

ENVIRONMENTAL BASIC ASSESSMENT PROCESS FOR A  
WASTE LICENCE

FINAL BASIC ASSESSMENT REPORT

PROPOSED REMEDIATION OF ASBESTOS  
CONTAMINATED LAND ON THE NSESE  
RAILWAY STATION IN KWAZULU NATAL

DEA Ref No: 12/9/11/L689/4

FINAL FOR SUBMISSION TO DEA  
NOVEMBER 2011

Prepared for:

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## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

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File Reference Number:

Application Number:

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Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

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10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

## PROJECT DETAILS

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DEA Reference No. : 12/9/11/L689/4

Title : Environmental Basic Assessment Process for a Waste Licence: Final Basic Assessment Report: Proposed Remediation of Asbestos Contaminated Land on the Nseese Railway Station in KwaZulu-Natal

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Client : Transnet Freight Rail (TFR)

Report Status : Final Basic Assessment Report for submission to DEA- November 2011  
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When used as a reference this report should be cited as: Savannah Environmental (2011) Final Basic Assessment Report: Proposed Remediation of Asbestos Contaminated Land on the Nseese Railway Station in KwaZulu Natal

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## OVERVIEW OF THE PROPOSED PROJECT

### 1. Background

The main asbestos mining areas in South Africa were concentrated in the Northern Cape from Prieska northwards to Botswana. Asbestos mining activities also took place near Polokwane (Penge) and near Pigg's Peak in Swaziland. The mined asbestos was then transported through the rail network to Durban, Port Elizabeth and Cape Town ports for export. The handling of Asbestos Ores and processed Asbestos Containing Products for export through Transnet Freight Rail's (TFR's) railway transportation networks resulted in the historical contamination of TFR's operational footprint around the country. Incorrect loading profiles resulted in asbestos spills en-route and environmental conditions such as wind and rain have, over the years, been contributing to the spreading of asbestos fibres in operational areas and along the transportation lines. At the time of contamination (in the 1990's), there was limited knowledge regarding the handling of asbestos and associated health implications. Asbestos spillage hotspots along transportation routes include:

- » The loading and off-loading platforms as well as several facilities at the depots.
- » Along the main lines at sharp bends along the railway lines.
- » At the depots and shunting yards where track maintenance is taking place on a regular basis.

In response to Asbestos Regulations promulgated in terms of both the Environment Conservation Act, 73 of 1989 and the Occupational Health and Safety Act, 85 of 1993, Transnet Freight Rail initiated the phasing out of the use of Asbestos and asbestos containing products and instituted a moratorium on the transportation thereof. A number of sites within TFR's railway stations and along railway lines were rehabilitated in the past. The late 1990's and early 2000 initiatives to rehabilitate contaminated areas were reactive in nature, focused on the cleaning of asbestos only when sighted. Asbestos kept on re-surfacing during rainy seasons and after windy conditions as well as during the track maintenance. The cleaning activities were therefore, not successful. During the 2008/2009 financial year, Transnet Freight Rail appointed external consultants, CSS Geographical Information Specialists, to undertake a country-wide asbestos risk assessment on areas affected by the historical spillage of asbestos, and to further pronounce on the pollution liability and quantification.

The risk assessment undertaken by CSS concluded that of the 25 sites assessed, 12 were highly contaminated, 8 sites had medium contamination and only 5 sites were rated as being of low contamination. The Nsese Railway Station in KwaZulu-Natal was categorised in the risk assessment as being a "low risk" site according to the Asbestos Risk Assessment report undertaken between 2008 and 2010 by Conservation Support Services (CSS) on behalf of TFR. Transnet, however intend to clean up this site in the

case that undetected asbestos is present at the Nsese railway station (CSS, 2010). The Nsese site was deemed an "NAD" site as no asbestos was detected through the risk assessment undertaken by CSS. Transnet Freight Rail recognises that asbestos **may** be present in its operational areas of Nsese yard, in various forms, condition and types and that an effective asbestos clean-up and management strategy is therefore required in order to manage the potential risks to employees, contractors and community members surrounding the sites. This requirement was confirmed through the risk assessment process.

