

ENVIRONMENTAL MANAGEMENT PROGRAMME
INFILLING AND EXCAVATION OF MATERIAL WITHIN 100M OF THE HIGH-WATER
MARK OF THE SEA AND CLEARANCE OF INDIGENOUS VEGETATION
FOR THE EDWARD SANDS RESIDENTIAL DEVELOPMENT, BALLITO
KWADUKUZA MUNICIPALITY
DC29/0008/2022



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AUTHOR OF REPORT

This Environmental Management Programme (EMPr) was compiled by Stephanie Denison from Confluence Strategic Development (Pty) Ltd (details of the Environmental Assessment Practitioner provided below). The contents of this Environmental Management Programme have been compiled in accordance with section 24N of the National Environmental Management Act 107 of 1998 as amended and Appendix 4 for of the Environmental Impact Assessment Regulations, 2014 as amended.

Environmental Assessment Practitioner (EAP):	Stephanie Denison	
Postal address:	30 Ashley Road, Ballito	
Postal code:	4399	
Cell:	082 929 4662	
E-mail:	steph@confluencesd.co.za	
Qualifications:	BSc (Hons) Botany and Ecophysiology (UCT) MPhil Marine and Environmental Law (UCT)	
Professional affiliations:	PR. Nat. Sci. Environmental Science (#120455) EAPASA Registered 2019/888	
Work Experience:	2012	Environmental Control Officer at Environmental Impact Management Services
	2012 – 2014	Environmental Scientist at Kerry Seppings Environmental Management Specialists
	2014 – 2020	Lead Environmental Consultant at EnviroPro Environmental Consulting
	2020 – Present	Director

Signed:



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1.0. PROJECT DESCRIPTION

1.1. BACKGROUND

Edward Sands (Pty) Ltd proposes to construct a new residential development on a vacant plot of land described as Erf 618 of Ballitoville Township. The site is located at No. 1 Edward Place, KwaDukuza Local Municipality, iLembe District. Development will take place within 100m of the high-water mark of the sea. The excavation of material on site during construction as well as the clearance of indigenous vegetation requires Environmental Authorisation from the Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for the activities listed in Table 1 below.

Table 1: Listed and Specified Activities Triggered and Being Applied for.

Activity #	Relevant Listing Notice	Description of Listed Activity as Per the Project Description
17 (v) (e)	Listing Notice 1 (GNR327) 04 th December 2014 as amended.	Development of 1 300m ² of residential infrastructure will take place within 100m inland of the high-water mark of the sea.
19A (ii)	Listing Notice 1 (GNR327) 04 th December 2014 as amended.	During construction, a total of 1400m ³ of material will be excavated and infilled within 100m of the high-water mark of the sea.
12 (d) (iv) & (vi)	Listing Notice 3 (GNR324) 04 th December 2014 as amended.	During construction, 1 100m ² of secondary indigenous vegetation will be cleared to accommodate the Edward Sands residential development.

1.2. DESCRIPTION OF ACTIVITY

Edward Sands (Pty) Ltd propose to construct a new residential development on a vacant property described as Erf 618 of Ballitoville Township. The property is 2 035m² in extent with 75% of the property being located within 100m of the high-water mark of the sea (i.e. 1 530m²). The site will be fully developed to accommodate a four-storey residential development (28 units) and basement parking level (Figure 1). As required by the traffic engineer, access will be off Edward Place. The development will connect to the existing municipal water, sewer and stormwater network.

The total development footprint of infrastructure to be constructed within 100m of the high-water mark of the sea is 1 300m² triggering Activity 17 of Listing Notice 1. During construction, approximately 1 400m³ of material will be excavated and infilled within 100m of the high-water mark of the sea triggering Activity 19A of Listing Notice 1. Although secondary and ruderal in nature, 1 100m² of indigenous vegetation will be cleared from within 100m of the high-water mark to accommodate the development. The environmentally sensitive features associated with the site are provided in Figure 2.

Figure 1: Site Development Plan Showing Proposed New Infrastructure to be Developed on Site (Source: MAP Architects, 2021).

