
- The delegated authorities indicated above must be notified, were the Asphalt Plant transferred to new ownership.

SECTION 4 – SURROUNDING SOCIAL ENVIRONMENT

4.1 Employment and Employee Facilities

The conditions under which employees, contractors and service providers work in the operational phase, must be safe and legally compliant:

- Provision must be made for clean and accessible ablution facilities for men and women.
- Provision must be made for clean drinking water.
- An area should be provided where employees may store personal goods and belongings. This area must be safe, dry and provide adequate privacy and protection from inclement weather for people and their belongings.
- Where required, protective gear must be provided for certain tasks and for the handling of chemicals.
- First aid equipment must be available and at least one employee must be trained in first aid provision.
- Relevant emergency service contact numbers must be clearly displayed.
- Basic legal employment conditions (i.e. for working hours, minimum wages, etc.) must be followed to ensure the maintenance of employment rights.
- Compliance with the Occupational Health and Safety Act 85 of 1993 must be upheld. In this regard a working environment must be created that is safe and without risk to the health of personnel.
- A health and safety consultant must develop a Health and Safety Plan to ensure compliance with the Occupational Health and Safety Act.
- All new employees must be exposed to an environmental awareness training session.
- Whenever possible, new employees should be preferentially sourced from the surrounding communities.
- Where possible, outside contractors should be sourced from local communities.
- Where possible, local materials and products should be used preferentially.

4.2 Dealing with Complaints

Any complaints received must be dealt with appropriately to ensure due consideration to the complainant and to ensure public and environmental safety.

- All complaints must be recorded in a complaints register by the EO, with details of the nature of the compliant, the person or organization that lodged the complaint, the date and the name of the responsible person dealing with the complaint.
- The complaint must be fully investigated. Further clarity may also be obtained from records, from employees, from third party specialists or from the complainant.
- A strategy to deal with the complaint must be formulated, documented in the complaints register and communicated to the complainant.
- The formulated strategy must be implemented by the allocation of resources.
- The effects of the strategy should be monitored and the strategy modified if need be.
- Once the situation leading to the complaint has been resolved, the complainant must be informed. The date hereof should be recorded in the complaints register.
- Actions must be taken to prevent the situation from reoccurring and, if necessary, a contingency plan should be developed.
- If a situation leading to a complaint cannot be resolved, an amicable solution should be devised with inputs from the complainant.
- If required, the relevant authorities should be involved in the resolution to a complaint.
- The complaints register must be reviewed regularly to ensure that all complaints have been dealt with effectively.

SECTION 5 – MONITORING AND AUDITING

Monitoring and auditing against the OEMPr will ensure that the operational phase remains legally compliant and environmentally sustainable.

5.1 Environmental Monitoring

Monitoring represents measurement of predetermined criteria to determine compliance to legally binding standards, as well as self-determined standards. The monitoring regime should be flexible, but should also ensure that it covers monitoring in terms of legal compliance and in terms of achieving environmental best practice. The following is

recommended as the minimum requirement in environmental monitoring for the Asphalt Plant:

Category	Parameter	Method	Evidence	Criteria	Frequency
Enviro. Admin	EO appointed	EO available	Appointment	Yes / No	Ongoing
	OEMP on site	Check document	OEMP	Yes / No	Monthly internal audit
	Environmental authorisation	Check document	Exemption or EA and AEL	Yes / No	Monthly internal audit
	Environmental awareness	Check document	Training material and register	Yes / No	Monthly internal audit
	Internal audit against OEMP	Check document	Audit report and/or checklist	Yes / No	Monthly internal audit
Potential Pollution	Water (when runoff contaminated or spills)	Various depending on specific parameter	Water quality results	Various depending of specific parameter	As required
	Waste	Disposal	Proof of disposal	Record volumes	Ongoing
	Dust	Dust buckets	Dust fallout results	< 1200 mg/m^2/day over 30 days *	Ongoing
	Air Quality **	Stack PM10 (ISO 9096)	Results report	< 50 mg/Nm3 for 24 hrs	Annually for 24 hrs
		Stack SOx (ISO 7935)	Results report	< 1000 mg/Nm3 for 24 hrs	Annually for 24 hrs
		Stack TVOC (Method 18/GC)	Results report	< 150 mg/Nm3 for 24 hrs	Annually for 24 hrs
	Greenhous Emissions	Electricity Usage	Electricity account	Measure total	Ongoing
		Other energy sources used	Fuel / gas receipts	Measure total and categorise	Ongoing
		Travel for business and personnel	Travel logs	Measure total and categorise	Ongoing
		Waste generated	Proof of disposal	Measure total and categorise	Ongoing
	Noise		Results report	See bylaw	Annually

