ENVIRONMENTAL MANAGEMENT SYSTEM
FOR THE NELSON MANDELA BAY MUNICIPALITY
MULTI-PURPOSE STADIUM

VOLUME 1:

ENVIRONMENTAL MANAGEMENT SYSTEM

PUBLIC HEALTH DIRECTORATE

FOR THE ENVIRONMENTAL MANAGEMENT SUB-DIRECTORATE

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FINAL ENVIRONMENTAL MANAGEMENT SYSTEM FOR THE NELSON MANDELA BAY MUNICIPALITY MULTI-PURPOSE STADIUM

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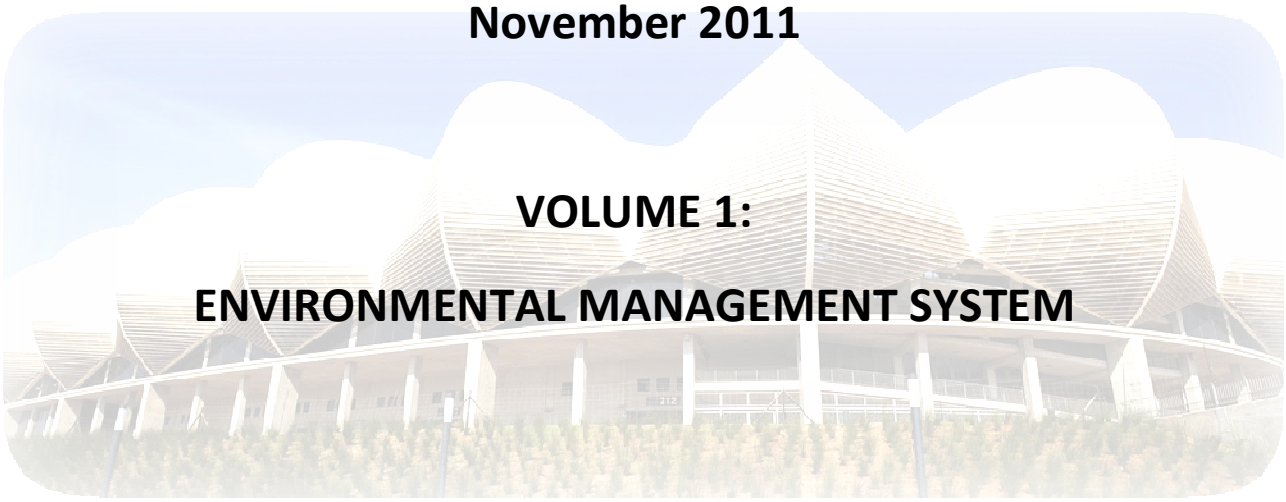

VOLUME 1:

ENVIRONMENTAL MANAGEMENT SYSTEM

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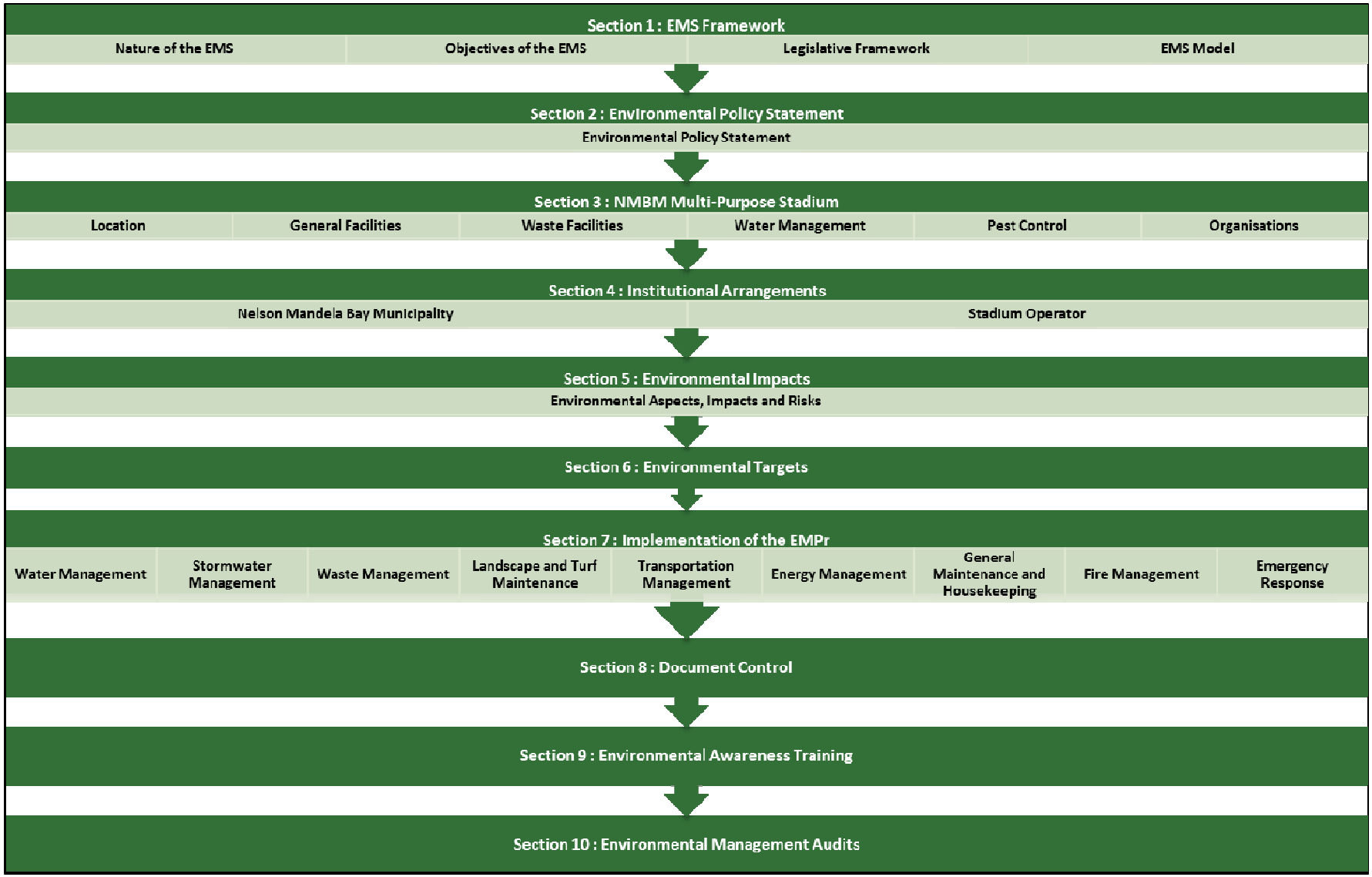
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TERMINOLOGY AND DEFINITIONS

Terminology	Explanation / Definition
Activity	Any action needed for the operation and maintenance of the Stadium.
Alien species	A species occurring in an area outside of its historically known natural range as a result of intentional or accidental dispersal by human activities.
Environmental aspect	A product's or production process's environmental impact or important issues in the environment that an organisation should take into consideration
Contaminated water	Water contaminated by pollutants from on- or off-site activities. Contaminated water must be treated to ensure that water released into the receiving environment meets minimum standards and guidelines. Treated water should be recycled where possible.
Department of Economic Development and Environmental Affairs	The authority responsible for the review and/or approval of an Environmental Management System including the Environmental Management Programme.
Department of Water Affairs	The authority responsible for water management.
Environment	The surroundings in which humans exist and which comprise: • the land, water and atmosphere of the earth; • micro-organisms, plant and animal life; • any part or combination and interrelationships; and • the physical, chemical, aesthetic, historical, cultural and economical properties and conditions of the foregoing that can influence human health and wellbeing.
Environmental Audit	Systematic, documented, regular and objective evaluation to see how well an organisation or facility is operating in terms of the Environmental Management System.
Environmental Authorisation	The authorisation by a competent environmental authority for commencement of listed activities in terms of the National Environmental Management Act (Act 107 of 1998).
Environmental Auditor	An independent person who is responsible for undertaking environmental audits to report on compliance with all phases of environmental specifications with the Environmental Management System.
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially that results from an organisation's environmental aspects.
Environmental Impact Assessment	The process of collecting, organising, analysing, interpreting and communicating information in accordance with the environmental legal requirements as promulgated in terms of Chapter 5 of the National Environmental Management Act (Act 107 of 1998), for the purposes of obtaining an Environmental Authorisation.
Environmental Management Inspector	A person designated as an environmental management inspector in terms of Section 31B or 31C of the National Environmental Management Act (Act 107 of 1998).
Environmental Management System (EMS) Official	The NMBM Environmental Management Official responsible for the co-ordination of Environmental Management Systems.

Terminology	Explanation / Definition
Environmental Management Programme	A tool used to prescribe management mechanisms or methods for the prevention of undue or reasonably avoidable adverse environmental impacts and for the enhancement of the positive environmental benefits of a development.
Environmental objectives	The overall environmental goal arising from the Environmental Policy that an organisation sets itself to achieve, and is quantified where practicable.
Environmental Officer	A Stadium Operator's employee responsible for the overall environmental control during the operational phase of the Stadium.
Fauna	All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Fire hazard	The relative combination of fuel, oxygen and heat that will lead to the start and spread of a potential fire.
Flora	All living plants, grasses, shrubs, trees, etc. that are typically incapable of easy natural motion and capable of photosynthesis.
Groundwater	Water that fills the natural openings in below-surface rock or unconsolidated sands.
Hazardous waste	Waste that, because of its chemical reactivity, toxic, explosive, corrosive, radioactive or other characteristics, causes danger or is likely to cause danger to health or the environment.
Induction training	The training provided to new / existing employees to (re)acquaint them with the company structure, their specific job requirements, practical or organisational issues and occupational health, safety and environmental considerations required on the project.
Integrated Environmental Management	A code of practice ensuring that environmental considerations are fully integrated into the management of all activities in order to achieve a desirable balance between conservation and development.
Interested and Affected Parties (I&AP)	Any person or group of people concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, customers and consumers, environmental interest groups, and the general public (after the Environmental Impact Assessment Regulations of September 1997 and Guideline Document: Environmental Impact Assessment Regulations of April 1998).
Jetting	A thin concentrated stream water that is forced under pressure from a small nozzle or opening.
Materials	All kinds of items (other than Plant) intended to form or forming part of the operations and maintenance, including the supply-only materials (if any).
Mitigate	The implementation of practical measures to reduce any adverse impacts or to enhance the beneficial impacts of an action
Nelson Mandela Bay Municipality	The holder of the Environmental Authorisation and organisation responsible for the Stadium.
Non-compliance	Failure to comply with the requirements of the EMPr.
Non-conformance report	A report outlining a deviation from process, procedure or compliance specifications.
Plant	The apparatus, machinery and vehicles used during the operational and maintenance of the Stadium.
Pollution	Any change in the environment caused by substances or noise, malodours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, where that change has an adverse effect on human health or wellbeing or on the composition,

Terminology	Explanation / Definition
	resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.
Potentially hazardous substance	A substance that can have a deleterious effect on the environment. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances, published in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).
Precautionary principle	The basic principle that, when in doubt or when there is insufficient or unreliable information, actions must be undertaken that have minimum risk.
Rehabilitation	Re-establishment or restoration to a healthy sustainable capacity or state.
Resource recovery	Recycling of waste or the recovery of energy.
Sensitive receptors	Locations or areas that are likely to experience an impact more than other locations or areas; for example, schools and residential areas.
Significant incident	An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.
Solid waste	All solid waste, including construction debris, chemical waste, wrapping materials, timber, steel, drums, wire, nails, food and domestic waste (e.g. plastic bags and wrappers).
Stadium Operator	The organisation appointed by the NMBM to manage the Stadium, currently Access Management.
Target	The detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Waste minimisation	The reduction of the volume of waste during construction by means of different processes or clean technology.
Waste prevention	The prevention and avoidance of the production of a waste.
Wastewater	Water containing oil, fuel or other contaminants.
Water resource	Includes a watercourse, surface water, estuary, or aquifer.

LIST OF ABBREVIATIONS

Acronym / Abbreviation	Explanation
DEA	Department of Environmental Affairs
DEDEA	Department of Economic Development and Environmental Affairs
EMPr	Environmental Management Programme
EMS	Environmental Management System
IEP	Integrated Environmental Policy
ℓ	litre(s)
m	metre(s)
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMWA	National Environmental Management Waste Act (Act 59 of 2008)
NMBM	Nelson Mandela Bay Municipality
Stadium	NMBM 2010 Multi-Purpose Stadium

1. ENVIRONMENTAL MANAGEMENT SYSTEM FRAMEWORK

1.1 NATURE OF THE EMS

The DEDEA Environmental Authorisation (ECM1/M/165-05) for the development of the Stadium included a condition for a suitable operation and maintenance programme to be developed for the operational phase of the Stadium. In order to fulfil this condition the NMBM has embarked on the development of an EMS, inclusive of an operational EMPr for the Stadium. The EMS is not ISO 14001 compliant, however the EMS has been based on the ISO 14001 principles (refer to Section 3.4).

The mitigation measures may include measures to –

a) investigate, assess and evaluate the impact on the environment;

b) inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment;

c) cease, modify or control any act, activity or process causing the pollution or degradation;

d) contain or prevent the movement of pollutants or the cause of environmental degradation;

e) eliminate any source of the pollution or degradation; or

f) remedy the effects of the pollution or degradation.

This EMS shall be used to guide and regulate environmental performance through the Stadium's operational and maintenance stages.