TFR adopted the recommendations proposed by the risk assessment for the asbestos clean-up. The objectives of the asbestos clean-up are as follows:

- » To ensure that the handling of asbestos containing products or material during the clean-up is in accordance with regulatory requirements.
- » To minimise occupational exposures to asbestos fibres and future liabilities.
- » To protect employees, tenants and the communities from contact with asbestos fibres during rehabilitation
- » To disclose to employees, contractors, tenants and the public, asbestos contaminated sites within TFR and pronounce on management of these.
- » To declare identified asbestos contaminated sites as environmental covenants after clean-up.

## 2. Introduction

Transnet Freight Rail (TFR) plans to embark on a country-wide clean-up and remediation of asbestos contaminated land along their operational footprint over the next ten years. The asbestos clean-up initiative is proposed in order to remediate the impacts of historical pollution caused by incidental spillage of asbestos-containing products during earlier years of transportation of processed asbestos and asbestos ores from mines to harbours for export (*note that TFR no longer transports asbestos in South Africa since the banning of Asbestos in 2008*). The purpose of this basic assessment process is to obtain a waste license for the remediation of asbestos contaminated land at the Nsese railway station in KwaZulu-Natal. This railway station was identified as a "low risk site" in the country-wide Asbestos Risk Assessment report undertaken between 2008 and 2010 by Conservation Support Services on behalf of TFR. However, Transnet has identified the potential for a risk to be present should asbestos be found at the Nsese site at a later stage.

Prior to undertaking any asbestos clean-up which may be required in the event of asbestos being detected, TFR is required to obtain a waste license from the National Department of Environmental Affairs (DEA) in line with the requirements of the National Environmental Management: Waste Act of 2008 (Act No 59 of 2008). Therefore, an Environmental Basic Assessment Process is underway for the potential remediation

required at Nsese Railway Station. This Basic Assessment Report and combined waste licence application is relevant to the asbestos clean-up for the Nsese railway station in KwaZulu-Natal (refer to locality map in **Figure 1 and Appendix A**):