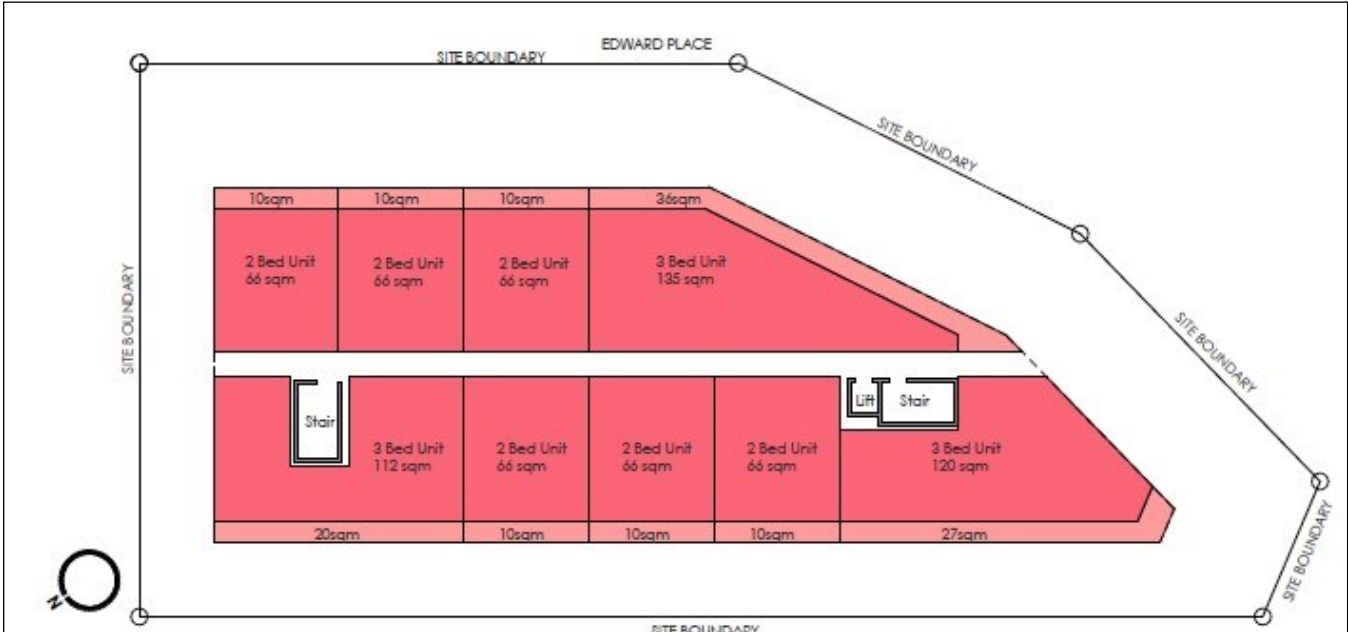
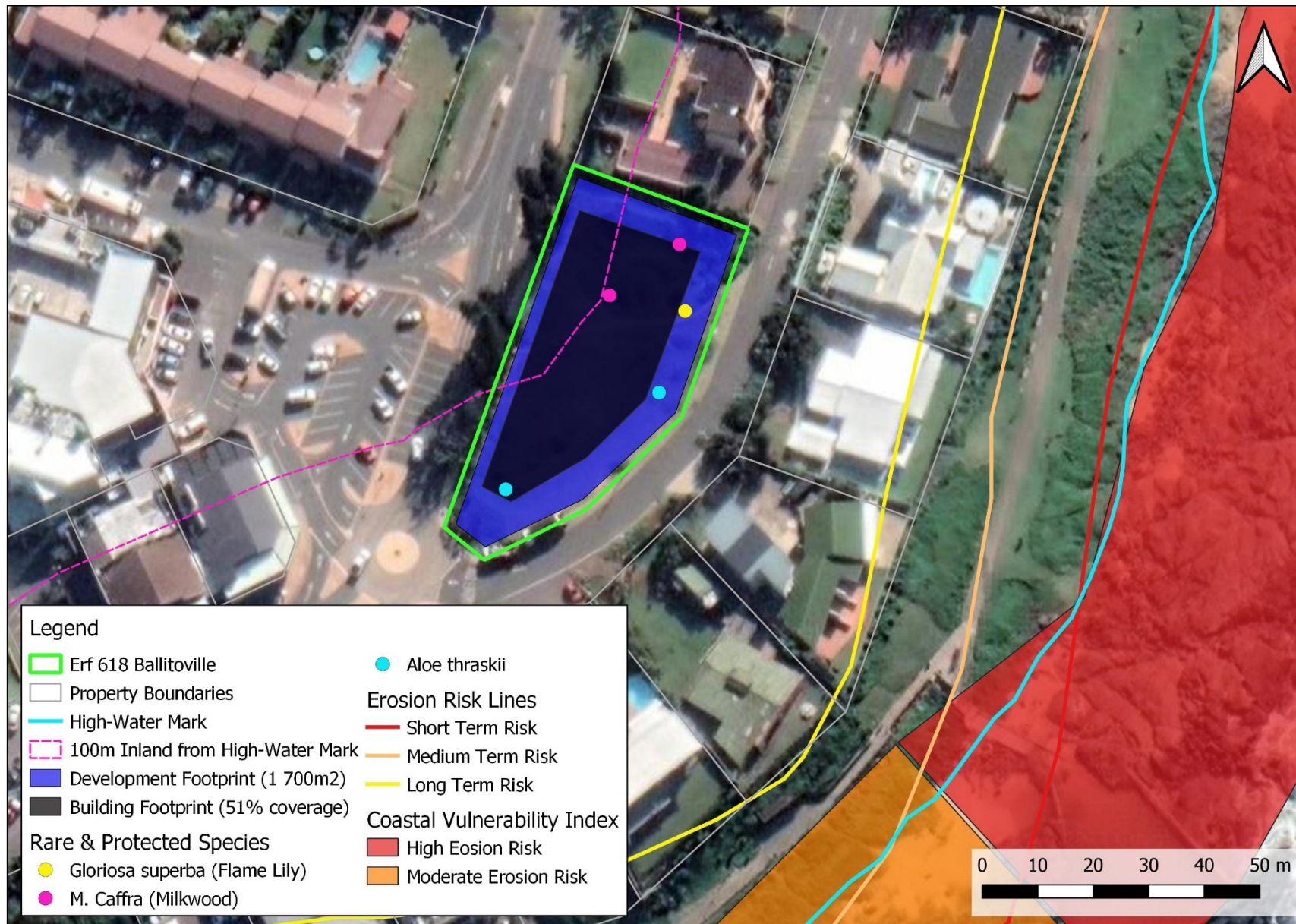


Figure 2: Map Superimposing the Proposed Activity and Associated Infrastructure on the Environmentally Sensitivities of the Site.



1.3. ENVIRONMENTAL SENSITIVITIES

The following sensitive environmental features have been identified within the study area (refer to Figure 2):

- The site is comprised of a wave-cut platform of very hard dolerite rock that has intruded into the sandstone of the Vryheid Formation. Overlying the rock, there is a thick succession of primary dune sand (up to 5m thick). This recent aeolian dune sand is generally uniform and described as “*very loose to loose slightly silty fine to medium grained sand*”¹.
- One rare species, *Gloriosa superba* (flame lily) and two protected species (*Mimusops caffra* and *Aloe thraskii*) were identified on site by the specialist.
- According to the CoastKZN database, the study site falls outside of the long-term (100 year) risk category. The beach environment eastwards of the property is considered to be “*high risk*” in terms of the Coastal Vulnerability Index. Due to the elevated level and distal position of the property from the high-water mark of the sea, the development will have no impact on the sand sharing system of the coastline.
- The site for development is in the Umkwelane Formation and indicated as highly sensitive in terms of fossil discovery. A Fossil Chance Find Protocol has been included in the EMPr.

The Applicant, Contractors and Staff on site must be made aware of the environmental sensitivities and associated restrictions. The restrictions must be clearly explained by the Environmental Control Officer (ECO) prior to construction commencing. An Environmental Awareness Plan has been prepared for Contractors working on site (section 5.0 of the EMPr). The Environmental Awareness Plan will form part of the Environmental Induction training prior to work commencing.