1.2 OBJECTIVES OF THE EMS

The primary objective of this EMS is to ensure that the stadium is operated in a manner that makes responsible use of natural resources, through the implementation of effective management actions. Secondary objectives of the EMS relate to:

a) The identification of environmental impacts resulting from activities associated with the operation of the Stadium.

b) Ensuring that management plans are put in place to mitigate negative impacts and maximise positive impacts.

c) Facilitating the monitoring of the implementation of management plans.

d) Allowing for the monitoring of activities in terms of compliance to legal and other standards.

e) Enabling the Stadium Operator to anticipate and meet growing environmental performance expectations.

1.3 LEGISLATIVE FRAMEWORK

The EMS is to be implemented within the framework of NEMA and other relevant environmentally related legislation, including the following national acts, provincial ordinances, NMBM By-laws and/or guideline documents (Table 1-1). Refer to Volume 2 for all the legislation and guidelines referred to.

Table 1-1: List of Applicable Legislation and Guidelines

Legislation	Sections	Relates to
The Constitution Act (No 108 of 1996)	Chapter 2	Bill of Rights
	Section 24	Environmental rights
	Section 25	Rights in property
	Section 32	Administrative justice
	Section 33	Access to information
National Environmental Management Act (No 107 of 1998) as amended (NEMA)	Section 2	Defines the strategic environmental management goals, principles and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment.
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	Duty of care and remediation of environmental damage. The Stadium owner has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care. The duty of care has been amended to include significant pollution or degradation that occurred before the commencement of NEMA that arises or is likely to arise at a different time from the actual activity that caused the contamination or that arises through an act or activity of a person that results in a change to pre-existing contamination.
	Section 30	Control of emergency incidents. Responsible person's duties relating to reporting and remediation actions regarding emergency incidents. A criminal sanction may be imposed on the responsible person for failure to comply with the reporting requirements and obligations to address any emergency incidents.
Environment Conservation Act (No 73 of 1989) and regulations	The Act has been substantially repealed by NEMA. However, there are certain regulations under the Act which are still in operation such as the National Noise Control Regulations.	
National Environmental Management: Waste Act (No 59 of 2008)	Section 16	General duty in respect of waste management.
	Section 17	Reduction, re-use, recycling and recovery of waste.
	Section 26	Prohibition of unauthorised disposal of waste.

Legislation	Sections	Relates to
(NEMWA)	Section 27	Littering
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA)	Sections 65-69	These sections deal with restricted activities involving alien species; restricted activities involving certain alien species totally prohibited; and duty of care relating to alien species.
	Sections 71 and 73	These sections deal with restricted activities involving listed invasive species and duty of care relating to listed invasive species.
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 32	Control of dust
	Section 34	Control of noise
	Section 35	Control of offensive odours
	Schedule 2	Ambient air quality standards
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947) and regulations	Sections 3 to 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard. Workers handling these remedies must also be registered in terms of the Act.
Conservation of Agricultural Resources Act (No 43 of 1983) and regulations	Section 5, 6	Implementation of control measures for alien and invasive plant species.
Occupational Health and Safety Act (No 85 of 1993) and regulations	General Administration Regulations GN R1449 (Section 7)	Material Safety Data Sheets must be made available at the request of any interested or affected person.
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution of a water body.
	Section 20	Control of emergency incidents.
	Chapter 4	Use of water and licensing.
Hazardous Substances Act (No 15 of 1973) and regulations	Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.	
National Heritage Resources Act (No. 25 of 1999)	Section 34	No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
NMBM By-Laws	**Municipal Health By-Law (Draft)** Protecting and promoting the health and well-being of all people in the NMBM area, regarding specifically municipal health nuisances, waste management, water and sanitation. **Air Pollution Control By-Law** Controlling air pollution within the NMBM and to ensure air pollution is avoided,	

Legislation	Sections Relates to
	or where it cannot be altogether avoided, is minimized and remedied. Applicable sections include open burning, emissions from compressed ignition powered vehicles and emissions causing a nuisance. **Noise Control By-Law** Regulations relating to noise pollution management, including obtaining permission from the NMBM for open-air music festivals or similar gatherings. **Waste Management By-Law** To regulate the generation, storage and collection of solid, non-hazardous waste and the control of littering and illegal dumping. **Fire Safety By-Law** To promote a fire-safe environment for the benefit of all persons within the NMBM and to provide for procedures, methods and practices to regulate fire safety. **Roads, Traffic and Safety By-Law** To control the use of roads, parking grounds, and to control motor vehicle attendants, taxis and buses within the area under its jurisdiction so as to provide a safe environment for all people within the municipal area. **Water and Sanitation Services By-Law** To ensure water conservation and the prevention of pollution of water or the sewage system. **Stormwater Management By-Law (Draft)** To regulate stormwater management and activities that may have an adverse impact on the development, operation and maintenance of the stormwater system.
DEA Integrated Environmental Management	DEA Integrated Environmental Management Information Series: Environmental Management Plans: DEA Guideline on compiling EMPs.
Environmental Authorisation: ECm1/M/165-05	Conditions specific to operation and maintenance.

1.4 EMS MODEL

The EMS model is based on the ISO 14001 management model that incorporates the "Plan-Do-Check-Act" cycle (Figure 1-1). This model ensures a cycle of continuous improvement during operations through continually monitoring and periodically reviewing environmental management in response to changing internal and external factors.

The "Plan-Do-Check-Act" involves the following (ISO, 2004):

a) Plan: establishing an on-going planning process and is linked to the EMS Planning section (Section 1.4.2).

b) Do: implement and operate the EMS and is linked to the Implementation and Operation section (Section 1.4.3).

c) Check: assessment of the EMS processes and is linked to the Checking and Monitoring section (Section 1.4.4).

d) Act: review and take action to improve the EMS and is linked to the Management Review section (Section 1.4.5).

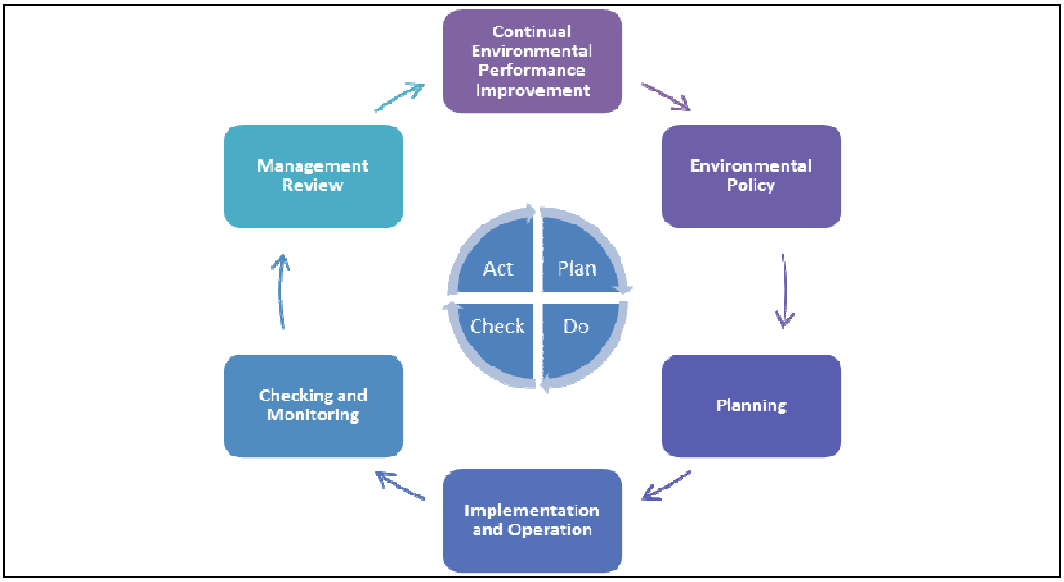

Figure 1-1: ISO 14001 EMS Model

1.4.1 Environmental Policy

An environmental policy establishes the principles and commitment of the NMBM to responsible environmental management. The integrated environmental policy represents the *Municipality's* vision for, and its commitment to, practising and promoting sustainable development during its day to day execution of duties which have an impact on the *environment,* whether directly or indirectly. The policy furthermore provides guidance to all stakeholders regarding the management of environmental matters (ISO, 2004).

As the Stadium falls under the jurisdiction of the NMBM, the Stadium's Environmental Policy (Section 2) is based on the NMBM Integrated Environmental Policy in order to incorporate the overarching environmental management principles of the NMBM.

1.4.2 Planning

Planning is essential to the fulfilment of the environmental policy and the establishment, implementation and maintenance of the EMS. The planning process includes the following elements (ISO, 2004):

a) Identification of environmental aspects and the determination of those which are significant.

b) Identification of applicable legal requirements.

c) Setting of internal performance criteria where appropriate.

d) Setting objectives and targets as well as the establishment of programmes to achieve these.

Project-specific planning for the EMS involved listing activities associated with the activities within the Stadium and the environmental aspects that may be impacted on (Section 5). This provided a starting point from which aspect-specific environmental management objectives were established. Environmental performance indicators were determined for these objectives and measurable targets prescribed to monitor environmental performance. Achieving the targets depends on compliance with this EMS and the legislative requirements that underpin it.

1.4.3 Implementation and Operation

An organisation should provide resources, capabilities, structures and support mechanisms necessary to (ISO, 2004):

a) Achieve its environmental policy, objectives and targets.

b) Meet the changing requirements of the organisation.

c) Communicate on EMS matters.

d) Provide on-going operation and continual improvement of the EMS to improve environmental performance.

The implementation and operation section of the EMS relates to the EMPr and thereby formalises the planning and scheduling of the implementation of the EMS. Mechanisms have been created in order to achieve the environmental objectives and targets (Section 6).

1.4.4 Checking and Monitoring

Checking involves measurement, monitoring and evaluation of the environmental performance. Preventive action should be used to identify and prevent possible problems before these occur. Corrective action consists of identifying and correcting problems in the EMS (ISO, 2004).

A system of assessing monitoring results has been developed (Section 7) to check on environmental management performance. Continuous assessment facilitates proactive management of environmental issues. Mitigation measures can then be successfully implemented on an on-going basis to keep environmental indicators within their target thresholds. Moreover, the assessment system also enables the assessment of the

effectiveness of the EMS**.** Regular auditing of environmental performance (Section 9) is prescribed to prove and preserve accountability in a legislative context.

1.4.5 Management Review

Management review relates to periodically reviewing and continually improving the EMS, with the objective of improving its overall environmental performance (ISO, 2004).

2. ENVIRONMENTAL POLICY STATEMENT

The NMBM's Integrated Environmental Policy (IEP) outlines the vision, priorities and commitments of the NMBM, in respect of the management of the environment in the area of its jurisdiction. It is integrated in that it applies to all, and all that the NMBM does, across all sectors, from planning to implementation.

The NMBM's vision for, and its commitment to, practising and promoting sustainable development during its day to day execution of duties which have an impact on the environment is presented in the IEP.

This IEP provides a framework from which action plans can be developed and serves as a high level strategic guide in directing the NMBM towards its vision for sustainable development.

As a result of the Stadium falling under the responsibility of the NMBM, a comprehensive Environmental Policy has not been compiled for the Stadium but rather an Environmental Policy Statement. This Statement is based on the NMBM's IEP and provides a Statement of commitment to sustainable environmental practice.

NMBM 2010 MULTI-PURPOSE STADIUM

ENVIRONMENTAL POLICY STATEMENT

It is the aim of the Nelson Mandela Bay Municipality (NMBM) and the Stadium Operator to ensure that the NMBM 2010 Multi-Purpose Stadium is operated and managed in an environmentally sustainable manner, as per the Integrated Environmental Policy of the NMBM.

The following environmental principles are recognised and committed to adopting:

a) **Sustainable development**: integrating environmental, social and economic considerations in all that we do so as to ensure our development activities serve present generations, without compromising the ability of future generations to meet their needs.

b) **Healthy environment**: ensuring the right of all South Africans to an environment that is not damaging to their health and well-being, as defined in the Constitution, is protected.

c) **Protecting the environment:** ensuring our environment is protected through preserving biodiversity and our cultural heritage, reducing waste, and preventing pollution.

d) **Legal compliance:** complying or exceeding the requirements of all local, provincial, national and international legislation, and those conventions and protocols to which South Africa is a signatory.

e) **Efficient use of natural resources:** ensuring that our natural resources are used in a sustainable manner which protects them for future generations.

f) **Holistic approach:** considering all aspects of the environment, including all potential impacts of our actions, be they cumulative, direct or indirect.

g) **Precautionary approach:** applying a risk averse and cautious approach which recognises the limits of current knowledge regarding environmental impacts and the consequences thereof.

h) **Polluter pays:** ensuring that the cost of environmental pollution, including all remediation, is borne by those responsible for causing the pollution.

i) **Public participation:** involving civil society in the decision-making process with regards to the environment in NMBM, and partnering with the public to realise appropriate management thereof.

j) **Environmental awareness:** furthering awareness of employees and the general public regarding all environmental management issues.

k) **Integrated planning and decision making**: ensuring integrated environmental management is part of the decision-making and planning at all levels, including policies, plans, programmes, and operational functions, in and across all sectors.

l) **Continuous improvement:** ensuring that we are continuously looking for better ways of doing things, and that our environmental performance continuously improves as a result thereof.

m) **Best Practical Environmental Option:** ensuring that in decision making, the Best Practical Environmental Option is considered.