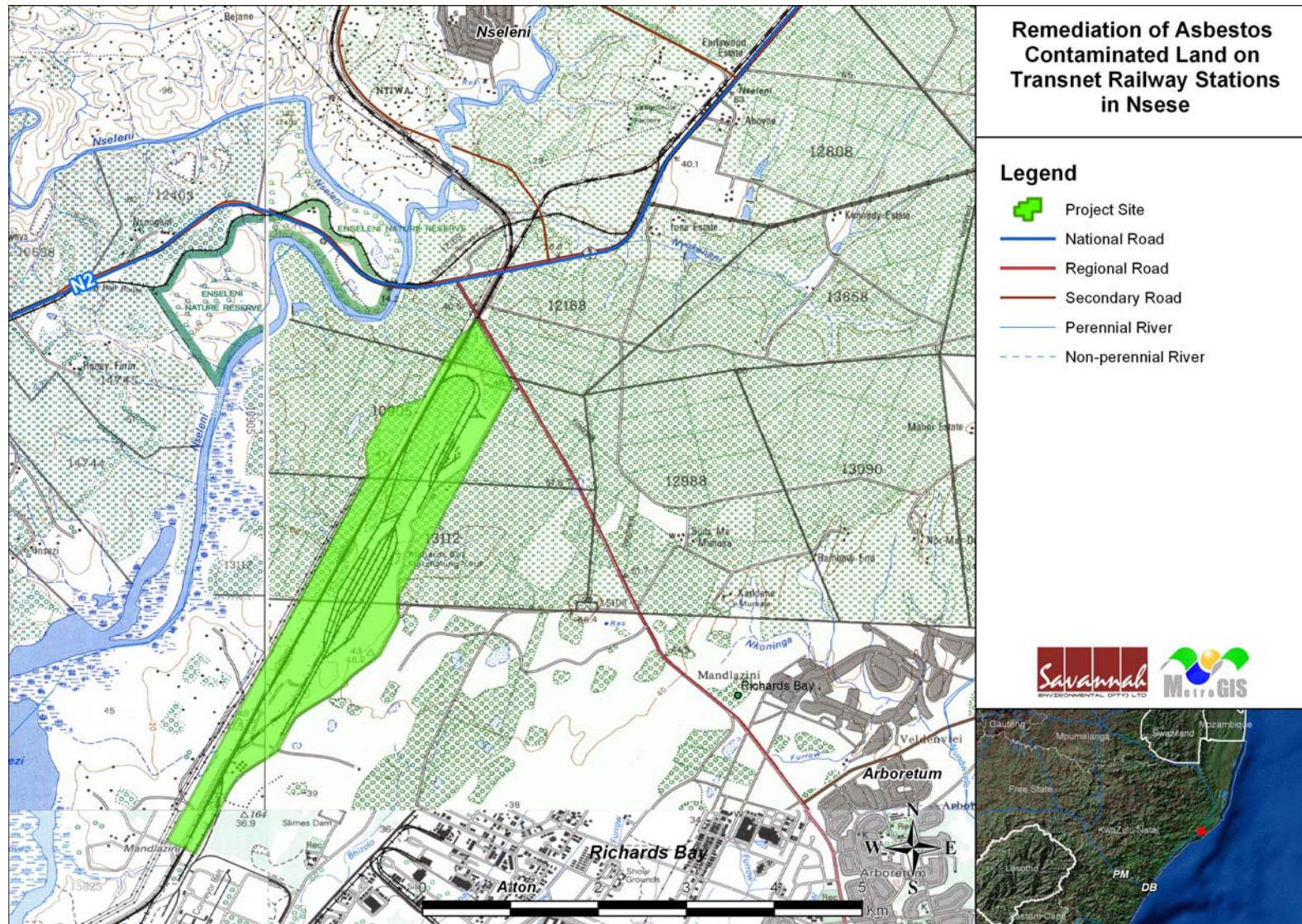


Figure 1: Locality Map showing Nsele Railway Station in KwaZulu-Natal

### **3. The Need and Desirability of the Asbestos Clean-Up**

Asbestos is an indigenous fibrous mineral that has been mined from a number of sites in Southern Africa and, because of its resistance to heat, has been used for the manufacturing of various products since the 1900s. Asbestos waste is defined as a Class 6 Hazardous Waste, with a Hazard Rating of 1 (i.e. Extreme Hazard), in terms of the Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste (Department of Water Affairs, 1998). It is an exposure to asbestos fibres that presents the hazard to people. Many studies have described a link between occupational exposure to various types of asbestos and lung cancer and associated diseases. Asbestos has therefore been designated as a known human carcinogen and hazardous substance. This carcinogenic activity is directly linked to the air pathway and ingestion of the fibres when swallowed. Asbestos shows a slight solubility in water and the natural fibres tend to become blunted on a molecular scale thus greatly reducing the associated cancer risk. Water therefore serves as a natural route for the removal of fibres from the soil and as a mechanism to suppress the emission of fibres into the air environment, which is part of the proposed remedial activities. The potential presence of asbestos at the Nsese railway station in KwaZulu-Natal poses a long term environmental and human health risk to people who operate on the site, and therefore the need and urgency to undertake the clean-up and eliminate any further environmental risks at contaminated area within each railway station is imperative.

### **4. The Need for a Waste License**

TFR requires a waste license from the National Department of Environmental Affairs (DEA<sup>1</sup>) (in consultation with the relevant local and provincial authorities who are commenting authorities) for the undertaking of the proposed asbestos remediation initiative. In order to obtain the waste license for the proposed site, independent environmental studies must be undertaken in accordance with the EIA Regulations of June 2010.

In terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) the need for a waste license is triggered by Schedule A, Activity 12 - "The remediation of contaminated land". In this regard, a Basic Assessment process and report as detailed in the EIA Regulations of June 2010 applies.

A waste license application has been submitted to DEA for the Nsese railway station in KwaZulu-Natal. DEA has accepted this application and issued a project reference number (to be used by any I&AP when referring to this site) is 12/9/11/L689/4.

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<sup>1</sup> DEA is the competent authority for waste licenses for all hazardous substances.

## 5. Summary of findings of the Asbestos Risk Assessment

An extraction of the main findings of the asbestos risk assessment undertaken by CSS for the Nsese railway station in KwaZulu-Natal is provided below (CSS, 2010). The methodology used by CSS is a Triangulated Irregular Network (TIN) model within a GIS platform based on the following contamination values:

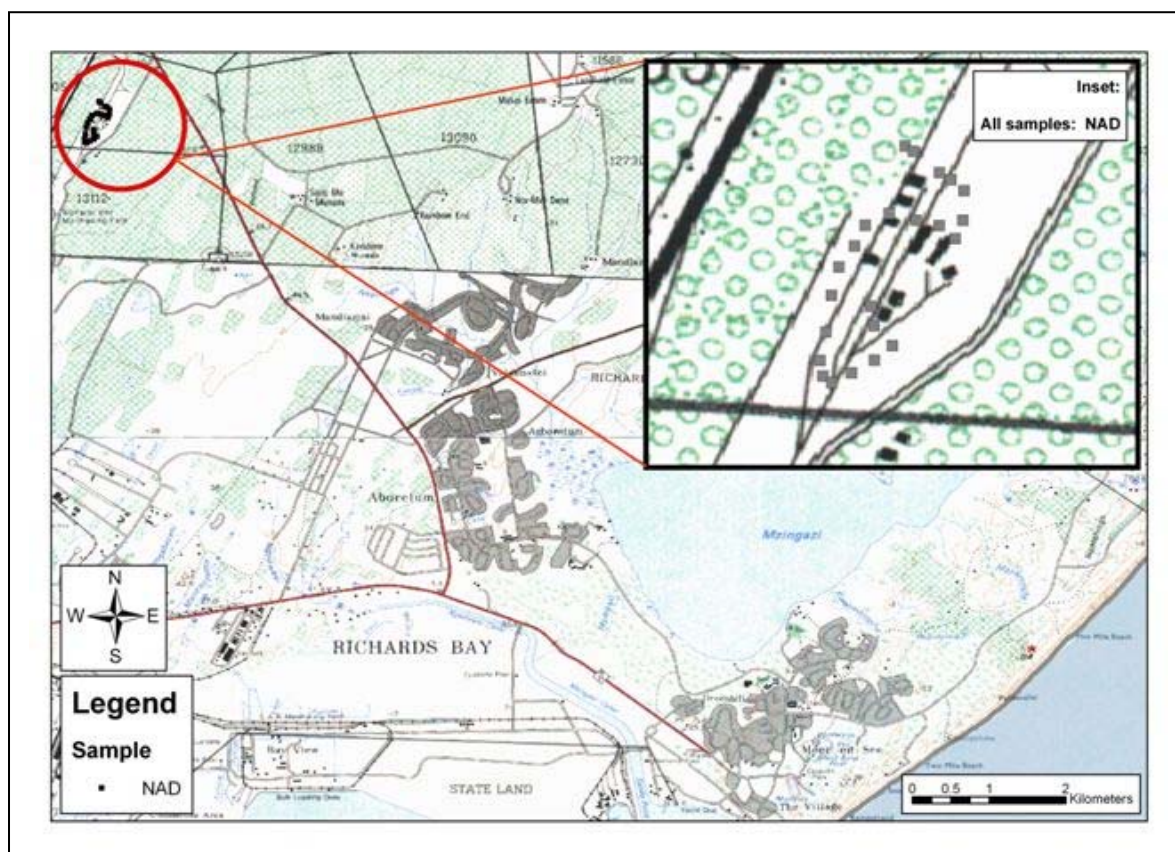
Asbestos Contamination Level in soil	Value	Depth of Remediation / Excavation (centimeters) required
NAD (No asbestos detected)	0	0 cm
1 - <1.0%	1	8 cm
2 – 1-2%	2	16 cm
3 - >2% and visible asbestos waste	3	30