1.4. IMPACT MANAGEMENT OUTCOMES

Considering the type of activity and the environmental sensitivities associated with the site, impact management actions were formulated during the Environmental Impact Assessment to avoid, manage and mitigate risks that were identified for the different phases of the activity including planning and design, pre-construction activities, construction activities, rehabilitation / post-construction and operational activities (where applicable). Impact management actions are in place to achieve the following impact management outcomes:

Table 2: Impact Management Outcomes

Primary Impact Management Outcome: <i>To create a sustainable development by preventing construction activities from impacting the adjacent beach environment and further uplifting the Ballito Village area.</i>		
#	Impact Management Outcome	Measures in Place to Achieve Outcome
1	To avoid construction activities from indirectly impacting the sand sharing system.	An independent ECO must be appointed to manage construction in accordance with the mitigation measures provided in the EMPr. All construction staff and vehicles to be contained to the property and stormwater management measures implemented early in the construction period to avoid ponding on site and uncontrolled stormwater discharge into the municipal system.
2	Reduce nuisance to the neighbours and surrounding area during construction.	Section 4.3 of the EMPr contains measures to manage and minimise general construction-related impacts (waste management, dust suppression, noise restrictions etc.). A complaints register must be retained on site and complaints recorded, timeously dealt with.
3	Effective stormwater management on and off-site.	Since the site is located in a depression with a basement parking level proposed, stormwater needs to be attenuated on site and pumped into the surrounding municipal stormwater system. A detailed stormwater

¹ Section 2.2.3 of the Drennan Maud “*Preliminary Geotechnical Investigation for Environmental Application for Rezoning, Erf 618 Ballitoville*”.

		management plan must be compiled prior to construction commencing to ensure there is sufficient capacity on site to attenuate stormwater prior to discharge into the municipal system (due to close proximity to the beach). On-site stormwater percolation to be encouraged.
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2.0. LEGISLATION

Table 3 provides a list of legislation and municipal planning frameworks which are applicable to the activity. The holder of the Environmental Authorisation and Contractors working on site must be aware of the legal requirements and address non-compliances when they arise.

Table 3: Legislation Applicable to Development of Edward Sands.

Legislation	Acronym	Comment
National Environmental Management Act (Act No. 107 of 1998 as amended).	NEMA	NEMA provides environmental management principles that are applicable across South Africa to fulfil section 24 of the Constitution, which is the right to “an environment that is not harmful to their health or wellbeing”. Section 24 of NEMA defines the activities requiring Environmental Authorisation and the processes to be followed to obtain Environmental Authorisation (published in the Environmental Impact Assessment Regulations, 2014 as amended). This application triggers activities listed in Listing Notice 1 and 3 of the Environmental Impact Assessment Regulations, 2014 as amended. A Basic Assessment process is underway to obtain Environmental Authorisation prior to any activities commencing.
DEA (2017), Public Participation guideline in terms of NEMA EIA Regulations, DEA, Pretoria, South Africa.	-	To give effect to section 2 (4)(f) and (o) of NEMA, adequate and appropriate opportunity for public participation in decisions that may affect the environment is required. NEMA requires that any person conducting public participation take into account any relevant guidelines applicable to the public participation process as contemplated in section 24J of NEMA. The public participation conducted as part of the Basic Assessment process complies with the NEMA EIA Regulations and has considered the relevant guidelines.
DEA (2017), Guideline on Need and Desirability, DEA, Pretoria, South Africa.	-	This guideline contains information on best practice and how to meet the requirements prescribed by NEMA when considering the need and desirability of a development. The need and desirability of the project has considered the list of questions outlined in the Need & Desirability Guidelines.
National Environmental Management: Waste Act (Act No. 59 of 2008 as amended).	NEM: WA	NEM: WA provides measures to protect health and the environment of South Africa by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. There are no activities proposed that will trigger a Waste Management License however measures have been provided in the EMP to ensure that waste management is compliant with the requirements of NEM: WA.
National Environmental Management Biodiversity Act (Act No. 10 of 2004).	NEM: BA	To manage and conserve South Africa's Biodiversity and protect species and ecosystems that warrant national protection. The proposed development does not require any specific permissions in terms of NEM:BA however the landowner must comply with the requirements of the Alien and Invasive Species Regulations (2020) which have been published in terms of section 97(1) of NEM:BA. These regulations categorise invasive species and outlines the way these species must be controlled by landowners. Section 52 of NEMBA allows for the publication of a national list of ecosystems that are threatened and in need of protection. The property is located within the Northern Coastal Grasslands Ecosystem which has been identified as “critically endangered” by the South African National Biodiversity Institute (SANBI). The vegetation on site is however described by the specialist as highly transformed, secondary, ruderal vegetation.
National Environmental Management: Air Quality Act (Act No. 39 of 2004).	NEM: AQA	Regulates air quality to protect the environment by providing measures to prevent pollution and ecological degradation and for securing ecologically sustainable development.

		There are no activities on site that will trigger an Air Emissions License however measures have been provided in the EMPr to ensure that air quality is managed in line with the requirements of NEM: AQA.
National Water Act (Act No. 36 of 1998) (as amended).	NWA	Provides for fundamental reform of the law relating to water resources. There are no watercourses within the property itself or within 32m of the site. The nearest watercourse is an unnamed watercourse, which originates in Zimballi Coastal Resort and Estate. This is approximately 1.1km south-west of the site. No watercourses will be impacted by the proposed development. A Water Use Authorisation is not required for this application.
National Forests Act (Act No. 84 of 1998).	NFA	To conserve and protect natural forests and woodlands as well as ensuring development with principles of sustainable management. The Department of Forestry Fisheries and Environment (DFFE) governs the removal, disturbance, cutting or damaging of protected tree species and natural forests. There are no forests located on site however a permit from DFFE is required for the removal of two juvenile <i>M.caffra</i> trees (i.e. Milkwoods).
Integrated Coastal Management Amendment Act (Act No. 36 of 2014).	ICMAA	Establishes an integrated coastal and estuarine management system to promote the conservation of coastal environment and maintain natural attributes of coastal landscapes and seascapes. Sound coastal management principles are presented in the ICMAA which are applicable to this application. The Coastal Vulnerability Index shows the site to have a “high” vulnerability. All infrastructure proposed falls within 100m of the high-water mark of the sea and therefore the layout needs to be “economically justifiable and ecologically sustainable”, which is a requirement of the ICMAA.
National Heritage Resources Act (Act No. 25 of 1999).	NHRA	For the management of national heritage resources and to nurture and conserve heritage resources so that they may be bequeathed to future generations. There are no heritage features on site. The property falls within a “highly” sensitive palaeontological (i.e. fossils) area. A Palaeontological Impact Assessment was therefore carried out.
iLembe District Municipality Integrated Development Plan (2021 / 2022 Review)	iLembe IDP	Provided that the construction is carried out in a sustainable manner, the activities proposed at 1 Edward Place are in line with the iLembe District Vision outlined in section 1.2 of the iLembe IDP. This vision is “By 2030 iLembe District Municipality will be a sustainable people-centred economic hub providing excellent service and quality of life”.
KwaDukuza Local Municipality Integrated Development Plan (2021/22)	KDM SDF	Ballito is identified in the KDM IDP as a major town centre experiencing high levels of demand for new residential, commercial and retail developments (section 3.3.1 of the IDP). In the Spatial Management SWOT Analysis, the establishment of high-income residential areas with high end services has been identified as an opportunity by KDM. A threat identified by the municipality is that the “concept of densification and compactness is not as prevalent as it should be” in Ballito. “Wasted land” in Ballito is also identified as a threat. 1 Edward Place has been left vacant since 2006. Its strategic location in the Ballito town centre makes any development on the land appealing in terms of the KDM IDP.