Box 2-1: NMBM Stadium Environmental Policy Statement

3. NMBM 2010 MULTI-PURPOSE STADIUM

3.1 LOCATION

The Stadium Precinct is situated on Erven 1262 and 3530, 70 Prince Alfred Road, and is located in the North End suburb of Port Elizabeth, Nelson Mandela Bay Municipality, Eastern Cape Province (refer to Figure 3-1). The North End Lake is situated to the north-west of the Stadium and residential and/or commercial properties comprise of the remaining surrounding areas. The Stadium Precinct (refer to Figure 3-2) consists of the following areas, excluding the North End Lake:

a) Stadium.

b) Practice fields.

c) Imatu building.

d) Parking areas.

e) Open, grassed areas.

3.2 GENERAL FACILITIES

The Stadium has a spectator capacity of 46,000 (includes general and VIP seating) for soccer, rugby and music events. In addition to providing spectator facilities, the Stadium has a variety of conferencing facilities. These facilities cater for gala dinners, conferences, weddings and cocktail functions (NMB Stadium, 2009).

The Stadium is approximately 40m in height from the field level to the roof top and is divided into four stands, namely the North, East, South and West stands. The Stadium consists of six levels in the West stand and five levels in the North, South and East stands. Two viewing screens (12.7m x 7.2m) are located within the Stadium bowl to provide live coverage of the activities occurring on the pitch (NMB Stadium, 2009).

Spectator access into the Stadium is provided from 32 turnstiles (colour coded gates) on level two. Access to the upper levels (levels three to five) is provided from four ramps or from lifts. There is a total of 11 lifts within the Stadium and these include lifts for VIP's and general access. 49 luxurious suites of differing sizes are located on the level 4. A total of 1,600 parking bays are provided within the Stadium Precinct, this includes parking for media, VIPs, disabled and general parking (NMB Stadium, 2009). A number of offices are located within the Stadium and the Imatu building. Concession stands are provided along level 2 for the general public. Two kitchens for catering purposes are located on level 1.

There are a total of 74 ablution blocks (male and female) within the Stadium. These ablution blocks are divided as follows: 36 blocks on level 2, 4 blocks on level 3, 14 blocks on level 4 and 20 blocks on level 5 (NMB Stadium, 2009).

There are three playing fields within the Stadium Precinct and these include the main field within the Stadium bowl and two practice fields.

3.3 WASTE FACILITIES

Various sizes of waste bins are provided on each level. These are broadly categorised as follows:

a) 240ℓ wheelie (waste) bins are provided in kitchens, concessions stands, general public areas and parking areas.

b) 80ℓ waste bins are provided in ablution blocks and hospitality suites.

c) 40ℓ waste bins are provided in the rooms for the players, press and in the offices.

Additional waste storage areas are provided along level 2. The main waste storage area is located in front of sub-station 2 on level 1 from where the waste is collected for disposal and recycling (Lombard & Associates, 2008).

3.4 WATER MANAGEMENT

There are two sources of water for the Stadium Precinct. Municipal (potable) water is used within the buildings as well as to irrigate the main pitch. Water obtained from the North End Lake is treated prior to irrigating the surrounding green areas and practice pitches.

Stormwater runoff is diverted into the municipal stormwater drainage system from various stormwater inlets.

3.5 PEST CONTROL

Pest control includes the control of birds (i.e. feral pigeons and crows), rodents and insects. Bird control is undertaken through the Urban Raptor Project (URP) and utilises poison free natural methods. This method comprises using trained falcons to disturb and hunt birds inside the Stadium. Two raptor nest boxes have been erected to encourage the Rock Kestrels to reside within the area. Local Rock Kestrels and African Peregrine Falcons (from the URP city nest boxes) are effectively controlling the birds within the Stadium area (NMB Stadium, 2009).

Rodent and insect control is also undertaken through mechanical means. Spotted Eagle Owls are utilised to control rodents and the owls nest in the surrounding Stadium gardens. Insects are controlled through bats, wagtails and the resident kestrels (NMB Stadium, 2009).

3.6 ORGANISATIONS

The Applicant and holder of the environmental authorisation is the NMBM.

The management and operations of the Stadium is contracted to a Stadium Operator, currently Access Facilities and Leisure Management (Pty) Ltd.

Office space within the Stadium and at the Imatu Building is leased to other organisations, e.g. Eastern Province Rugby Union (EPRU) and SAFA Regional.

Catering and concession stands are sub-contracted to a food and beverage operator.

Figure 3-1: Locality Map

Figure 3-2: Stadium Precinct

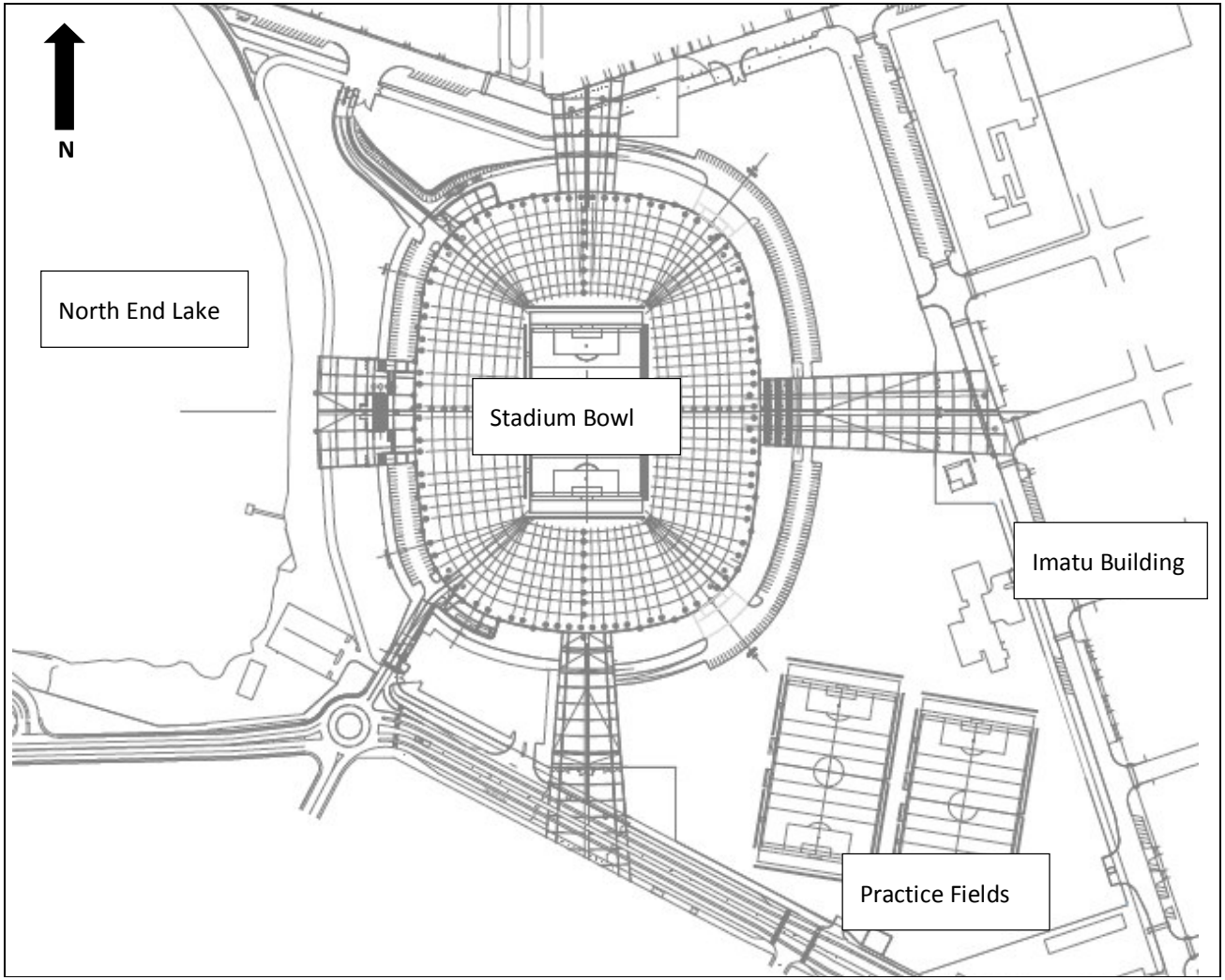

Figure 3-3: Stadium Layout Map

4. INSTITUTIONAL ARRANGEMENTS

4.1 STADIUM OPERATOR'S ORGANOGRAM

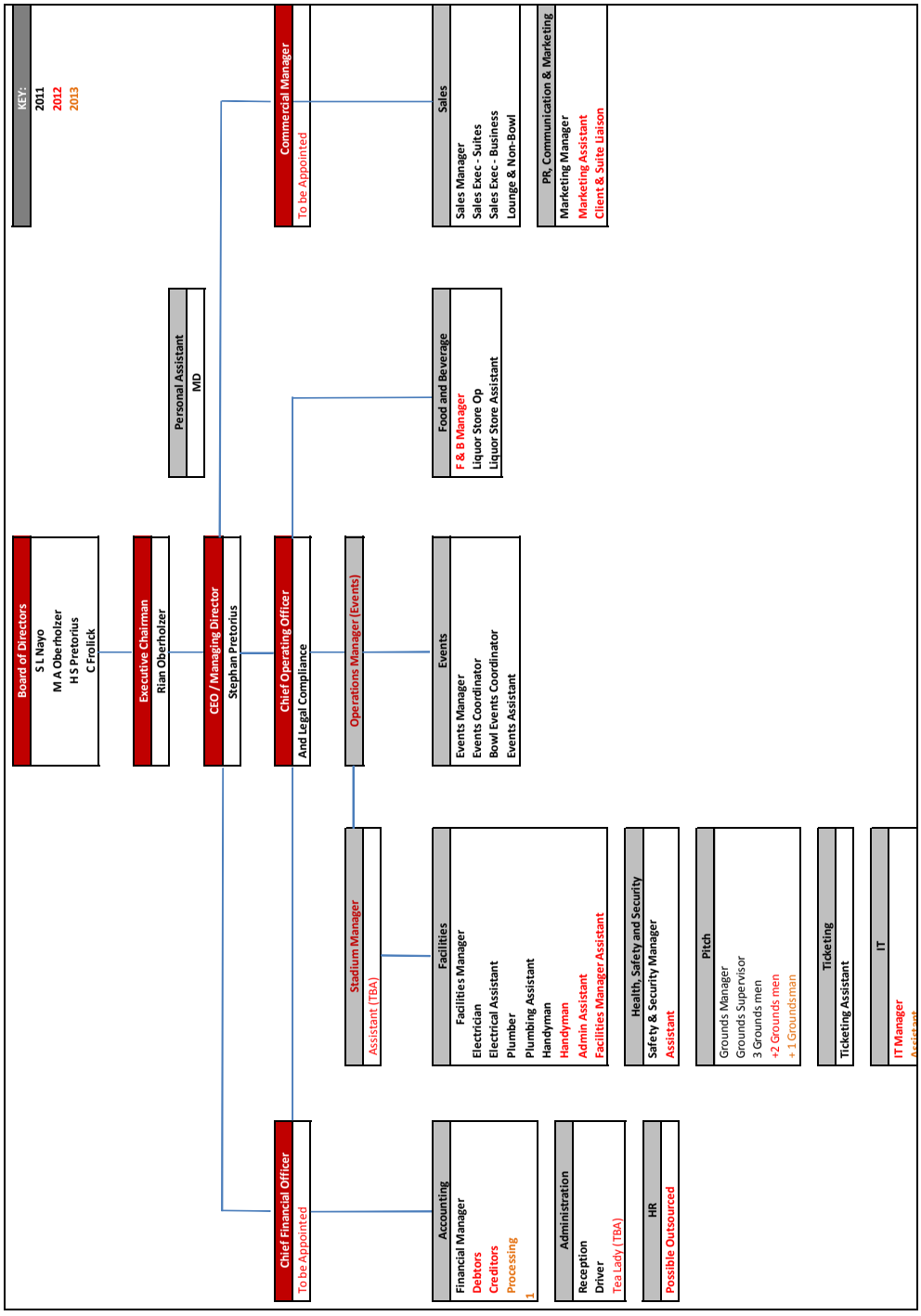

Figure 4-1: Stadium Organogram

4.2 INSTITUTIONAL AND FUNCTIONAL ARRANGEMENTS

The institutional and functional arrangements indicate the role players and institutional linkages with regards to the Stadium. These arrangements are illustrated in Figure 4-2 and explained further in Sections 4.3 and 4.4.