The following abbreviations are used in the maps which follow, as taken from the Risk assessment report (CSS, 2010):

- » AD - Asbestos Detected
- » NAD – No Asbestos Detected
- » MAW – Mixed Asbestos Waste
- » AR – Asbestos Rope
- » LAF – Loose Asbestos Fibres
- » AB – Asbestos Blanket

### 5.1 Findings for Nsese Railway Station

CSS surveyed the Nsese Station on May 2009. A total of 23 sample locations were collected from the site for laboratory analysis. No visible asbestos waste contamination was identified during the inspection. All samples were collected along the track (typically within two to seven meters from the centre line). According to the results of the laboratory analysis, all 23 samples were reported as No Asbestos Detected (NAD). Figure 2 indicates the sample locations that were taken.



**Figure 2:** Nsese sample locations and results (CSS, 2010)

The laboratory analysis revealed that the Nsese Yard in KwaZulu-Natal is a **Low Risk** location. No further active investigations were recommended for this site at the time.

## 5.2 Asbestos Clean-up Process Overview

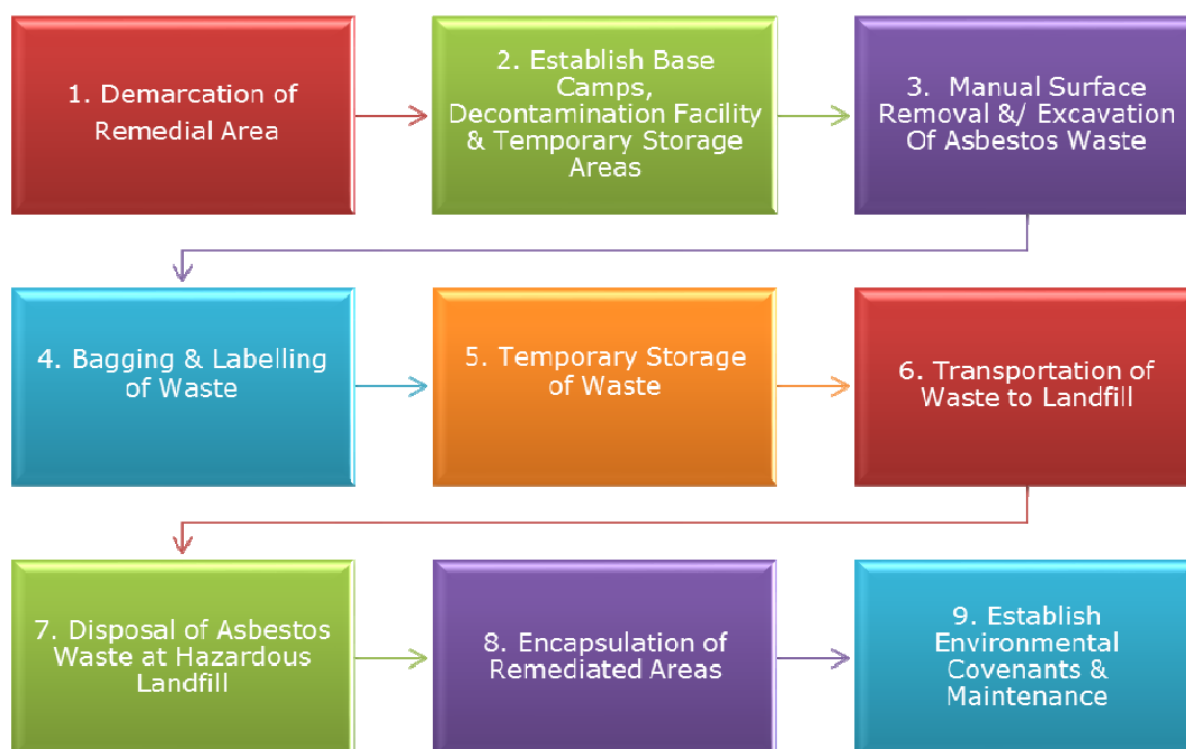
Any asbestos present at the TFR Nsese railway station has the potential to comprise of mixed asbestos waste (mainly amosite and chrysotile) due to incidental spillage of asbestos-containing products during earlier years of transportation of processed asbestos and asbestos ores by rail during the transit of the products via railway lines, from mines to harbours for export. The composition of waste includes mixed asbestos waste (Loose Amphibole asbestos - amosite and chrysotile fibres present in soil, asbestos cement pipes, asbestos cement sheets, asbestos rope, asbestos lagging) and asbestos fibres (Amosite and Chrysotile) present in the soil.