3.0. MONITORING REQUIREMENTS

As per the findings of the Environmental Impact Assessment, the holder of the Environmental Authorisation is responsible for appointing an independent Environmental Control Officer (ECO) to monitor the implementation of the impact management actions. Table 4 provides a summary of the monitoring requirements to ensure effective implementation of the EMPr. It is noted that the mitigation measures listed in the EMPr as well as the Conditions of the Environmental Authorisation must be adhered to.

The appointed ECO must have the following skills:

- Knowledge and understanding of constructing on coastal environments.
- Knowledge of good practise environmental management standards.
- Understanding of the legal context of the activity including the Duty of Care and Polluter Pays principles.
- At least 3 years’ experience in the ECO field.

Table 4: Monitoring Requirements

Method of Monitoring	<ul style="list-style-type: none"> • Site & beach inspection by ECO to monitor the implementation of the EMPr and conditions of the EA during construction and the post-construction audit. • Visual inspections & photographs for record keeping purposes.
Frequency of Monitoring	<ul style="list-style-type: none"> • The ECO must audit the construction period monthly. • One monthly report summarising the findings of the audits must be submitted to the applicant, Contractor and EDTEA: Compliance and Enforcement. • The findings of the audits must be included in the monthly report write up. • One post-construction audit by ECO.
Mechanism for Monitoring Compliance	<ul style="list-style-type: none"> • Written monthly audit report to be submitted by the ECO after the site inspection to the Holder of Environmental Authorisation, Contractor and EDTEA: Compliance, Monitoring & Enforcement.
Program for Reporting on Compliance	<ul style="list-style-type: none"> • Prior to the Contractor commencing with construction, environmental induction training must be carried out in accordance with the Environmental Awareness Plan in section 5.0. • The register in section 6.0 must be signed by all Primary Contractors working on the site. • The roles and responsibilities of the individuals involved must be determined and the line of communication outlined by the ECO in the audit reports. • Any non-compliances with the EMPr identified during the site inspection must be reported to the relevant Contractor, who must rectify the non-compliance immediately or within a reasonable timeframe as agreed upon with the ECO. • An Environmental Audit Report, compliant with Appendix 7 of the NEMA EIA Regulations 2014 as amended, must be compiled by the ECO and submitted to the relevant parties as listed above. • Prior to construction commencing on site, the holder of the Environmental Authorisation must have an agreement with the Primary Contractors working on site as to what remedial actions must be taken should environmental damage arise on the site as a result of actions by the Contractor.

4.0. IMPACT MANAGEMENT ACTIONS

Mitigation measures provided in the tables below have been formulated during the Environmental Impact Assessment process to ensure that Edward Sands is a sustainable development, as contemplated in the principles of NEMA. The actions aim to:

- (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and
- (ii) Comply with any prescribed environmental management standards or practices.

The tables below indicate the persons who will be responsible for the implementation of the mitigation measures / actions. Abbreviations provided below:

- | | |
|---|---|
| • Independent Environmental Control Officer (ECO) | • Holder of Environmental Authorisation (DEV) |
| • Engineer (ENG) | • Contractor (CON) |

4.1. PLANNING & DESIGN

The following must be included in the detailed planning and design phase of the Edward Sands development.

Table 5: Impact Management Actions to be Adhered to During the Planning and Design Phase of Edward Sands.

Aspect	Impact	Mitigation / Actions	Responsible Person	Compliant (Yes / No)
Infilling and excavation of material within 100m inland of the high-water mark of the sea during the construction of Edwards Sands.	Soil mobilisation resulting in silt entering the stormwater drains damaging nearby coastal environment.	Recommendations provided in the Geotechnical Report and Bulk Services Report must be adhered to during the design phase to ensure the site is stable: <ul style="list-style-type: none"> • Heavily loaded structures require deep foundations such as piled foundations. • A detailed geotechnical investigation must be carried out prior to construction commencing to make recommendations on specific measures to be implemented ensuring stability of the proposed development. • Stormwater runoff from hard surfaces must be attenuated prior to discharge into the municipal stormwater system. • Stormwater on site must be attenuated on the basis of 1m³ attenuated for every 40m² of hard surface. 	ENG	
Development of residential infrastructure within 100m inland of the high-water mark of the sea.	Clearance of rare and protected plant species	One rare species, <i>Gloriosa superba</i> (flame lily) and two protected species (<i>Mimusops caffra</i> and <i>Aloe thraskii</i>) will be cleared from the site to accommodate the development (location of these plants is shown in Figure 2). <ul style="list-style-type: none"> • A permit from DFFE must be obtained for the removal of the two <i>M. caffra</i> trees. Additional <i>M. caffra</i> trees to be used in the landscaping post-construction. • <i>A. thraskii</i> must either be retained and used as part of the landscaping or a permit from EKZN Wildlife must be obtained for the clearance of the aloes². • <i>A. thraskii</i> must be planted as part of the landscaping associated with the development. 	DEV CON	
Edward Sands development located within 100m of the high-water mark of the sea.	Uncontrolled stormwater management resulting in ponding of stormwater in the basement parking and/or high velocity of stormwater runoff onto the beach environment.	The property is located within a small depression and is surrounded by road networks. The following must be adhered to to manage stormwater and prevent ponding in the basement parking: <ul style="list-style-type: none"> • Stormwater infrastructure must be connected to the existing municipal stormwater system in Edward Place and/or Compensation Road. • Stormwater must be attenuated on site before being discharged into the municipal system. • As per the Bulk Services Report, attenuation facilities must allow for 1m³ of attenuation volume for every 40m² of hard surfaces³. 	ENG	