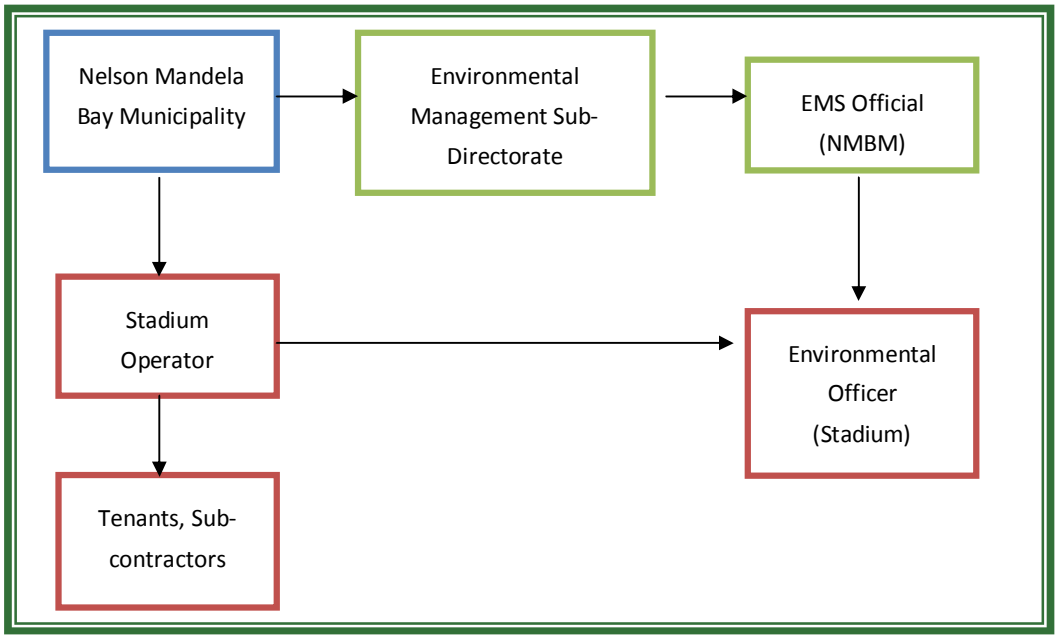

Figure 4-2: Institutional Arrangements

4.3 NELSON MANDEL BAY MUNICIPALITY

4.3.1 Role and Responsibility

The NMBM is the holder of the environmental authorisation and thus the owner of the Stadium. The NMBM is responsible to ensure that the operating conditions stipulated within the environmental authorisation are implemented. The NMBM shall further ensure that the Stadium Operator complies with the requirements of the EMS as well as any requirement from other relevant environmental legislation.

The NMBM shall designate an EMS Official (champion) within the Environmental Management Sub-Directorate. The NMBM EMS Official will be responsible for:

a) Overall environmental control during the operational phase of the Stadium.

b) Assisting the Stadium Operator in finding environmentally responsible solutions to problems that may be experienced.

c) Facilitating independent bi-annual environmental audits of the implementation of the EMS by the Stadium Operator.

d) Determining the training needs and assisting in the training of the Stadium staff.

e) Updating the EMS Legal Register.

4.3.2 Reporting

The NMBM EMS Official will review the quarterly and annual reports submitted by the Stadium Operator.

The NMBM Environmental Management Sub-Directorate shall annually assess the undertakings of the Stadium Operator with regards to the implementation of the EMS and report to Council (if required).

4.4 STADIUM OPERATOR

4.4.1 Role and Responsibility

A Stadium Operator (i.e. Access Management) has been appointed by the NMBM as the specialist service provider to operate and maintain the Stadium on the behalf of the NMBM.

The Stadium Operator is responsible for:

a) The operation and maintenance of the Stadium and associated infrastructure.

b) Events, sub-contracting specialised serves (e.g. catering) and tenants that have leased offices within the Stadium Precinct.

c) Ensuring that all event organisers, sub-contractors and tenants adhere to the EMS.

d) Implementation of the EMS within the Stadium Precinct.

e) Designating an Environmental Officer (champion) within the operational team who will be responsible for:

   i. The implementation of the EMS, monitoring and reporting.

   ii. Advising the Stadium Operator on the rectification of any pollution, contamination or damage from operational and maintenance activities.

   iii. Ensuring that a copy of the latest version of the EMS is available at all times at the Stadium.

   iv. Ensuring all staff are aware of any applicable changes to the EMS.

4.4.2 Reporting

The Stadium Operator shall report on a quarterly basis to the NMBM Environmental Management Sub-Directorate on the outcomes of the implementation of the EMS. The quarterly environmental monitoring reports will include:

a) Environmental training undertaken.

b) All relevant monitoring information and internal audit checklists.

c) Environmental related incidents and corrective actions.

d) Non-compliances and corrective actions.

The Stadium Operator together with the NMBM Environmental Management Sub-Directorate shall undertake an annual management review of the EMS.

5. ENVIRONMENTAL IMPACTS

The risk assessment identifies potential risks and uses qualitative measures to estimate the consequences or impact of the event, together with the estimate of its likelihood. Each potential impact was investigated to determine the consequence and likelihood of the impact occurring. A simple assessment of L (Low), M (Medium) and H (High) was used for the assessment consequence. The occurrence potential of each impact was also assessed using the simple assessment of L (Low), M (Medium) and H (High).

Table 5-1: Predicted Level of Risk

Occurrence Potential (Likelihood)	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Definite	L	M	H	H	H
Highly Likely	L	M	H	H	H
Moderate	L	M	H	H	H
Possible	L	L	L	M	H
Rare	L	L	L	M	M

The identification of environmental aspects and a summarisation of impacts with the related risks associated with the operation and maintenance of the Stadium are indicated in Table 5-2.

Table 5-2: Environmental Aspects, Impacts and Risks

Environmental Aspect	Impacts	Risk	Operational Mitigation / Control Measures	Monitoring and Frequency
Water Management	Increased usage of potable (municipal) water due to pitch irrigation and facilities within the Stadium.	High	Refer to **Table 7-1**: for mitigation measures and monitoring requirements.	
	Wastage of potable water through for example leaks and incorrect irrigation procedures.	High		
Stormwater Management	Contamination of stormwater runoff from pollution sources, e.g. hydrocarbon spillages from the fuel storage permeable bund.	Medium	Refer to **Table 7-2** for monitoring and mitigation measures.	

Environmental Aspect	Impacts	Risk	Operational Mitigation / Control Measures	Monitoring and Frequency
Waste Management	Incorrect storage of waste leading to an increase of pests (e.g. rodents).	High	Refer to **Table 7-3** for monitoring and mitigation measures.	
	Increase in waste generation and disposal of recyclable and reusable materials to landfill.	High		
	Incorrect disposal of hazardous waste to general landfill.	Medium		
Landscape & Turf Maintenance	Regrowth of declared invasive alien vegetation and ineffective rehabilitation methods.	Low	Refer to **Table 7-4** for monitoring and mitigation measures.	
	Environmental degradation and contamination of ground water resources through herbicides, fertilizers and hydrocarbon spillages.	High		
	Incorrect irrigation (with treated non-potable water) procedures resulting in water wastage.	Low		
Transportation Management	Ineffective fleet management leading to an increase of CO^2 emissions and hydrocarbon spillages.	Low	Refer to **Table 7-5** for monitoring and mitigation measures.	
	Traffic disruptions due to insufficient public notifications.	High		
Energy Management	Excessive and unnecessary consumption of electricity resulting in wastage of non-renewable sources.	High	Refer to **Table 7-6** for monitoring and mitigation measures.	
General Maintenance & Housekeeping	Use of environmentally harmful cleaning materials resulting in a degradation of the environment.	Medium	Refer to **Table 7-7** for monitoring and mitigation measures.	
	Hydrocarbon spills from leaking equipment and refuelling of equipment (e.g. generators, lawnmowers) resulting in environmental degradation and contamination of soils, ground water and stormwater.	High		

Environmental Aspect	Impacts	Risk	Operational Mitigation / Control Measures	Monitoring and Frequency
Pest Control	Environmental degradation due to the use of environmentally harmful pesticides.	Low	Refer to **Table 7-7** for monitoring and mitigation measures.	
Fire Management	Ineffective fire equipment and procedures leading to an increase in fire risks.	High	Refer to **Table 7-8** for monitoring and mitigation measures.	
Emergency Response	Persistent or cumulative significant incidents resulting in environmental damage and degradation.	Medium	Refer to **Table 7-9** for monitoring and mitigation measures.	

6. ENVIRONMENTAL TARGETS

The following table (Table 6-1) sets out the environmental objectives and targets for each environmental aspect as identified in Table 5-2.

Table 6-1: Environmental Targets

Environmental Aspect	Objectives	Targets / Performance Indicators
Water Usage	Promotion of water conservation.	The reduction of potable water usage by 5%.
	Sustainable and responsible use of water resources.	The harvesting of rain water to supplement water sources
Stormwater Management	Minimisation of the contamination of the stormwater.	Stormwater entering the stormwater system shall meet the NMBM requirements (as per the Stormwater Management By-law). Stormwater system within the Stadium Precinct to be clear of any waste materials.
Waste Management	Reduction of waste quantities to landfill by including recycling and reuse principles.	Reduction of waste quantities to landfill by 20% per annum. Non-recyclable waste to be disposed of at a registered landfill site.
	Correct disposal of hazardous waste.	Hazardous waste to be disposed of at a registered hazardous landfill site.
Landscape Maintenance and Turf Maintenance	Removal of re-growth of declared invasive alien vegetation.	No re-growth of declared invasive alien vegetation.
	Implementation of correct procedures for hydrocarbon spillages and the use of herbicides and fertilizers to prevent environmental degradation and negative impacts.	No significant environmental incidents.
Transportation Management	Regular service and maintenance on vehicles to maintain efficient operation and minimise hydrocarbon leaks.	Service and maintenance as per vehicle manuals.
	Reduce nuisance of traffic disruptions.	Public notifications issued prior to events occurring.
Energy Management	Energy consumption is optimised and wastage is avoided. Electrical use efficiency improved	Total energy consumption to reduce by 10%.

Environmental Aspect	Objectives	Targets / Performance Indicators
	to reduce total electricity consumption.	
General Maintenance and Housekeeping	Implementation of correct procedures to prevent environmental degradation and negative impacts.	No significant environmental incidents.
Pest Control	Implementation of correct procedures to prevent environmental degradation and negative impacts.	No significant environmental incidents.
Fire Management	Minimisation of fire risks.	No fire incidents.
Emergency Response	Identification and investigation of significant incidents to prevent environmental damage.	Significant environmental incidents are not repeated.

7. IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMP provides an integrated approach to environmental management. This approach is designed to guide the appropriate allocation of human resources, assign responsibilities, develop procedures and ensure project compliance with regulatory and best practice requirements.

The following implementation tables describe the aspect-specific objectives for achieving environmental best practice. The tables present performance indicators for each aspect, target thresholds (qualitative and/or quantitative) that must be met for each indicator.

Refer to Section 8 for the environmental awareness training requirements and Section 9 for the environmental management auditing procedures.

7.1 WATER MANAGEMENT

Table 7-1: Water Management

Water Management		Responsibility
Objectives	Promotion of water conservation.	NMBM, Stadium Operator
	Sustainable and responsible use of water resources.	
Impacts	Increased usage of potable (municipal) water due to pitch irrigation and facilities within the Stadium.	NMBM, Stadium Operator
	Wastage of potable water through for example leaks and incorrect irrigation procedures.	
Targets / Performance Indicators	The reduction of potable water usage by 5%.	NMBM, Stadium Operator
	The harvesting of rain water to supplement water sources.	
Procedures	Separate water meters are to be used for the municipal water and water drawn from the North End Lake.	Stadium Operator
	Water consumption based on the water meter readings are to be recorded on a monthly basis and after events.	
	Irrigation of the practice pitches and surrounding landscape is to be undertaken with treated water from the North End Lake.	
	Irrigation of the pitches and surrounding landscape is not to be undertaken whilst it is raining.	
	Due to the NMBM falling within a drought prevalent area, landscape irrigation should preferably be undertaken in the early morning or late afternoon.	
	Pitch irrigation is to be undertaken as the maintenance requirements for the pitch.	
	Water fittings are to be inspected daily to detect leaks or taps that have been left open accidently. This includes all ablutions, toilets, change rooms, kitchens and other facilities.	
	Repairs to stop leaks are to be undertaken immediately.	
	Water appliances taps, shower heads, toilet, urinals etc. that require replacement are to be replaced with alternatives favouring low water consumption (e.g. low flow shower heads).	

Water Management		Responsibility
	Rainwater is to be collected to supplement the water usage for irrigation and washing purposes.	
	NMBM water restrictions are to be enforced within the Stadium Precinct, when required.	
Monitoring	Water consumption based on the water meter readings are to be recorded on a monthly basis and after events.	Stadium Operator
	Water fittings are to be inspected daily to detect leaks or taps that have been left open accidently.	
	Water usage activities are to be monitored on a daily basis. These activities include the use of hosepipes, irrigation duration and weather conditions (e.g. if it is raining irrigation is not required).	
Corrective Actions	Any leaks from water fittings or water pipes are to be repaired immediately.	Stadium Operator
	Taps that have been left open are to be closed.	
Reporting	The monthly water consumption figures are to be reported by the Stadium Environmental Officer to the Stadium Manager.	Stadium Operator
	The Stadium Operator shall compile quarterly reports and submit these to the NMBM Environmental Management Sub-Directorate.	
	The water consumption figures are to be included in the annual management review.	
Management Review	Water consumption figures from the various water sources (i.e. municipal, North End Lake and if applicable rain water) are to be reviewed annually.	NMBM, Stadium Operator
	An assessment on whether water consumption can be reduced further is to be undertaken annually and this is to be documented in the annual management review report.	