No asbestos waste material has been identified via visual inspections and soil sampling undertaken as part of the Asbestos Risk Assessment study (Conservation Support Services, 2010). However, should contaminated soils be found on site at any stage in the future, it is anticipated to be removed and disposed of at the nearest H: H Landfill Sites (High hazardous landfill sites) or H:h Landfill Sites (Low hazardous sites - if clean soil is added to the waste). It is still under investigation as to which landfill can be used

to dispose of any asbestos contaminated soil. The contaminated soil will be mixed with soil to reduce risk to low, and then disposed off at a suitable hazardous landfill.

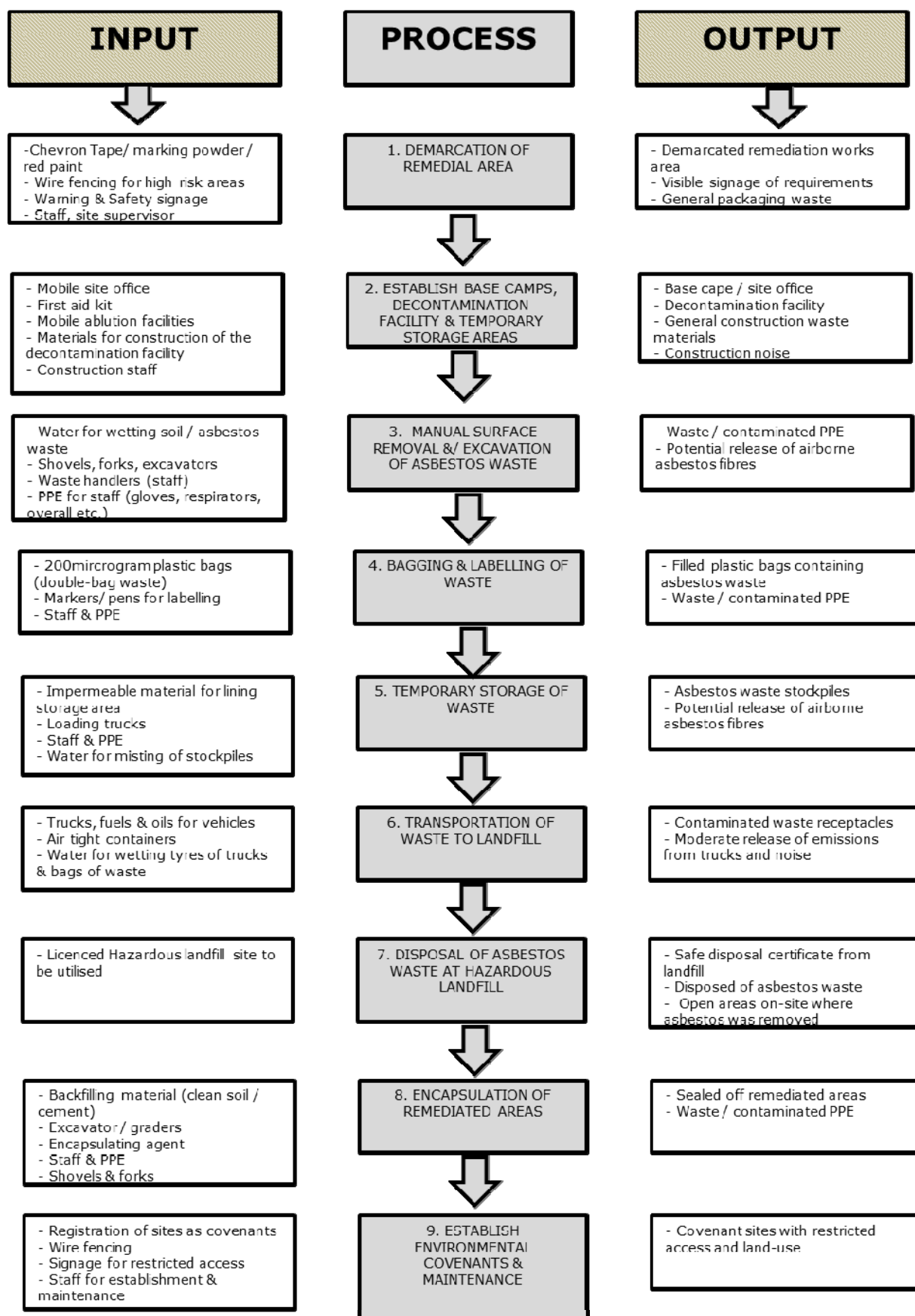
The possibility exists for TFR to commission their own H:H landfill, which is outside the scope of this waste licence application process (a separate EIA application and process in this regard is currently underway for a site in the Northern Cape).