* Note that this is the allowed for non-residential fallout
Note that 2 exceedances in non-sequential months are allowed per annum.
Note that this is the dust fallout rate permitted without an approved dust management plan – if exceeded then a dust management plan must be approved.

** This monitoring may be supplemented by conditions of a forthcoming Atmospheric Emissions Licence

It is recompensed that baseline (pre-operational) monitoring be conducted to set a comparative point for change.

Note the minimum monitoring criteria in the table above does not constitute complete compliance to the OEMPr. The individual aspects covered by the OEMPr still need to be implemented and checked, while additional monitoring requirements may be set by forthcoming environmental authorisations.

5.2 Environmental Auditing

The provisions for auditing contained in Appendix 7 of the Environmental Impact Assessment Regulations (GN R 982 of 14 December 2014) should be consulted when devising an audit regime.

The aim of an audit is primarily to:

- Check the degree to which a facility meets a set of predetermined standards.
- Check that proper records are kept.
- Determine the effectiveness of specifications in the predetermined standards.
- Aid in logical communication and feedback to authorities.
- Recommend changes and updates to the OEMPr.

The EO must take responsibility for a monthly audit against the OEMPr during the operational phase. The audit results must be in written form.

It is recommended that audits be done by means of an audit checklist as shown below.

Requirement / Issue /Specification	**Compliance**			**Comments/ recommendations**	**OEMPr Ref.**
	Yes	**Part**	**No**		

Where applicable, the outcome of an audit should be used to amend and improve the OEMPr.

SECTION 6 – ENVIRONMENTAL EMERGENCY RESPONSE

Even under the best management systems environmental emergencies are possible. These emergencies include accidental spills of contaminants, flooding, equipment failure that could lead to fire, injuries or environmental impact and more. The following recommendations should be implemented in this regard:

- The EO should inspect and identify any emergencies that may occur at the Asphalt plant. These should be recorded in a contingency plan for each emergency, which must be communicated to all personnel and contractors. Typical contingency plans would include spills, fire, flooding and equipment failure.
- The EO must immediately stop any works that pose an immediate threat to the environment.
- All legally required health and safety measures must be in place, emergency contact numbers of all response agencies and authorities displayed clearly on site and people identified with whom the responsibility lies in the event of environmental incidents.
- An environmental incidents register should be kept and the following procedures followed when an environmental incident occurs:
    - At detection of an environmental incident the responsible person must be notified immediately.
    - When safe to do so, measures must be taken to stem the incident and causative factors.
    - Where possible and provided no immediate damage can be caused to the environment, contingency plans should be referenced to formulate a strategy for dealing with the matter.
    - The strategy must be implemented by means of resource allocation and where required, emergency response services should be alerted for assistance.
    - All major incidents must be recorded in the environmental incidents register with details of the nature thereof, the date and the steps taken in dealing with the matter.

- It must be established whether the incident has caused non-compliance in terms of any authorisations, licences, permits and contracts. If so, these compliance frameworks must be checked for any prescriptive measures and particular reporting requirements.
- All applicable authorities must be informed as soon as possible. Where required, authorities can be invited to inspect the incident.
- Incident analysis should be done after an incident has been addressed. The analysis should look into the cause and the manner in which the incident was resolved. This analysis should be recorded in the incidents register.
- Where required a post-incident audit or investigation of the environmental damage may be required.
- Actions must be taken to prevent the incident from reoccurring and, if necessary, a contingency plan should be developed or existing plans updated.
- The content of the incident register should be subjected to any auditing regime that may apply.

SECTION 7 – CONCLUSION

The OEMPr is a dynamic document that is flexible and responsive to new and changing circumstances i.e. it should be updated as and when required.