7.2 STORMWATER MANAGEMENT

Table 7-2: Stormwater Management

Stormwater Management		Responsibility
Objectives	Minimisation of the contamination of stormwater.	NMBM, Stadium Operator
Impacts	Contamination of stormwater runoff from pollution sources, e.g. hydrocarbon spillages from the fuel storage permeable bund.	NMBM, Stadium Operator
Targets / Performance Indicators	Stormwater entering the stormwater system shall meet the NMBM requirements (as per the Stormwater Management By-law).	NMBM, Stadium Operator
	Stormwater system within the Stadium Precinct to be clear of any debris or waste materials.	
Procedures	The stormwater system within the Stadium Precinct is to be physically inspected, via the stormwater manholes and inlet structures, on a weekly basis for any debris or waste therein. After any event, the stormwater system is to be physically inspected for any debris or waste materials.	Stadium Operator
	After significant rainfall events the stormwater system within the Stadium Precinct is to be physically inspected.	
	Debris and waste located within the stormwater system shall be cleared immediately and disposed of according to the waste management procedures.	
	The stormwater system shall be kept clean of any debris or waste. No "jetting" of the stormwater system is permitted.	
	The inlet structure of the stormwater culvert at the North End Lake is to be checked on a monthly basis for any build-up of debris. Any debris that is located is to be collected and disposed of according to the waste management procedures.	
Monitoring	Inspections (i.e. weekly and after events) of the stormwater system are to be recorded.	Stadium Operator
	Inspections after significant rainfall events of the stormwater system are to be recorded.	
	Monthly inspections of the stormwater culvert inlet structure at the North End Lake to be recorded.	
Corrective	Physical removal of any debris and waste materials noted	Stadium

Stormwater Management		Responsibility
Actions	within the stormwater management system and/or at the North End Lake stormwater culver inlet structure.	Operator
Reporting	Any significant stormwater contamination is to be reported immediately to the Stadium Environmental Officer.	Stadium Operator
	The Stadium Operator shall include the procedures for clearing of the stormwater system, types of debris or waste materials found within the stormwater system and any significant stormwater contamination in the quarterly report for the NMBM Environmental Management Sub-Directorate.	
	Significant stormwater contamination is to be included in the annual management review.	
Management Review	An assessment will be undertaken on the procedures for clearing of the stormwater system, types of debris or waste materials cleared and any significant stormwater contamination in the annual management review.	NMBM, Stadium Operator

7.3 WASTE MANAGEMENT

Table 7-3: Waste Management

Waste Management		Responsibility
Objectives	Reduction of waste quantities to landfill by including recycling and reuse principles.	NMBM, Stadium Operator
	Correct disposal of hazardous waste.	
Impacts	Incorrect storage of waste leading to an increase of pests (e.g. rodents).	NMBM, Stadium Operator
	Increase in waste generation and disposal of recyclable and reusable materials to landfill.	
	Incorrect disposal of hazardous waste to general landfill.	
Targets / Performance Indicators	Reduction of waste quantities to landfill by 20% per annum.	NMBM, Stadium Operator
	Non-recyclable waste to be disposed of at a registered landfill site.	
	Hazardous waste to be disposed of at a registered hazardous landfill site.	
Procedures	All organisations (i.e. Stadium Operator, lessees, sub-contractors and vendors) and their staff shall minimise the generation of waste when waste generation cannot be avoided.	Stadium Operator
	All organisations (i.e. Stadium Operator, lessees, sub-contractors and vendors) and their staff shall re-use, recycle or recover waste whenever possible.	
	All vendors will be required to separate waste at source into recyclable and non-recyclable waste.	
	Hazardous waste (e.g. compact florescent lights, batteries, used oil) shall be collected separately and disposed of at either a registered hazardous landfill site or recycled.	
	Collection and disposal of waste is to be contracted to a registered NMBM waste service provider. The service provider is to ensure recyclable materials are recycled and disposal manifests are submitted to the Stadium Operator.	
	The 2-bin waste management system is to be implemented for daily operations and events. Waste is to be separated into recyclable (dry waste) and non-recyclable (wet waste) items at source in order to facilitate recycling.	
	Public awareness on recycling is to be undertaken through the placement of appropriate signs at waste	

Waste Management		Responsibility
	bins.	
	All waste bins located in open areas shall have lids secured to the bins.	
	All waste bins and storage areas shall be cleaned within 24 hours of an event.	
	The Stadium Precinct shall be kept clear of any litter.	
	Litter picking shall be undertaken after any event held at the Stadium.	
	Waste produced from daily operations shall be removed on a weekly basis by a NMBM registered waste contractor.	
	Waste generated from an event shall be collected within 24 – 48 hours after the event has ended.	
Monitoring	The Stadium Precinct is to be checked on a daily basis and after an event for litter and waste.	Stadium Operator
	The quantities and types of recyclable and non-recyclable waste and method of disposal are to be recorded on a monthly basis and after an event.	
	During events the public are to be monitored to ensure correct disposal of waste in the 2-bin system.	
Corrective Actions	All litter and waste is to be collected and disposed of in the correct waste bin.	Stadium Operator
	All staff involved in daily operations and events are to separate waste into recyclable and non-recyclable waste.	
	Public to be made aware of correct disposal of waste into recyclable and non-recyclable bins.	
Reporting	The monthly waste management figures are to be reported by the Stadium Environmental Officer to the Stadium Manager.	Stadium Operator
	The Stadium Operator shall include the monthly waste management figures and disposal methods in the quarterly report for the NMBM Environmental Management Sub-Directorate.	
Management Review	The annual management review shall include the waste management figures and disposal methods. An assessment is to be undertaken to identify areas where waste generation can be minimised.	NMBM, Stadium Operator
	The current waste management plan is focused on the proceedings during the World Cup 2010 and needs to be updated due to the multi-uses undertaken within the Stadium Precinct.	

7.4 LANDSCAPE AND TURF MAINTENANCE

Table 7-4: Landscape and Turf Maintenance

Landscape and Turf Maintenance		Responsibility
Objectives	Removal of re-growth of declared invasive alien vegetation.	NMBM, Stadium Operator
	Implementation of correct procedures for hydrocarbon spillages and the use of herbicides and fertilizers to prevent environmental degradation and negative impacts.	
Impacts	Regrowth of declared invasive alien vegetation and ineffective rehabilitation methods.	NMBM, Stadium Operator
	Environmental degradation and contamination of ground water resources through herbicides, fertilizers and hydrocarbon spillages.	
	Incorrect irrigation procedures resulting in water wastage.	
Targets / Performance Indicators	No re-growth of declared invasive alien vegetation.	NMBM, Stadium Operator
	No significant environmental incidents.	
Procedures	The maintenance of the pitch is to be undertaken as per the pitch maintenance manual. This includes irrigation procedures, mowing and the application of fertilizers, fungicides and pesticides.	Stadium Operator
	Fertilizers, fungicides and pesticides are to be applied by a registered and qualified person and the least hazardous products are to be used.	
	Preference should be given to the use of organic fertilizers on the landscaped areas.	
	Mowing of grassed open areas is to be conducted during normal working hours.	
	All mowing equipment is to be checked prior to use for any hydrocarbon leakages. Should a leak be identified, drip trays with absorbent materials need to be placed underneath the leak and repairs conducted. No leaking or faulty equipment is to be used until repairs are made.	
	Only indigenous vegetation that is drought resistant is to be used in the landscaped areas.	
	All vegetated areas (e.g. open grassed areas and embankments) are to be inspected monthly for and kept free of any declared invasive vegetation. .	
	Re-growth of declared invasive vegetation is to be removed prior to the seed-bearing stage. Manual removal is preferred to the use of herbicides.	

Landscape and Turf Maintenance		Responsibility
	Vegetation cuttings are to be disposed of at either a composting facility or a registered landfill site.	
	Irrigation procedures for the landscaped areas are to be undertaken as per the procedures within the water management section (Table 7-1).	
Monitoring	The application procedures and quantities of any fertilizer, fungicide or pesticide are to be recorded on a monthly basis.	Stadium Operator
	The re-growth of declared invasive vegetation is to be monitored on a monthly basis.	
Corrective Actions	Application procedures and quantities for fertilizers, fungicides or pesticides are to be applied as per product instructions.	Stadium Operator
	Training of landscape staff in identification of declared invasive vegetation.	
Reporting	The re-growth of declared invasive vegetation, application procedures and quantities of any fertilizer, fungicide or pesticide utilised are to be reported by the Stadium Environmental Officer to the Stadium Manager on a monthly basis.	Stadium Operator
	The Stadium Operator shall include the removal of declared invasive vegetation and the quantities of any fertilizer, fungicide or pesticide utilised in the quarterly report for the NMBM Environmental Management Sub-Directorate.	
Management Review	The annual management review shall include the landscape and pitch maintenance procedures and results.	NMBM, Stadium Operator
	The current pitch maintenance manual is focused on the proceedings during the World Cup 2010 and needs to be updated due to the multi-uses undertaken within the Stadium.	

7.5 TRANSPORTATION MANAGEMENT

Table 7-5: Transportation Management

Transportation Management		Responsibility
Objectives	Regular service and maintenance on vehicles to maintain efficient operation and minimise harmful leaks and emissions.	NMBM, Stadium Operator
	Reduce nuisance of traffic disruptions.	
Impacts	Ineffective fleet management leading to an increase of CO^2 emissions and hydrocarbon spillages.	NMBM, Stadium Operator
	Traffic disruptions due to insufficient public notifications.	
Targets / Performance Indicators	Service and maintenance as per vehicle manuals.	NMBM, Stadium Operator
	Public notifications issued prior to events occurring.	
Procedures	Vehicles are to be serviced as per the vehicle schedule in the service manual.	Stadium Operator
	Vehicles are to be inspected daily for any hydrocarbon leaks, excessive smoke and noise emissions. If leaks are detected, drip trays with absorbent materials need to be placed underneath the leak and repairs conducted. If excessive smoke and noise emissions are detected, the vehicle is to be repaired.	
	Business trips and activities should be planned in order to minimise additional trips.	
	Public notifications that indicate the following for events are to be advertised at least two weeks before an event occurs : 1. Road closures 2. Drop-off zones 3. Disabled parking zones 4. Public parking areas and tariffs for parking, if applicable.	
	The NMBM Safety and Security Directorate are to be informed of events that require road closures.	
Monitoring	Vehicle service manuals are to be checked on a monthly basis.	Stadium Operator
	Dates and details of public notifications are to be recorded on a monthly basis.	
	Any complaints received from the public regarding traffic disruptions around the Stadium are to be recorded and responses issued within 7 days of receiving the complaint.	

Transportation Management		Responsibility
Corrective Actions	Vehicle service manuals are to be checked for correct dates for servicing.	Stadium Operator
	Drivers are to be trained regarding inspecting vehicles for leaks, excessive smoke or noise emissions.	
	Responses to complaints received from the public regarding traffic disruptions around the Stadium are to be issued within 7 days of receiving the complaint.	
Reporting	The Stadium Operator shall include details on any public notifications and public complaints (including responses) in the quarterly report for the NMBM Environmental Management Sub-Directorate.	Stadium Operator
Management Review	The annual management review shall include an assessment on vehicles and the procedures for public notifications and complaints.	NMBM, Stadium Operator

7.6 ENERGY MANAGEMENT

Table 7-6: Energy Management

Energy Management		Responsibility
Objectives	Energy consumption is optimised and wastage is avoided.	NMBM, Stadium Operator
	Electrical use efficiency improved to reduce total electricity consumption.	
Impacts	Excessive and unnecessary consumption of electricity resulting in wastage of non-renewable sources.	NMBM, Stadium Operator
Targets / Performance Indicators	Total energy consumption to reduce by 10%.	NMBM, Stadium Operator
Procedures	All lights are to be switched off at night except where required for security purposes or when facilities are being utilised.	Stadium Operator
	Lights in any facility not being utilised shall be switched off.	
	Offices, rooms or areas with movement automated light switches are to be checked on a weekly basis to ensure movement detectors and lights are operating correctly.	
	All non-essential electrical appliances are to be switched off at the end of any event.	
	Compact fluorescent lights (CFLs) are to be used when replacements are required, unless specified otherwise in the electrical operations manual.	
	Investigations should be made into incorporating localised renewable energy sources in order to reduce the dependence on coal generated energy.	
Monitoring	Offices, rooms or areas with movement automated light switches are to be checked on a weekly basis.	Stadium Operator
	All electrical appliances are to be checked at the end of an event to ensure all non-essential electrical appliances have been switched off.	
	Energy consumption figures shall be recorded on a monthly basis.	
	In the event that renewable energy sources are installed within the Stadium Precinct, monthly energy generation and consumption figures are to be recorded.	
Corrective	Defective light switches are to be repaired.	Stadium

Energy Management		Responsibility
Actions	Non-essential lights and electrical appliances to be switched off. If non-compliance continues staff are to be retrained.	Operator
Reporting	The monthly energy consumption figures are to be submitted to the Stadium Manager by the Stadium Environmental Officer.	Stadium Operator
	The Stadium Operator shall include the monthly energy consumption and energy saving figures in the quarterly report for the NMBM Environmental Management Sub-Directorate.	
Management Review	Energy consumption and potential areas for energy savings are to be included in the annual management review.	NMBM, Stadium Operator
	An assessment on whether energy consumption can be reduced further is to be undertaken annually and this is to be documented in the annual management review report.	