A simplified illustration of the asbestos clean-up and site remediation process at the Nsesse Railway Station in KwaZulu-Natal (should this be required) is shown in **Figure 3**.



**Figure 3:** Illustration of the asbestos clean-up and site remediation at the Nsesse Railway Station in KwaZulu-Natal

A Flow chart of the Asbestos Clean-up / remedial activities showing more details of the asbestos clean-up activities is included in **Figure 4**.



**Figure 4:** Flow chart of the Asbestos Clean-up / remedial activities at the Nsesse Railway Station in KwaZulu-Natal

TFR has developed an Environment, Safety and Health Plan for the asbestos clean-up that will apply to the contractors appointed to undertake the asbestos clean-up. This document is attached as **Appendix G2**. The risk factors of individual sites (as determined by the Risk Assessment) shall also influence the classification of individual contaminated sites and the level of remediation to be undertaken. Decontamination of the works and site shall continue until each pollution location has been cleaned to a standard commensurate with the risk classification of any particular area. The risk classification criteria are provided in the **Table 1** below.

**Table 1:** Risk Classification Criteria used to determine methods for clean-up (extracted from Environment, Safety and Health Plan for the Remediation of Asbestos Contaminated Sites: Phase 1, 2010)

Pollution class	Location	Risk factors	Standard of clearing	Rehabilitation action
1	Active yards	Staff working, public access. neighbouring and residential areas	Close visual inspection reveals asbestos pollution. Encapsulate area on completion of removal	Encapsulate area on completion of removal
2	Inactive yards	No regular staff activity. No general access. No general residential activity.	Asbestos to be removed where no asbestos material >10mm in length is present and the number of pieces <10mm do not exceed 5m <sup>2</sup>	Encapsulate area and cover with a 100mm thick layer of soil on completion of removal
3	Service roads	Vehicle movement	Close visual inspection Reveals asbestos pollution. Encapsulate area on completion of removal	Encapsulate area on completion of removal
4	Open lines – close to track or in immediate adjoining area	Possible disturbance by staff, infrequent	Asbestos to be removed where no asbestos material >10mm in length is present and the number of pieces <10mm do not exceed 5m <sup>2</sup>	Cover with soil and compact surface
5	Open areas in reserves not near	No staff, limited access and no residential activity	Variation of 2, depending on rehabilitation potential and potential for future disturbance	Encapsulate and cover with soil or topsoil if needed.
6	All lines, in ballast	Mechanical maintenance activities ballast sifting)	Remove contaminated ballast up to the lowest level of the sleeper, drench all contaminated ballast lower than sleeper level with encapsulating agent	Backfill with new/uncontaminated ballast.

In the event of any uncertainty as to the risk classification of the particular area, a conservative approach shall be adopted and clearing shall continue until a close visual inspection confirms that there are no visible signs of asbestos spillage or asbestos fibres at each working site or pollution site. The Contractor (an Approved Inspection Authority (AIA)) and Transnet Freight Rail Asbestos Project Manager will decide on the risk classification of a work site in consultation with the relevant Risk Classification Criteria.

#### **6. Basic Assessment Process: Assumptions, Uncertainties and Gaps in Knowledge**

- » The technical information on the methods for the asbestos clean-up contained in this basic assessment report is according to the information provided by TFR (as recommended by CSS).