The OEMPr strives to ensure that potential environmental impacts are minimised during the operational phase.

TABULATED ENVIRONMENTAL MANAGEMENT PROGRAMME

Ref	Primary Aspect	Sub-aspect	Impact	Monitoring	Mitigation	Timeframe / Schedule	Responsible Person / People
1.1	Environmental Authorisations	Authorisation for operation > 24 mth	Legal compliance	Check timeframes	Apply	Before 24 months	Management/ Consultant
1.2	Design	No crushing	Dust	Dust fallout (PM10)	No crushing	Ongoing	Management / EO
1.2	Footprint	< 2000 m^2	Sprawl	Check footprint	Curtail / fencing	Ongoing and check in monthly internal audit	EO
1.4	Lease Agreement	Read OEMPr with Section 4 of lease	Admin and Contractual	Check Section 4 of lease	Implement	Ongoing	Management / EO
1.5	Roles and Responsibilities	Check roles and responsibilities	Uncontrolled management	Check that all parties know their roles and responsibilities	Training and awareness	Ongoing	Management / EO
1.6	Environmental Awareness	Personnel and contractors trained on arrival	General	Attendance register	Training and follow-up training	On arrival and refresher sessions	EO
1.8	Status and Legal Context	Availability of OEMPr	Legal Compliance and general	Check for OEMPr (on site and contractors)	Provide OEMPr (on site and contractors)	Immediate / ongoing	Management / EO
1.8	Status and Legal Context	Update OEMPr	Legal Compliance and general	Check for updates	Update	Annually	EO
1.9	Code of Conduct	Awareness	General	Check awareness	Training and awareness	On arrival and refresher sessions	EO
1.10	Method Statements	Dealing with environmental challenges	General	Check for method statements	Compile method statements	As required for environmental challenges	EO
1.11	Transgressions and Non-Compliance	Reporting	General	Monitor for non-compliance	Record and report non-compliance	Check in monthly internal audit	EO

2.1	Access, Security and Traffic	Control access	General and uncontrolled access, theft	Monitor access control	Implement access control	Ongoing and check in monthly internal audit	EO / Site Management
Ref	**Primary Aspect**	**Sub-aspect**	**Impact**	**Monitoring**	**Mitigation**	**Timeframe / Schedule**	**Responsible Person / People**
2.2	Sensitive Areas	Protect sensitive areas	Damage to sensitive areas	Check access and condition	Limit access and report	Ongoing and check in monthly internal audit	EO
2.3	Infrastructure And Housekeeping	Maintenance and Safety	Unsafe and environmentally damaging	Check condition of building and machinery	Maintenance	Ongoing and check in monthly internal audit	EO
2.3	Infrastructure And Housekeeping	Rodent control	Damage	Check rodent damage	Rodent control program	Ongoing and check in monthly internal audit	EO
2.4	Stormwater Management	Stormwater attenuation measures	Erosion and damage	Check attenuation structures	Make sure structures are stable and capable	Ongoing and check in monthly internal audit	EO
2.4	Stormwater Management	No wastewater in stormwater	Pollution	Prevent pollution and educate	Arrange other means of disposal	Ongoing and check in monthly internal audit	EO
2.5	Soils and Erosion	Soil stability	Erosion	Check for erosion	Stabilize and prevent stormwater	Ongoing and check in monthly internal audit	EO
2.5	Soils and Erosion	Topsoil retention	Topsoil loss	Check for topsoil loss	Stabilize and preserve	Ongoing and check in monthly internal audit	EO
2.5	Soils and Erosion	Paths and roads	Erosion	Check that paths and roads are formalized	Formalize	Ongoing and check in monthly internal audit	EO
2.5	Soils and Erosion	Soil contamination	Pollution	Check for contamination	Monitor	Ongoing and check in monthly internal audit	EO
2.6	Vegetation	Stripping and landscaping	Erosion and loss of habitat	Monitor landscaping	Limit stripping and stabilize	Ongoing and check in monthly internal audit	EO