7.7 GENERAL MAINTENANCE AND HOUSEKEEPING

Table 7-7: General Maintenance and Housekeeping

General Maintenance and Housekeeping		Responsibility
Objectives	Implementation of correct procedures to prevent environmental degradation and negative impacts.	NMBM, Stadium Operator
Impacts	Use of environmentally harmful cleaning materials resulting in a degradation of the environment.	NMBM, Stadium Operator
	Hydrocarbon spills from leaking equipment and refuelling of equipment (e.g. generators, lawnmowers) resulting in environmental degradation and contamination of soils, ground water and stormwater.	
Targets / Performance Indicators	No significant environmental incidents.	NMBM, Stadium Operator
Procedures	**Cleaning:** Wherever possible, cleaning activities should be waterless unless water is essential. When water is required for cleaning, steam or high pressure/low volume hoses are to be used.	Stadium Operator
	Wash water (mixed with cleaning chemicals) is to be disposed of in the sewer system and is not permitted to be disposed of in the stormwater system.	
	Environmentally friendly products are to be used for all cleaning operations. In the event that hazardous cleaning substances need to be utilised, these should be the least environmentally harmful and approval needs to be obtained from the Stadium Environmental Officer.	
	All cleaning and maintenance products are to be stored in water tight containers and stored in lockable rooms.	
	A materials register of cleaning products is to be compiled and maintained.	
	Hazardous substances: A hazardous substances register, including Material Data Safety Sheets (MSDS), is to be prepared and included in the EMS. The following is a list of hazardous substances examples: 1. Fluorescent light bulbs 2. Batteries 3. Solvent based paints 4. Fuel and oils 5. Pesticides	

General Maintenance and Housekeeping		Responsibility
	All hazardous substances are to be kept under lock and key in an impermeably bunded fire proof facility, with the appropriate signage displayed.	
	Fuels that are stored on-site for equipment are to be stored in tanks or containers and stored in impermeable bunded areas with 110% capacity of the storage container.	
	All staff are to be trained in the safe handling and spill management of all substances used at the Stadium.	
	All reactive hazardous substances are to be labelled and stored separately under lock and key in an impermeably bunded fire proof facility.	
	All hazardous substance storage areas are equipped with spill kits and fire fighting equipment.	
	Hazardous waste and waste fuels and oils must be stored in appropriate containers that will not corrode or leak. These containers must be properly marked to indicate contents.	
	All refuelling procedures are to be undertaken with drip pans in order to collect any spillages.	
	Spillages of any hazardous substances are to be recorded as incidents.	
	Ensure that the necessary materials and equipment for dealing with oil, fuel and hazardous substance spills and leaks are available on site and up to date at all times.	
	Maintenance: Maintenance requiring painting should be undertaken with water based paints. If solvent based paints are required, these should be stored and used as hazardous substances. Wash water from the cleaning of paint brushes and containers is not to be disposed of into the stormwater drains. Wash water from water based paint equipment and containers is to be disposed of into the sewer drains. Solvent based paint equipment and containers are to be washed into a collecting drum and disposed of as hazardous waste.	
	Pest control: The Urban Raptor Programme is to be continued and raptors nesting within the Stadium are to be regularly checked by a raptor specialist.	

General Maintenance and Housekeeping		Responsibility
	Pesticides applied for pest control is to be undertaken by a suitably trained and registered pest control officer. Pest control is not to be conducted by persons unqualified or uncertified and the least environmentally harmful pesticide is to be used.	
Monitoring	A list of all cleaning products and hazardous substances is to be maintained and checked on a monthly basis.	Stadium Operator
	Daily checks are to be conducted to ensure that drip trays (with spill kits) are utilised when any hazardous substance is used.	
	Spillages of any hazardous substance are to be recorded on a daily basis and appropriate cleaning has to be undertaken.	
	Correct methods for disposal of paints are to be checked.	
	Checks for any vermin (e.g. rodents) are to be undertaken on a weekly basis through the Stadium.	
Corrective Actions	Spillages of any hazardous substance are to be cleaned and disposed of as hazardous waste.	Stadium Operator
Reporting	The Stadium Environmental Officer is to report to the Stadium Manager on a monthly basis any incorrect procedures and storage relating to hazardous substances.	Stadium Operator
	The Stadium Operator shall include all cleaning products and hazardous substances that are stored for use within the Stadium Precinct as well as the procedures undertaken when using any hazardous substance in the quarterly report for the NMBM Environmental Management Sub-Directorate.	
Management Review	General maintenance and housekeeping procedures and products are to be included in the annual management review.	NMBM, Stadium Operator

7.8 FIRE MANAGEMENT

Table 7-8: Fire Management

Fire Management		Responsibility
Objectives	Minimisation of fire risks.	NMBM, Stadium Operator
Impacts	Ineffective fire equipment and procedures leading to an increase in fire risks.	NMBM, Stadium Operator
Targets / Performance Indicators	No fire incidents.	NMBM, Stadium Operator
Procedures	Fire extinguishers must be available at all points of storage of flammable products.	Stadium Operator
	The fire extinguishers must be checked on a monthly basis to ensure they have not been used/exceeded their yearly service intervals.	
	All fire hydrants are to be checked monthly to ensure fire hydrants are fully functional and free of any rust. Any fire hydrants found to be defective or have rusted components are to be removed and replaced immediately. Where rust is present the fire hydrants should be sent to an accredited manufacturer for further assessment and a spare unit is inserted until the original returns.	
	All staff are to undergo basic fire fighting training.	
	The Stadium Operator shall assign the position of Fire Officer to one of its staff members who shall be competent and adequately trained to fulfil the position of Fire Officer.	
	The Fire Officer shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Fire Officer will be responsible for contacting emergency services for assistance.	
	Any fires that occur shall be reported immediately and reported in turn to the NMBM.	
	No open fires shall be permitted on or off the Stadium, except for activities authorised by the Stadium Operator. All authorised fires shall occur at designated fire places.	
	No on-site burning of any waste materials, vegetation, litter or refuse shall be permitted.	

Fire Management		Responsibility
	Fire and emergency drills shall be conducted every six months.	
	No chemicals or water used in the control of fires is to be disposed of in the North End Lake.	
Monitoring	Checklists for all fire extinguishers and fire hydrants are to be completed on a monthly basis.	Stadium Operator
	Records are to be maintained of fire and emergency drills conducted.	
Corrective Actions	Fire fighting equipment is to be easily accessible and functional.	Stadium Operator
	Ashes and waste water is to be collected and disposed of at a registered landfill site.	
Reporting	The Fire Officer is to report to the Stadium Environmental Officer. The Stadium Environmental Officer is to report to the Stadium Manager on a monthly basis any faulty fire extinguishers or fire hydrants.	Stadium Operator
	The Stadium Operator shall include in the quarterly report for the NMBM Environmental Management Sub-Directorate any fire incidents that have occurred and any fire and emergency drills that have been conducted.	
Management Review	Fire management equipment and procedures are to be included in the annual management review.	NMBM, Stadium Operator

7.9 EMERGENCY RESPONSE

Table 7-9: Emergency Response

Emergency Response		Responsibility
Objectives	Identification and investigation of significant incidents to prevent environmental damage.	NMBM, Stadium Operator
Impacts	Persistent or cumulative significant incidents resulting in environmental damage and degradation.	NMBM, Stadium Operator
Targets / Performance Indicators	Significant environmental incidents are not repeated.	NMBM, Stadium Operator
Procedures	Incidents relate to the endangering or degrading of any environmental feature (i.e. soil, water or air) and includes the following: 1. Spills of any hazardous substance (liquid or solid) onto exposed soil, into the storm water system or sewer system or into the North End Lake. 2. An accidental release of a gaseous substance to the atmosphere.	Stadium Operator
	An emergency response plan is to be compiled and included in the EMS.	
	Any incident is to be reported to the Stadium Environmental Officer immediately.	
	Appropriate action is to be undertaken to prevent the impact of the incident from spreading and a clean-up conducted.	
	An incident investigation is to be undertaken to determine the cause and measures to be implemented to avoid a recurrence.	
Monitoring	Activities that can result in significant incidents are to be monitored when undertaken, e.g. refuelling of fuel tanks.	Stadium Operator
Corrective Actions	The affected areas are to be cleaned (or decontaminated).	Stadium Operator
	Measures to be implemented to ensure incident does not recur.	
Reporting	The Stadium Environmental Officer is to report to the Stadium Manager on a monthly basis any incidents which have occurred and measures undertaken to address the incident.	Stadium Operator
	The Stadium Operator shall include in the quarterly report for the NMBM Environmental Management Sub-	

Emergency Response		Responsibility
	Directorate any incidents that have occurred, measures undertaken to clean the contaminated areas and prevention measures to ensure the incident does not recur.	
Management Review	Incident procedures are to be included in the annual management review.	NMBM, Stadium Operator

8. DOCUMENT CONTROL

8.1 OBJECTIVES

Document control provides evidence of the on-going operation and ensures all relevant documentation is readily available in a coherent filing system. Key features of environmental document control include the means of identification, collection, indexing, filing, storage, maintenance, retrieval and retention (ISO, 2004).

8.2 RECORDS

The following documents are to be recorded and available at the Stadium:

a) Information on compliance with applicable legal requirements.

b) Details of non-conformities, corrective and preventive actions that have been undertaken.

c) Results of EMS audits and management reviews.

d) Information on environmental attributes of products (e.g. chemical composition and properties).

e) Evidence of fulfilment of objectives and/or targets.

f) Information on environmental awareness training and proof of attendance to the related training.

g) Permits, licenses or other forms of legal authorisation.

h) Results of inspections and operational controls.

i) Signed versions of documents are to be stored in a central filing system.

8.3 PROCEDURES

The Stadium Operator is to set up a document control system that is applicable to both electronic and hard copy versions. The system is to ensure easy filing and retrieval of documents.

9. ENVIRONMENTAL AWARENESS TRAINING

9.1 INTRODUCTION

The EMS inclusive of the EMPr, when authorised by the DEDEA becomes a legally binding document against which environmental management performance shall be gauged. The Stadium Operator has the responsibility to ensure all staff are made aware of their responsibilities towards each other, the surrounding community and to the environment.

9.2 RESPONSIBILITIES

The Stadium Operator is responsible to ensure that all staff members, organisations and sub-contractors involved with the stadium operations have sufficient knowledge and understanding of the EMS and the specific procedures to be undertaken. The environmental awareness training programme should therefore be targeted at three distinct levels of employment, i.e. executive, middle management and labour.

The Stadium Operator is to report to the NMBM Environmental Management Sub-Directorate on training programmes undertaken and the signed register is to accompany the report.

The training programmes and number of staff that have received training shall be included in the annual management review.

9.3 REQUIREMENTS

The environmental awareness training programme shall comprise of:

a) The EMS framework and the associated functions.

b) Obligations and requirements from staff and organisations involved in operations.

c) Environmental procedures as indicated in the EMS.

A register of staff members that attend the training programmes shall be maintained and kept on file.

9.4 TIMEFRAMES

Environmental awareness training is to be conducted on an annual basis by the Stadium EMS Officer. In the event that new staff members are employed, the environmental awareness training is to form part of the induction process.

9.5 ENVIRONMENTAL AWARENESS TRAINING

9.5.1 What is the environment?

In terms of the National Environmental Management Act (Act No 107 of 1998) as amended (NEMA), the "Environment" means the surroundings within which humans exist and that are made up of —

i) the land, water and atmosphere of the earth;

ii) microorganisms, plant and animal life;

iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and

iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

9.5.2 Why must we look after the environment?

The quality of the environment effects how everyone lives. Therefore, the degradation of the environment will result in a lowering of the quality of life experienced by all. Additionally, the unrestricted use of natural resources will result in these resources becoming depleted should these unsustainable practices continue. It therefore is the responsibility of all to protect the environment, ensuring sustainable use of resources in a way to protect ourselves and future generations.

9.5.3 How do we look after the environment?

By working together as a team, following the requirements of the EMPr and reporting any problems identified pertaining to the environment to the designated representative.

9.5.4 Management Tables

The following management tables are incorporated within the Environmental Awareness Training to provide guidance to the Stadium Operators' employees.

9.5.5 Water Management

1. Employees are not permitted to swim in, wash in or drink from the North End Lake.
2. Employees are not permitted to throw oil, petrol, diesel, herbicide, pesticide or fungicide or any form of waste into the North End Lake.
3. Employees are not permitted to work with close proximity of the North End Lake without instruction to do so; and without the supervision of a co-employee. This is to prevent potential accidents from happening whereby employees accidentally fall into the North End Lake.

Water Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Irrigation	Is treated water from North End Lake being used for irrigation?	If not, ensure that only treated water is being used for irrigation.	Report to the designated representative should water, other than the North End Lake water be used for irrigation.
	Is irrigation being undertaken during early morning and late afternoon periods?	If not, ensure irrigation programmes are amended to reflect these periods.	Report to the designated representative should irrigation be undertaken during the heat of the day.
	Is pitch irrigation being undertaken in terms of pitch maintenance requirements?	If not, please ensure pitch maintenance requirements are complied with.	Report to the designated representative to pitch irrigation deviate from the pitch maintenance requirements.
	Are all water fittings inspected on a daily basis to detect leaks?	If not, request an inspection schedule from the designated representative.	Report to the designated representative all water fittings found to be leaking.
	Are repairs to leaking water fittings repaired immediately?	If not, implement immediate repairs.	Report to the designated representative all repairs undertaken of leaking water fittings.
	Are replacement water appliance fittings being replaced with water saving devices?	If not, request these replacements from the designated representative.	Report to the designated representative should water saving devices not replace existing water appliances.
	Is rainwater being collected to	If not, request that measures be	Report to the designated representative should

Water Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
	supplement irrigation and washing usage?	implemented to install rainwater catching devices.	rainwater not be collected and used as supplement irrigation and for washing.
	Are measures in place for periods when water restrictions apply?	If not, request the designated representative to provide for measures to be implemented during water restriction periods.	Report to the designated representative should no measures be implemented.
Vegetation	Is vegetation being used for landscaping drought resistant?	If not, request drought resistant vegetation.	Report to the designated representative the use of non-drought resistant plants being used for landscaping.