² All species in the Liliaceae family, including aloes, are specially protected species listed under Schedule 12 of the Nature Conservation Ordinance No. 15 of 1974. A permit from EKZN Wildlife is required to relocate these species.

³ Section 4.1.1 of the Escongweni BPH Engineers "Bulk Services Report" April 2022.

		<ul style="list-style-type: none"> • Attenuation facilities must be constructed at the same level as the municipal stormwater system or a pump must be installed to pump stormwater into the municipal system. • To prevent stormwater from ponding in the basement parking, a separate storage / attenuation tank must be constructed below-ground. Any stormwater entering the underground attenuation tanks must either be stored and used in the building (greywater system / landscaping etc.) or automatically pumped into the municipal system when the tanks are reaching capacity. • A cut off drain / berm must be constructed at the top of the driveway leading down to the basement parking to prevent / reduce the volume of stormwater from entering the parking. • A detailed stormwater management plan must be prepared by an engineer prior to development commencing. • The architect and engineer to encourage on-site stormwater percolation, where possible (i.e. permeable paving, grass blocks, landscaped areas vs hard surfaced etc.) 	DEV	
Development of Edward Sands within Ballito Village.	Cumulative impact on traffic congestion.	<ul style="list-style-type: none"> • The traffic engineer recommends access off Edward Place with no access from Compensation Road considered due to safety concerns. • All parking must be provided within the property boundaries. 	DEV	

4.2. PRE-CONSTRUCTION

The following actions must be undertaken prior to construction commencing on site.

Table 6: Impact Management Actions to be Adhered to During the Pre-Construction Phase of Edward Sands.

Aspect	Impact	Mitigation / Actions	Responsible Person	Compliant (Yes / No)
Infilling and excavation of material within 100m inland of the high-water mark of the sea during the construction of Edwards Sands.	Indirect impact on nearby beach environment.	<ul style="list-style-type: none"> • Prior to any work commencing on site, the applicant must appoint an independent Environmental Control Officer (ECO). • All Primary Contractors on site must undergo environmental induction training prior to work commencing (see Environmental Awareness Plan under section 5.0 of the EMPr). 	APP ECO	

4.3. CONSTRUCTION

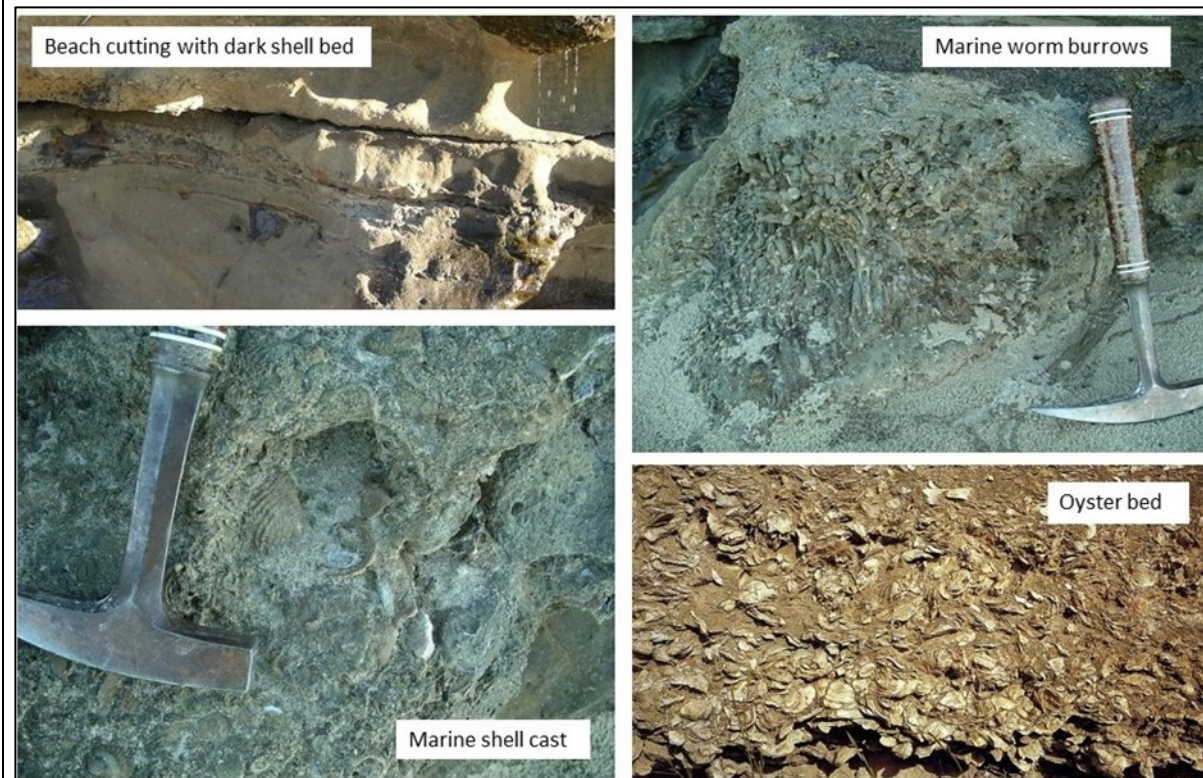
The following mitigation measures must be adhered to during the entire construction phase.

Table 7: Impact Management Actions to be Adhered to During Construction of Edward Sands.