2.6	Vegetation	Indigenous and alien vegetation	Infestation	Alien growth	Plant indigenous and eradicate alien	Ongoing and check in monthly internal audit	EO
2.7	Fauna	Management of animals	Injury or loss of animal life	Check structure safety and access	Make structures safe and educate	Ongoing and check in monthly internal audit	EO
Ref	**Primary Aspect**	**Sub-aspect**	**Impact**	**Monitoring**	**Mitigation**	**Timeframe / Schedule**	**Responsible Person / People**
2.8	Heritage Aspects	All heritage	Loss or damage of heritage matters	Check and finds and report – prevent damage	Educate	Ongoing and check in monthly internal audit	EO
2.9	Integrated Waste Management	Collection and disposal	Pollution	Check for waste and disposal records	Improved collection and disposal – educate	Ongoing and check in monthly internal audit	EO
2.10	Ablution Facilities	Provision of facilities	Pollution and hygiene	Check adequacy	Provide facilities and educate	Ongoing and check in monthly internal audit	EO
2.11	Water Management	Provision	Inadequate amount / safety	Check adequacy	Provide water	Ongoing and check in monthly internal audit	EO
2.11	Water Management	Pollution	Pollution	Monitor quality	Provide alternative means of disposal and educate	Ongoing and check in monthly internal audit	EO
2.12	Dust Management	Air pollution	Erosion and air pollution	Dust fallout (PM10) reports	Watering	Ongoing and check in monthly internal audit	EO
2.13	Air Quality	Emissions	Air pollution	Air quality sampling	Better air quality abatement	Ongoing and check in monthly internal audit	EO
2.14	Greenhouse Gases	Monitoring	Global warming and climate	Record activity values	Reduce energy consumption	Ongoing and check in monthly internal audit	EO
2.15	Fire	Safety	Damage and injury	Check safety equipment and plan in place	Provide safety equipment and educate	Ongoing and check in monthly internal audit	EO
2.16	Noise and Light	Noise	Disturbance	Sound levels	Dampen noise levels	Ongoing and check in monthly internal audit	EO

2.16	Noise and Light	Light	Disturbance	Light levels at night	Reduce	Ongoing and check in monthly internal audit	EO
2.17	Visual Impacts	Visual Impacts	Visual disturbance	Visual impact and complaints	Blend with surroundings, plant trees and control dust	Ongoing and check in monthly internal audit	EO
Ref	**Primary Aspect**	**Sub-aspect**	**Impact**	**Monitoring**	**Mitigation**	**Timeframe / Schedule**	**Responsible Person / People**
2.18	Electricity and Communications	Safety	Safety	Check installations	Repair	Ongoing and check in monthly internal audit	EO
2.18	Electricity and Communications	Reduce electrical use	Costs and carbon	Check use	Reduce use and energy saving methods	Ongoing and check in monthly internal audit	EO
2.19	Chemicals and Dangerous Goods	Use and storage	Safety	Check safe storage and use, MSDS and safety equipment	Provide safe storage and safety equipment – educate	Ongoing and check in monthly internal audit	EO
2.19	Chemicals and Hydrocarbons	Use and storage	Pollution	Check spillage and contamination	Safe storage and use of remedial products	Ongoing and check in monthly internal audit	EO
3.1	Expansion and Modification	Procedure	General and legal compliance	Check plans	Inform authorities	Before expansion or modification	Management / EO
3.2	Transfer and Decommission	Procedure	General and legal compliance	Check plans	Inform authorities and remove infrastructure	Before transfer or decommissioning	Management / EO
4.1	Employment and Employee Facilities	Employment conditions	Safe and legal environment conducive to work	Check work environment	Provide better working conditions	Ongoing and check in monthly internal audit	Management / EO
4.2	Complaints	Complaints procedure	General	Check complaints register	Implement improved complaints procedure	Ongoing and check in monthly internal audit	EO
5.1	Monitoring	Compliance	General and legal	Check monitoring regime	Implement monitoring program	Ongoing and check in monthly internal audit	EO

5.2	Auditing	Compliance	General and legal	Check auditing regime	Implement auditing internally and externally	As per auditing schedule	Management / EO
6	Environmental Emergencies	Procedures	General and legal	Check incidents register and procedure	Implement improved procedure	Ongoing and check in monthly internal audit	Management / EO