9.5.6 Stormwater Management

1. All employees are to ensure unimpeded flow of storm water through storm water infrastructure.
2. All employees are to ensure the correct functioning of storm water infrastructure.

Stormwater Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Stormwater infrastructure	Is the storm water infrastructure inspected on a weekly basis?	If not, ensure all storm water infrastructure is inspected on a weekly basis.	Report to the designated representative should storm water infrastructure not be inspected on a weekly basis.
	Is the storm water system inspected after each event?	If not, ensure all storm water infrastructure is inspected.	Report to the designated representative should inspections of the storm water system not occur after events.
	Is all debris and waste found in the storm water infrastructure being collected and properly disposed of?	If not, ensure all waste and debris is disposed of in accordance to waste type and management procedure.	Report to the designated representative should debris not be removed and adequately disposed of.
	Is the North End Lake storm water culvert inlet structure checked on a monthly basis and waste appropriately disposed of?	If not, ensure this is implemented and waste disposed of.	Report to the designated representative should the infrastructure not be checked on a monthly basis.

9.5.7 Waste Management

1. All litter and waste generated is to be disposed of within the designated rubbish bins for disposal at registered landfill sites.
2. Should rubbish bins be full, these must be reported to the designated representative.

Waste Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Waste minimisation	Are measures in place to minimise waste?	If not, ensure measures are implemented with the designated representative.	Report to the designated representative should there be no measures to minimise waste.
	Have programmes to re-use, recycle and recover waste been implemented?	If not, request these from the designated representative.	Report to the designated representative should there be no programmes to re-use, recycle and recover waste.
	Is hazardous waste being collected separately?	If not, request this from the designated representative.	Report to the designated representative should hazardous waste not be collected separately.
	Is waste being collected and disposed of by a registered NMBM waste service provider?	If not, request that this to be undertaken with the designated representative.	Report to the designated representative
	Is a 2 bin waste management system being implemented?	If not, request that additional bins be provided with the designated representative.	Report to the designated representative should the 2 bin system not be implemented.
	Have all bins been made weather and scavenger proof?	If not, discuss this with the designated representative.	Report to the designated representative all bins not weather and scavenger proof.
	Are all bins cleaned within 24 hours of an event?	If not, ensure all bins are cleaned within 24 hours.	Report to the designated representative all bins not cleaned within 24 hours of an event.

Waste Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
	Is the Stadium Precinct being kept clear of litter?	If not, ensure litter picking activities are increased and that more bins are made available in high litter areas.	Report to the designated representative should litter become noticed on the precinct.
	Are litter picking scheduled after events?	If not, ensure this activity is undertaken.	Report to the designated representative should no litter picking occur after events.
	Is waste being removed on a weekly basis?	If not, discuss this with the designated representative.	Report to the designated representative if waste is not collected weekly.
	Is waste generated from an event being collected within 24 hours after the event?	If not, request from the designated representative that waste is collected timeously.	Report to the designated representative if waste is not being collected 24 hours after an event.

9.5.8 Landscape and Turf Maintenance

1. All employees are to ensure products used for landscape and turf maintenance are least harmful to the environment.
2. Employees are to ensure all chemicals used for landscape and turf maintenance are locked in a secure dedicated facility.

Waste Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Pitch management	Are pitch maintenance activities being undertaken as per the pitch operating manual?	If not, request the designated representative to provide this.	Report non-compliance to the pitch operating manual to the designated representative.
Hazardous substance management	Are all landscaping equipment maintained in good working condition?	If not, ensure all equipment is maintained in good working condition.	Report all faulty or poorly maintained equipment to the designated representative.
	Is the application of fungicides and pesticides being undertaken by a registered pest control officer (PCO)?	If not, request the designated representative to provide this.	Report all applications of fungicides and pesticides not being undertaken by the PCO to the designated representative.
	Is the application of fertilisers being undertaken by a qualified person?	If not, request the designated representative to provide this.	Report the application of fertilisers by non-qualified persons to the designated representative.
Landscaping	Are organic fertilisers being used on landscaped areas?	If not, request the designated representative to provide this.	Report to the designated representative should organic fertilisers not be applied to the landscaped areas.
	Is the mowing of grassed areas being undertaken during normal working hours?	If not, ensure this activity occurs during normal working hours.	Report all mowing outside of working hours to the designated representative.
Weed management	Are only indigenous plants being used during landscaping activities?	If not, request all landscaping plants to be indigenous.	Report the planting of non-indigenous plants during landscaping activities to the

Waste Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
			designated representative.
	Are the landscaped areas being maintained and kept weed free?	If not, ensure all areas are kept free of invasive vegetation.	Report the proliferation of weeds within landscaped areas to the designated representative.
	Are all areas inspected on a monthly basis to ensure they are kept weed free?	If not, implement system to undertake this on a monthly basis.	Report to the designated representative should monthly inspections not be carried out.
	Are vegetation cuttings being disposed of at a composting facility or registered landfill site?	If not, ensure all vegetation cuttings are adequately disposed of.	Report to the designated representative should vegetation cuttings be incorrectly disposed of.
Irrigation	Are irrigation procedures being undertaken as per the water management requirements?	If not, ensure irrigation measures are being implemented in accordance to the water management section.	Report to the designated representative any irrigation procedures not compliant with the water management requirements.

9.5.9 Transportation Management

1. All drivers are to keep to the stipulated speed limits.
2. All vehicles must be checked prior to being driven, with all leaks and problems being reported to the designated representative.
3. All loads are to be secure during transit.

Transportation Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Vehicle management	Are vehicles being serviced as per maintenance schedules?	If not, request the designated representative to implement maintenance schedules.	Report to the designated representative should vehicles not be maintained as per the service schedules.
	Are vehicles inspected on a daily basis to detect hydro carbon leaks?	If not, undertake daily inspection.	Report to the designated representative should vehicles not be inspected on a daily basis.
	Are all trips planned in order to minimise additional trips?	If not, co-ordinate all trips with the designated representative.	Report to the designated representative should trips not be planned.

9.5.10 Energy Management

1. Employees are to ensure electrical usage is managed in a responsible manner.
2. All employees are to ensure equipment and lighting requiring replacement are replaced with energy saving devices.

Energy Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Lights left on at night	Are the lights for security requirements or are the facilities being used?	If not, switch the lights off.	Report lights left on to the designated representative.
Lights left on during the day	Are the lights providing essential lighting?	If not, switch the lights off.	Report lights left on to the designated representative.
Non-essential electrical appliances left on	Are the appliances serving a function?	If not, switch the appliances off.	Report non-essential appliances that are left on to the designated representative.
Replacement of light bulbs	Are the replacement light bulbs energy saving?	Unless specified otherwise in the electrical operations manual, replace with energy saving light bulbs.	Report the non-replacement of energy saving light bulbs.

9.5.11 General Maintenance and Housekeeping

1. Employees are to work with petrol, oil and diesel within demarcated areas.
2. All leaks or spills are to be reported to the designated representative.
3. All maintenance work shall require the use of a drip tray. These shall be emptied after rainfall events and the contents disposed of within the hazardous waste stream.
4. All activities to be undertaken to ensure no dust or noise is generated that may affect members of the local community.

General Maintenance and Housekeeping			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Waterless cleaning activities	Are least water intensive cleaning processes being used?	If not, use steam or high pressure/low volume hoses where possible.	Report water intensive cleaning practices to the designated representative.
Environmentally friendly products	Are least harmful products being used for cleaning purposes?	If possible, only environmentally friendly products may be used.	Report the use of environmentally harmful cleaning products to the designated representative.
	Are hazardous cleaning substances being used?	If yes, permission must be obtained from the Stadium EMS Officer to use these substances.	Report the non-authorised use of hazardous cleaning substances.
	Are cleaning products being left unattended?	If yes, all cleaning products must be stored in a water tight container that is bunded and stored in lockable rooms.	Report all unattended cleaning products to the designated representative.
Waste water management	Is wash waste water appropriately disposed of?	If not, dispose through municipal sewer system and not into the storm water system.	Report all inappropriately disposed of waste water to the designated representative.
Hazardous substance management	Are hazardous substances being left unattended?	If yes, all hazardous substances must be stored under lock and key.	Report all hazardous substances being left unattended to the designated representative.
	Are flammable	If yes, all hazardous	Report all flammable

General Maintenance and Housekeeping			
Scenario	**Determination**	**Corrective Action**	**Reporting**
	hazardous substances stored close to fuel or ignition sources?	substances must be stored in an impermeable bund with a capacity of 100% that is fire proof.	hazardous substances stored close to fuel or ignition sources to the designated representative.
	All hazardous substance storage areas are equipped with spill kits and fire fighting equipment?	If not, ensure these measures are implemented by reporting this to the designated representative.	Report all hazardous substance storage areas not equipped with spill kits and fire fighting equipment to the designated representative.
	Are all the containers containing hazardous substances adequately marked?	If not, ensure all containers are adequately marked and the contents made known.	Report all poorly or incorrectly labelled containers containing hazardous substances to the designated representative.
	Are refuelling activities being undertaken in a responsible manner?	If not, a drip tray, spill kit and fire extinguisher must be requested from the designated representative .	Report all refuelling activities being undertaken in an irresponsible manner to the designated representative.
	Are spills of hazardous substances being recorded?	If not, ensure all spills are recorded and reported.	Report all spills of hazardous substances to the designated representative.
	Is adequate spill containment equipment in place?	If not, request the designated representative to provide this equipment.	Report incorrect spill containment procedures / equipment to the designated representative.
Maintenance	Are water based paints being used?	If not, request the designated representative to provide this.	Report the non-use of water based paints to the designated representative.
	Is wash water from cleaning paint brushes being disposed of in storm water drains	If yes, ensure wash water is being disposed of as per the approved waste water disposal methods.	Report the incorrect disposal of wash water to the designated representative.

General Maintenance and Housekeeping			
Scenario	**Determination**	**Corrective Action**	**Reporting**
	Are the cleaning products used to clean solvent based paints collected and disposed of as hazardous waste?	If not, ensure all waste is collected and disposed of at a registered hazardous waste landfill site.	Report the incorrect disposal of solvent based paint wash water to the designated representative.
Pest Control	Is the application of pesticides being undertaken by a registered pest control officer (PCO)?	If not, request the designated representative to provide this.	Report the application of pesticides by a non-registered PCO to the designated representative.

9.5.12 Fire Management

1. Employees shall not smoke near gas, paint, diesel or petrol supplies. All cigarette butts must be disposed of within allocated rubbish bins.
2. All employees must be aware of the localities of fire extinguishers and know how to use them.
3. No burning of waste shall be permitted on site.
4. All fires must be reported to the designated representative.

Fire Management			
Scenario	**Determination**	**Corrective Action**	**Reporting**
Placement of fire extinguishers	Are fire extinguishers placed at all points of storage of flammable products?	If not, ensure all areas where flammable substances are stored have fire extinguishers.	Report all missing fire extinguishers to the designated representative.
Fire extinguisher service intervals	Are the fire extinguishers within their service intervals?	If not, check on a monthly basis to determine servicibility of the fire extinguisher.	Report all fire extinguishers outside of their service intervals to the designated representative.
Fire fighting training	Has the Stadium Operator's Fire Officer provided adequate (annual) fire fighting training?	If not, request training.	Report the need for training to the designated representative.
Waste management	Are flammable waste products stored close to fuel or ignition sources?	If not, remove waste products to areas of low risk.	Report the incorrect storage of all flammable products to the designated representative.
	Is waste being burnt on site?	If yes, no waste may be burnt on site.	Report all burning of waste to the designated representative.
Fire management	Has a fire broken out within the stadium / precinct?	If possible, contain the fire as best as possible using class specific suppressants and summons help.	Report all fire to the designated representative.
Emergency drills	Has emergency drills been conducted on a six monthly basis?	If not, request drills.	Report the need for emergency drills to the designated representative.

10. ENVIRONMENTAL MANAGEMENT AUDITS

10.1 OBJECTIVE

The objective for undertaking environmental management audits is to ensure compliance to the EMS. This will provide a systematic and objective evaluation of the performance in the implementation of the EMS and will identify areas that require additional attention.

10.2 PROCEDURES

Bi-annual audits shall be undertaken by an independent auditor.

The audit report shall detail the findings of the audit and recommendations shall be included for areas that require improvement. The audit report shall be submitted to the NMBM EMS Official and the Stadium Environmental Officer within one week of the audit having being conducted.

10.3 RESPONSIBILITIES

The Stadium Operator shall be responsible to undertake any corrective actions required and feedback on the corrective actions is to be submitted to the auditor. The NMBM EMS official shall assist with corrective actions where necessary.

The Stadium Operator shall report on the audit results in the annual management review.