Aspect	Impact	Mitigation / Actions	Responsible Person	Compliant (Yes / No)
Infilling and excavation of material within 100m inland of the high-water mark of the sea during the construction of Edwards Sands.	Soil mobilisation resulting in silt entering the stormwater drains damaging nearby coastal environment.	<p>The following measures must be put in place to reduce stormwater runoff and associated erosion damage during construction:</p> <ul style="list-style-type: none"> • Vegetation must remain in place wherever possible and for as long as possible during earthworks. • Sound management of surface water runoff from any exposed sand surfaces must be put in place early in the construction phase to prevent excessive inundation of sediments into the local stormwater disposal system. This must include the placement of sandbags and/or bidim in areas of preferential flow to contain stormwater on site. 	CON	
	Indirect impact on nearby beach environment.	<ul style="list-style-type: none"> • During excavations, all material must be stockpiled within the property boundaries to reduce the risk of sand / sediment from being blown / washed into the stormwater system and onto the beach. • All cement mixing must take place on plastic sheets and must be contained to prevent cement / concrete from entering the stormwater system. 	CON	
	Excavations destroying fossils impacting on palaeontology.	<p>The palaeontologist concluded that it is extremely unlikely that any fossils occur in the development footprint however, given the potentially very high sensitivity of the rocks underlying the site, a Fossil Chance Find Protocol has been provided below.</p> <ul style="list-style-type: none"> • During earthworks, the following procedure must be adhered to if fossils are discovered (see photographs provided below for examples of the type of fossils that could be found on the site): <ul style="list-style-type: none"> - When excavations begin the rocks must be given a cursory inspection by the ECO or designated person. Any fossiliferous material (shells, plants, insects, bone, coal – see Figure 3) must be put aside in a protected place. This way construction activities will not be interrupted. - Photographs of similar fossil plants must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones (see below). - Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. - If there is any possible fossil material found then a qualified palaeontologist, must visit the site to inspect the selected material. 	CON	

- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered, then no site inspections by the palaeontologist will not be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
If no fossils are found and the excavations have finished, then no further monitoring is required.

Figure 3: Example of fossils from the Maputaland Group that could be trapped in the dune sand (source: Proff. Marion Bamford).



Development of residential infrastructure within 100m inland of the high-water mark of the sea.	New infrastructure negatively impacting coastal processes (i.e. the sand sharing system, biotic environment, sea-level rise and storm surges).	<ul style="list-style-type: none"> All construction work and staff must be contained within the property boundaries during the construction phase. 	CON	
Site Camp	Incorrect placement of the site camp indirectly impacting environmentally sensitive areas (i.e. adjacent beach / coastal environment).	<ul style="list-style-type: none"> The site camp must be located within the property boundaries. Signage is to be erected outside site camp indicating relevant contact details of responsible person in case of complaints or emergencies after hours. 	CON	
Record Keeping	Proof of safe disposal & sustainably sourced material.	<p>The following documents must be retained on site for auditing purposes:</p> <ul style="list-style-type: none"> Environmental Authorisation Environmental Management Program Environmental Audits for the site A full inventory of all hazardous materials must be retained on site with the respective Material Safety Data Sheets Safe disposal slips for waste (general, hazardous and chemical toilets) Proof of raw material sourcing (i.e. building sand, gravel etc.) Environmental training registers Record of incidents on site, including photographs (if applicable) Any other permits, licenses or approvals that may be applicable to the site. 	CON	
Vehicles & Equipment	Disturbance to areas adjacent to construction site and contamination of environment.	<ul style="list-style-type: none"> Major vehicle servicing is not permitted on site. Only emergency / minor repair work is permitted. A drip tray must be used to capture any spills during emergency / minor repair work. Construction vehicles must not be washed on site. 	CON	
Material Storage Areas & Stockpiles	Sedimentation risk.	<ul style="list-style-type: none"> Material stockpiles must not exceed 2m in height, must be covered, or grassed to prevent erosion caused by exposure to heavy wind or rain. Stockpiling of material must only take place within the property boundaries. 	CON	
Waste Management	Littering and improper storage / disposal of waste accumulating on site and/or adjacent to the site.	<ul style="list-style-type: none"> All waste generated on site must be disposed of in the designated waste management area to ensure that it is not blown around the site or into adjacent residential properties. The waste management area must be located within the property boundaries. All waste must be stored under cover to prevent rain ingress and/or waste from being blown around site. No waste must be buried or burnt on site 	CON	

	Hydrocarbons or other liquids / chemicals entering the surrounding environment.	<ul style="list-style-type: none"> • Potentially hazardous substances⁴ to be stored in a fenced off area that is undercover to prevent contamination of rainwater. • All potentially hazardous substances must be stored, in a bunded area (110% capacity of largest container) with an impermeable surface to prevent soil contamination during handling. • The use of hydrocarbons and other potentially hazardous liquids on site must be managed in accordance with section 4.3 of the EMP. • No bulk storage of fuel is permitted on site (>30m³). • A full inventory of all hazardous materials must be retained on site with the respective Material Safety Data Sheets. • Decanting of potentially hazardous substances must be carried out within the confines of a drip tray / similar or using a hand pump. • Hazardous waste must be disposed of at a registered hazardous landfill site. • Cement mixing must take place on a hard surface that is protected from stormwater runoff. 	CON	
	Improper placement and management of toilet facilities potentially impacting the coastal environment and becoming a nuisance to surrounding residents.	<p>Sufficient toilet facilities must be provided on site to prevent construction staff from utilising the surrounding areas.</p> <ul style="list-style-type: none"> • On-site toilets will be provided for domestic purposes during construction phase (chemical or connected to municipal sewerage pipeline). • Toilets must be located within the property boundaries (i.e. not near the fore dune in front of the house). • Staff must use the toilets provided and must not use any other areas on site as toilet facilities. • Toilets should be screened from the neighbours as far as is practically possible. • Ablution facilities must be checked regularly and kept in a clean state. • No pit latrines are permitted on site. 	CON	
Spills Incidents &	Greywater / hydrocarbons / chemicals storage and use on site having the potential to pollute the adjacent beach environment.	<ul style="list-style-type: none"> • Any spills on site must be cleaned up immediately using the Spill Response Procedure provided in section 5.4.1 of the EMP. • The seven step Spill Response Procedure must be included in the ECO's environmental toolbox talk. • No vehicles or equipment must be washed on site. • Drip trays must be available near the hazardous storage area and where hazardous materials are being used on the site. • A Spill Kit / similar must be available near the hazardous storage area. 	CON	

⁴ Hazardous substances refer to substances scheduled in the Hazardous Substances Act (1973) and Hazardous Chemical Substances Regulations (1995) and include paint, oils, fuels, solvents, pesticides.