ADDENDUM A:

DOCUMENT CONTROL AND PROJECT BACKGROUND

1. DOCUMENT CONTROL

TITLE	**:**	***FINAL ENVIRONMENTAL MANAGEMENT SYSTEM FOR THE NELSON MANDELA BAY MUNICIPALITY 2010 MULTI-PURPOSE STADIUM***
Project Team	**:**	*BKS (Pty) Ltd*
Client	**:**	*Nelson Mandela Bay Municipality*
BKS Project No	**:**	*J01540*
Status of Report	**:**	*Final*
BKS Report No	**:**	*J01540/02*
Key Words	**:**	*Environmental Management System (EMS), Environmental Management Operational Plan.*
Date of this Issue	**:**	*30 November 2011*

For BKS (Pty) Ltd

Compiled by	:	L Behrens	LBehrens	November 2011
		Initials & Surname	Signature	Date
Reviewed by	:	R Swanepoel		November 2011
		Initials & Surname		Date
Approved by	:	M Howard		November 2011
		Initials & Surname	Signature	Date

2. PROJECT BACKGROUND

2.1 OVERVIEW

The aim of this project is to provide an Environmental Management System (EMS), inclusive of an operational Environmental Management Programme (EMPr) for the Nelson Mandela Bay Municipality (NMBM) 2010 Multi-Purpose Stadium (hereafter referred to as the Stadium) that will ensure the responsible stewardship of the natural resources available.

An EMS is a key integrated environmental management tool that is used for managing environmental performance of an organisation. This provides a systematic framework and approach to minimise risks and manage environmental aspects and impacts, and to achieve continual improvement (DEA, 2004).

2.2 BACKGROUND

The Environmental Authorisation (ECM1/M/165-05) for the development of the Stadium was issued by the then Department of Economic Affairs, Environment and Tourism, now known as the Department of Economic Development and Environmental Affairs (DEDEA), on the 2nd March 2006. The set of conditions in this authorisation included a condition for a suitable operation and maintenance programme to be developed for the operational phase of the Stadium. In order to fulfil this condition the NMBM has embarked on the development of an EMS, inclusive of an operational EMPr for the Stadium.

The primary objective of this EMS is to ensure that the stadium is operated in a manner that makes responsible use of natural resources, through the implementation of effective management actions. Secondary objectives of the EMS relate to:

a) The identification of environmental impacts resulting from activities associated with the operation of the Stadium.

b) Ensuring that management plans are put in place to mitigate negative impacts and maximise positive impacts.

c) Facilitating the monitoring of the implementation of management plans.

d) Allowing for the monitoring of activities in terms of compliance to legal and other standards.

e) Enabling the Stadium Operator to anticipate and meet growing environmental performance expectations.

f) Ensuring the proper alignment with the 2010 Green Goal Plan.

2.3 DETAILS OF THE AUTHORS

As per the requirements of the National Environmental Management Act (NEMA, Act 107 of 1998), the details and expertise levels of the persons who prepared the EMS and EMPr are provided in Table 1-1.

Table 2-1: Authors' Details

Snr Env Scientist	BKS (Pty) Ltd
Contact Person	Lucille Behrens
Postal address	PO Box 272, Port Elizabeth, 6000
Telephone	041 585 2514
Fax	041 585 8478
Email	lucilleb@bks.co.za
Qualifications	BSc Environmental Management BSc (Hons) Environmental Monitoring and Modelling
Expertise to carry out preparation of EMS and EMPr	Lucille has 7 years of environmental management experience and has been involved in environmental impact assessments, compilation of environmental management plans for construction, maintenance and operations, e.g. operational phases for residential developments and wildlife reserves. Lucille has also been involved in a number of sustainability projects, e.g. strategies for green procurement and elimination of illegal dumping.

Project Manager	BKS (Pty) Ltd
Contact Person	Robin Swanepoel
Postal address	PO Box 112, Bellville, 7535
Telephone	021 950 7500
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Email	robins@bks.co.za
Qualifications	B. Tech Nature Conservation B. Tech Environmental Management
Expertise to carry out preparation of EMS and EMPr	Robin has 14 years of experience and has been involved in the implementation of various EMPrs as the Environmental Control Officer or Environmental Manager on a number of construction sites.

Project Director	BKS (Pty) Ltd
Contact Person	Mike Howard
Postal address	PO Box 3173, Pretoria, 0001
Telephone	012 421 3611
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Email	mikeh@bks.co.za
Qualifications	B.Sc. (Honours), Geography and Biology
Expertise to carry out review of EMS and EMPr	Mike has extensive experience in environmental and sustainability management. Mike has been involved in developing a number of strategies and environmental management frameworks for local and provincial government.

3. REFERENCES

DEA (2004). *Environmental Management Plans, Integrated Environmental Management, Information Series 12*, Department of Environmental Affairs, Pretoria.

Lombard & Associates (2008). *Final Draft Waste Management Plan for the Nelson Mandela Bay Arena.*

NMB Stadium (2009). Nelson Mandela Bay Stadium http://www.nmbstadium.com. [accessed May 2011].

Compliance Management System for Green Point Urban Park, City of Cape Town.

ADDENDUM B:

MONITORING RECORDS

DAILY CHECKLIST: ENVIRONMENTAL MONITORING						
Daily Checks		**Notifications**				
Activity monitored		**Location of Activity**	**Date Notified**	**Responsible Person Notified**	**Corrective actions undertaken**	**Date Rectified**
Are any water fittings leaking? If yes, complete notifications.	Yes / No					
Have any taps been left open? If yes, complete notifications.	Yes / No					
Is irrigation being undertaken at the correct times? If no, complete notifications.	Yes / No					
Is irrigation being conducted whilst it is raining or directly after rainfalls? If yes, complete notifications.	Yes / No					
Are hosepipes being used unnecessarily? If yes, complete notifications.	Yes / No					
Are all areas clear of waste and litter? If no, complete notifications.	Yes / No					
Are drip trays with spill kits being used with any hazardous substance? If no, complete notifications.	Yes / No					
Are there any spillages of hazardous substances? If yes, complete notifications.	Yes / No					
Date of inspection:	Undertaken by: Designation:				Signature:	

WEEKLY CHECKLIST: ENVIRONMENTAL MONITORING						
Weekly Checks		**Notifications**				
Activity monitored		**Location of Activity**	**Date Notified**	**Responsible Person Notified**	**Corrective actions undertaken**	**Date Rectified**
Is there any debris or waste within the stormwater system? If yes, complete notifications.	Yes / No					
Have any complaints been received by the public? If yes, complete notifications.	Yes / No					
Are all movement automated lights working correctly? If no, complete notifications.	Yes / No					
Have any vermin been noted? If yes, complete notifications.	Yes / No					
Is waste being separated into recyclable and non-recyclable items? If no, complete notifications.	Yes / No					
Is waste being collected weekly? If no, complete notifications.	Yes / No					
Date of inspection:	Undertaken by: Designation:				Signature:	

MONTHLY CHECKLIST: ENVIRONMENTAL MONITORING						
Monthly Checks		**Notifications**				
Activity monitored		**Location of Activity**	**Date Notified**	**Responsible Person Notified**	**Corrective actions undertaken**	**Date Rectified**
Is there any debris or waste in the North End Lake stormwater culvert? If yes, complete notifications.	Yes / No					
Has the application procedures and quantities of any fertilizer, fungicide or pesticide been recorded? If no, complete notifications.	Yes / No					
Is there any re-growth of any declared invasive vegetation? If yes, complete notifications.	Yes / No					
Are any vehicles due for a service? If yes, complete notifications.	Yes / No					
Have details of the public notifications been recorded? If no, complete notifications.	Yes / No					
Have all cleaning products and hazardous substances been checked according to the maintained list? If no, complete notifications.	Yes / No					
Has all fire fighting equipment been checked? If no, complete notifications.	Yes / No					
Date of inspection:	Undertaken by: Designation:				Signature:	

MONTHLY RECORDINGS: ENVIRONMENTAL MONITORING								
Month & Year	Water Management		Waste Management			Energy Management		Completed by
	Municipal Meter Reading	North End Lake Meter Reading	Recyclable Waste (Quantity)	Non-Recyclable Waste (Quantity)	Hazardous Waste (Quantity)	Energy Consumption Figure	Energy Generation Figure	
Month 1:								
Month 2:								
Month 3:								
Month 4:								
Month 5:								
Month 6:								
Month 7:								
Month 8:								
Month 9:								
Month 10:								
Month 11:								
Month 12:								

EVENT RECORDINGS: ENVIRONMENTAL MONITORING								
Event Management	**Water Management**		**Waste Management**			**Energy Management**		**Completed by**
Event & Date	**Municipal Meter Reading**	**North End Lake Meter Reading**	**Recyclable Waste (Quantity)**	**Non-Recyclable Waste (Quantity)**	**Hazardous Waste (Quantity)**	**Energy Consumption Figure**	**Energy Generation Figure**	
Event 1:								
Event 2:								
Event 3:								
Event 4:								
Event 5:								
Event 6:								

ADDENDUM C:

ENVIRONMENTAL INCIDENT FORM

ENVIRONMENTAL INCIDENT FORM	
Person Responsible for the Incident	
Designation of person responsible for the Incident	
Contact Details:	
Date of incident:	**Time** of incident: **AM/PM**
Duration of incident: hr/min	
Description of Incident (provide a brief description of what happened)	
Location of the incident: (include landmarks and features, e.g. nearest street, road or fence, etc to make it easier to identify at a later date)	
Extent of incident: (provide sketch/take a photograph if appropriate and attach to this form)	
Quantity or volume of material released or causing incident: (provide a known amount or an estimate if quantity is unknown)	
Estimate of distance to nearest waterway: (waterway can include stormwater drains, natural drainage and North End Lake)	

Type of activity that caused the incident: (what works were in progress at the time of the incident?)	
How was the incident identified? (e.g. employee, community, complaint)	
Name & contact details of complainant: (where relevant)	
Description of environmental conditions (e.g. weather conditions)	

Incident Criteria: (tick category)		
All incidents of a Level Thresh Hold 4 & 5 must be reported to the Department of Economic Development and Environmental Affairs (DEDEA) by the Stadium Operator. The DEDEA must be telephonically notified within 24 hours of the incident and a full report submitted within 14 days.		
Level	**Example**	**Action**
Minor	e.g. no material has escaped the site or caused material harm to the environment – it is easy to clean up without additional assistance	
Major	E.g. material has escaped the site causing pollution of surrounding areas which will require clean up involving other service providers and/or additional resources not available to the Stadium Operator.	
Threshold Level of Incident		
Threshold Level 1	Personnel rectifies the incident at time of inspection	Personnel capable and competent to mitigate incident
Threshold Level 2	Personnel rectifies the incident at time of inspection	Personnel capable and competent to mitigate incident, however it would cause a delay in the works
Threshold Level 3	Requires corrective action to be initiated and completed within a specified timeframe	Personnel to implement measures which through administrative controls can temporarily manage and mitigate the situation
Threshold Level 4	Access and activities within the area to be halted with the immediate implementation of measures to control the incident initiated	Incident represents an immediate danger to people and the environment, potentially resulting in serious injury of death
Threshold Level 5	The Stadium Operator requires to obtain external specialists to manage the incident	Incident is considered to be difficult to control / manage and or may be long standing resulting in costly, time consuming and complex corrective actions

Applicable Reference Documentation	
Environmental Authorisation	**EMS Specification Clause**

Type of Incident: (tick category)		
Spill (including fuel, oil, waste material or other polluting substance)	**Erosion and sedimentation incident**	**Contaminated water discharge**
Noise Emission/Complaint	**Unauthorised/accidental damage to heritage resource**	**Unauthorised/accidental vegetation removal or damage**
Dust Emission/Complaint	**Unauthorised/accidental damage to avifauna/fauna**	**Unauthorised/accidental damage to Stadium infrastructure**
Fire	**Emission of non-toxic substances at low concentrations**	**Emission of non-toxic substances at high concentrations**
Emission of toxic substances at low concentrations	**Emission of toxic substances at high concentrations**	**No evacuation required**
Immediate area evacuated	**Immediate surrounds evacuated**	**Evacuation of the general public**
Other (provide details)		

Cause of the incident (How did the incident occur. Specify whether the incident was due to poor training/management, neglect or through activities beyond the control of the Stadium Operator):

Any other details of the incident (including any information which did not fit in spaces above, as well as any special circumstances of the day or the location):

What immediate actions/control measures were taken to rectify or contain the incident?

What corrective/preventive actions were undertaken?

History of similar or previous events

Provide details on all previous similar incidents involving the responsible person; or similar incidents (i) involving similar circumstances; (ii) involving similar emissions; (iii) involving similar personal; and/or (iv) involving similar impacts.

Incident	Report reference	Date of incident	Summary of event

Stadium EMS Officer (Originator)				
Name	Signature	Date	Designation	Required Response Date

Stadium Management Representative (Acknowledgement of Receipt)			
Name	Signature	Date	Designation

The Stadium Management's Representative is required to respond officially to the Stadium EMS Officer in writing by the required response date. All correspondence shall be contained within this report. (Please use separate sheets if the space is insufficient. Where necessary, please provide supporting documentation).

Stadium EMS Officer: Evaluation of Proposed Corrective Action Response					
Name	**Signature**	**Date**	**Designation**	**Accept**	**Reject**

Stadium Management Representative: Corrective Action Verified as Implemented			
Name	**Signature**	**Date**	**Designation**

Stadium EMS Officer: Follow Up and Close Out					
Name	**Signature**	**Date**	**Designation**	**Accept**	**Reject**

To be completed by: the relevant Manager – e.g. Facilities Manager, etc.
Was the Stadium EMS Officer notified? YES / NO
Who Notified the Stadium EMS Officer? Name:
Designation:
Notification method: Telephone / On site Date of notification: / /
Time of notification: AM/PM

Other authorities notified and why:	
Name:	**Position:**
Signature:	**Date:**

Verification:	
Name:	**Position:**
Signature:	**Date:**