Dust Emissions &	Dust & emissions becoming a nuisance to surrounding residents.	<ul style="list-style-type: none"> • During high winds, dust suppression must take place using water carts / hose to prevent excessive dust on site. • Any fine materials stockpiled on site must be covered to prevent dust from being blown around. • Material transported to site on the back of trucks must be covered, • A complaints register must be maintained on site and any complaints received addressed timeously. • A shade cloth fence / other screening techniques must be used to reduce dust from entering other properties, where required. • All construction vehicles and equipment must be well maintained to reduce emissions generated on site. 	CON	
Noise	Noise form construction machinery, equipment and staff becoming a nuisance to surrounding residents.	<ul style="list-style-type: none"> • All construction vehicles and equipment must be well maintained to reduce noise on site. • All construction vehicles and equipment must be fitted with standard silencers. • No construction vehicles or machinery to operate outside of construction working hours (07:00 – 17:00). • Neighbours to be advised prior to work being done outside the above times. • A complaints register must be maintained on site and any complaints received addressed timeously. 	CON	
Cultural Heritage /	Items of historical, archaeological or cultural significance destroyed or disturbed during excavations.	<ul style="list-style-type: none"> • During earthworks, should any objects with historical, archaeological or cultural significance be uncovered, all work in this area must cease and the heritage authority, AMAFA, notified. • Objects with historical, archaeological or cultural significance must not be destroyed or removed from site without prior permission from AMAFA. • Should any human remains be discovered, all work in this area must cease and the South African Police contacted for further direction. 	CON	
Alien Vegetation	Proliferation of exotic species on site and within adjacent dune environment.	<p>Construction activities, primarily vegetation clearance, typically provides an opportunity for the proliferation of exotic species within the disturbed area. The establishment and spread of alien invasive species within the disturbance footprint must be managed throughout the construction phase by the Contractor.</p> <ul style="list-style-type: none"> • The “<i>Eradication of Alien Invasive Plant</i>” Management Plan must be implemented on site during construction (section 5.4.2 of the EMP_r). • Alien invasive species must not be permitted to establish on site or adjacent to the site. 	CON	

4.4. REHABILITATION / POST CONSTRUCTION

Once construction is complete on site, the Contractor and ECO must ensure that the mitigation measures listed in the table below are adhered to. This will ensure that there will be no residual impacts on the environment remaining once construction is complete.

Table 8: Impact Management Actions to be Adhered to Once Construction is Complete.

Aspect	Impact	Mitigation / Actions	Responsible Person	Compliant (Yes / No)
Post-Construction Audit	To ensure the site is stable and there are no outstanding environmental non-compliances that need to be corrected by the Contractor.	<ul style="list-style-type: none"> The ECO must carry out a post-construction inspection of the site once construction is complete. Clearance from the ECO must be obtained to ensure there are no outstanding environmental non-compliances prior to the Contractor vacating the site. The following areas must be audited by the ECO in the post-construction inspection: <ul style="list-style-type: none"> No waste / litter remaining on site; There is no evidence of spills or building rubble remaining on site; There is no left over building material remaining on site; All exposed surfaces have been rehabilitated / landscaped to avoid sediment wash away; Stormwater management is adequate and has been formalised; and There is no evidence of erosion. 	CON & ECO	
Development of residential infrastructure within 100m inland of the high-water mark of the sea.	Clearance of rare and protected plant species	<p>One rare species, <i>Gloriosa superba</i> (flame lily) and two protected species (<i>Mimusops caffra</i> and <i>Aloe thraskii</i>) will be cleared from the site to accommodate the development (location of these plants is shown in Figure 2).</p> <ul style="list-style-type: none"> Additional <i>M.caffra</i> trees to be used in the landscaping post-construction. <i>A. thraskii</i> must either be retained and used as part of the landscaping or a permit from EKZN Wildlife must be obtained for the clearance of the aloes. <i>A. thraskii</i> must be planted as part of the landscaping associated with the development. 	CON	

4.5. OPERATION

Provided that the above mitigation measures /actions are adhered to, the operational phase of the Edward Sands development will have a low impact on the surrounding environment. There are no impact mitigation measures applicable to the operation phase of the development.

5.0. ENVIRONMENTAL AWARENESS PLAN

This Environmental Awareness Plan describes the manner in which the holder of the Environmental Authorisation must inform all Contractors and employees of the environmental risk which may result from their work; and that the risks must be dealt with to avoid pollution or the degradation of the environment.

5.1. INDUCTION

All Primary Contractors working at 1 Edward Place must receive a copy of the Environmental Awareness Plan and sign the register attached stating that they have received a copy of the EMPr and are aware of the environmental risks. Contact details for the Environmental Control Officer (ECO) are provided below if Contractors require any clarification or assistance with the demarcation of sensitive areas (shown in Figure 2).

Table 9: Important Contact Information.

Designation	Company	Contact Person	Contact Details (to be completed on site)
Holder of the Environmental Authorisation	Edward Sands (Pty) Ltd	Charl Roux	
Environmental Assessment Practitioner	Confluence Strategic Development	Stephanie Denison	
Environmental Control Officer	TBC		
Coastal Specialist	SDP Ecological & Environmental Services	Simon Bundy	
Consulting Engineer	Escongweni BPH Engineers	Njabulo Khoza	

5.2. ENVIRONMENTALLY SENSITIVE AREAS

Please refer to section 1.3 of the EMPr and Figure 2, which provides a description of the environmentally sensitive areas associated with the Edward Sands development. These areas must be demarcated and avoided during construction. Contractors must be aware of the primary Impact Management Outcome, which is ***to create a sustainable development by preventing construction activities from impacting the adjacent beach environment and uplifting the Ballito Village area.***

5.3. BASIC ENVIRONMENTAL TRAINING POINTS

All staff working on site must receive basic environmental training, which includes the items listed below. Please note that the ECO must be available to conduct environmental training should the Contractor prefer.

- Context of the Edward Sands development and the applicability of the EA and EMPr.
- The location of environmentally sensitive features (Figure 2).
- Restrictions associated with the environmentally sensitive features.
- Waste management (general & hazardous).
- No cement mixing directly on exposed soil outside of construction footprint.
- Management of hazardous substances (paint, oil, drip trays, spills etc.).
- Sanitation (i.e. the use of toilets).
- Nuisance to neighbouring properties.

5.4. PROCEDURES FOR HANDLING ENVIRONMENTAL RISKS

All construction staff working at 1 Edward Place must be aware of the procedures listed below.

5.4.1. SPILL RESPONSE⁵

In the event of a spillage, the following procedure must be adhered to so that there is minimal impact on the surrounding environment. Diesel and oil are the most likely hydrocarbons that will be spilled on the site.

1. **ASSESS THE RISK**
 - WHAT was spilled; and
 - HOW MUCH was spilled.
2. **SELECT THE RELEVANT PERSONAL PROTECTIVE EQUIPMENT (PPE)**
3. **CONFINE THE SPILL**
 - Block, Divert away from sensitive environmental areas and confine spill.
 - Use absorbents or boom in Spill Kit
 - Stop the flow of the spill.
4. **STOP THE SOURCE**
5. **EVALUATE THE SPILL AND IMPLEMENT APPROPRIATE CLEAN UP**
 - Re-assess the spill and decide on most appropriate method of clean up.
 - Absorb spill using materials in Spill Kit or soil / wood chips.
 - Using a broom, rag or other material, scrub the impacted area or using a spade, dig out the contaminated soil.
6. **DECONTAMINATE**
 - All PPE must be removed and disposed of as hazardous waste if contaminated.
 - All rags / materials used during the clean up as well as the actual spilled material must be disposed of as hazardous waste.
7. **REPORTING**
 - Responsible person to determine if the spill constitutes an “incident”, see definition below.
 - All incidents must be reported as per the procedure outlined in section 5.4.3.

⁵ Seven Step Spill Procedure Accessed from Border Hazmat: Specialised Environmental Cleaning (<http://borderhazmat.co.za/7-step-spill-procedure/>). Accessed on 12th March 2021.



5.4.2. ERADICATION OF ALIEN INVASIVE PLANTS

Alien Invasive Plant (AIP) species rapidly establish in disturbed areas due to the lack of competition from other indigenous species. AIP species rapidly colonise and area and can spread to other areas outside of the development footprint. It is therefore important for construction staff to receive some training on how to identify and remove AIPs before they become a nuisance and negatively impact the rehabilitation efforts underway within the study area. The list below can also be used by the developer when eradicating AIP species during the operational phase of the development.

Notes:

- Mechanical removal of AIPs (i.e. hand pulling / slashing) is preferred above chemical control.
- All mixes given as a percentage (ml per 100 l water/diesel).
- Apply methods either by species or by area i.e. multiple areas, one species or one area, multiple species.
- Autumn and winter - basal stem and cut stump treatments, no foliar spraying.
- Spring and summer - foliar spraying can be done on suitable plants. Rule of thumb - don't spray anything over 1.5 m tall. Spray during the morning (8 am to 11 am) during calm conditions.
- NB PPE when spraying - rubber gloves, goggles, respirator, apron/chemical overall, rubber boots.
- NEVER use diesel for foliar application.
- If in doubt, check the herbicide label.
- Follow up treatment/clearance is essential for effective AIP management.

Table 10: AIP species likely to be associated with the Edward Sands site.

Scientific Name	Common Name	Identification Image	Scientific Name	Common Name	Identification Image
<i>Chromolaena odorata</i> .	Chromolaena		<i>Ricinus communis</i>	Castor Oil	

<i>Solanum mauritianum</i>	Bugweed		<i>Tithonia diversifolia</i>	Mexican Sunflower	
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5.4.3. REPORTING OF ENVIRONMENTAL INCIDENTS

Definitions

"Incident" as defined in NEMA	An unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property.
"Incident" as defined in NWA	Incident or accident in which a substance- (i) pollutes or has the potential to pollute a water resource: or (ii) has or is likely to have, a detrimental effect on a water resource.
"responsible person" as defined in NEMA & NWA	Includes any person who- (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident.
"relevant authority" as defined in NEMA	(i) a municipality with jurisdiction over the area in which an incident occurs; (ii) a provincial head of Department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs; (iii) the Director-General; (iv) any other Director-General of a national department.

Procedure should an *incident*, as defined above, occur on site:

The responsible person or, where the incident occurred in the course of that person's employment, his or her employer	Complete an Emergency Incident Report (template provided in Appendix 2). The report must be sent to the following personnel within 14 days of the incident occurring. (i) the Director-General of the Department of Environmental Affairs; (ii) the Director-General of the Department of Water & Sanitation; (iii) the South African Police Services and the relevant fire prevention service; (iv) the relevant provincial head of department or municipality; (v) The relevant catchment management agency, if applicable; and All persons whose health may be affected by the incident.
The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident-	(i) Take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons; (ii) Undertake clean-up procedures; (iii) Remedy the effects of the incident; (iv) Assess the immediate and long-term effects of the incident on the environment and public health;

Should the responsible person fail to comply, or inadequately comply with a directive received by a relevant authority, there be uncertainty as to who the responsible person is; or there be an immediate risk of serious danger to the public or potentially serious detriment to the environment, a relevant authority may take the measures it considers necessary to contain and minimise the effects of the incident; undertake clean-up procedures; and remedy the effects of the incident. A relevant authority may claim reimbursement of all reasonable costs incurred by it in terms of subsection (8) from every responsible person jointly and severally.

6.0. RECEIPT OF ENVIRONMENTAL MANAGEMENT PROGRAMME & ACKNOWLEDGEMENT OF ENVIRONMENTAL RISKS

By signing this register, I confirm that I have received a copy of the Environmental Management Programme (EMPr) prepared by Confluence Strategic Development (Pty) Ltd and dated June 2022. I am aware of the environmental sensitivities of the site as shown in Figure 2 of the EMPr.

[illegible]

APPENDIX 1

EMERGENCY INCIDENT REPORT TEMPLATE