- » The technical information contained in the Asbestos Risk Assessment report undertaken by the independent consultant Conservation Support Services (2010) has also been used in this report.
- » No project alternatives are provided in this BA report due to the nature of the project – an asbestos clean-up. The alternative options for remediation were considered in the Asbestos Risk Assessment. Thereafter, the most appropriate remediation options were recommended in this report, which TFR adopted and will use.

## **DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER AND EXPERTISE TO CONDUCT THE BASIC ENVIRONMENTAL ASSESSMENT FOR A WASTE LICENCE**

Savannah Environmental was contracted by Transnet Freight Rail (TFR) as the independent environmental consultant to undertake the basic environmental assessment for the proposed asbestos clean-up. Neither Savannah Environmental nor any its specialist sub-consultants on this project are subsidiaries of or are affiliated to TFR. Furthermore, Savannah Environmental does not have any interests in secondary developments that may arise out of the authorisation of the proposed project.

Savannah Environmental is a specialist environmental consulting company providing holistic environmental management service, including environmental impact assessments, environmental permitting and planning to ensure compliance and evaluate the risk of development; and the development and implementation of environmental management tools. Savannah Environmental benefits from the pooled resources, diverse skills and experience in the environmental field held by its team. The Savannah Environmental team have considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects throughout South Africa.

The EAPs from Savannah Environmental who are responsible for this project are:

- » Jo-Anne Thomas - a registered Professional Natural Scientist and holds a Master of Science degree. She has 13 years' experience consulting in the environmental field with a. Her key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. She is currently responsible for the project management of EIAs for several development projects across the country and is responsible for the management of waste license applications for various other developments.
- » Alicia Govender - the principle author of this report, holds an Honours Bachelor of Science degree in Environmental Management and has about 4 years experience in environmental management. Alicia is currently the responsible EAP for several renewable energy projects and other EIAs across the country.

In order to adequately identify and assess potential environmental impacts associated with the proposed project, Savannah Environmental has appointed the following specialist sub-consultants for input into the BA report:

- » Soil Scientist from TerraSoil Science for input on soils on the sites for remediation.

- » Occupational Hygienists from Apex Environmental for input on airborne asbestos and asbestos handling and removal.

Refer to **Appendix G1** for the curricula vitae for Savannah Environmental and the specialist sub-consultants team.

## SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

NO ✓

If YES, please complete the form entitled "Details of specialist and declaration of interest for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

### 1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail<sup>2</sup>:

The asbestos waste material potentially present at the TFR Nsese railway station could comprise of mixed asbestos waste (mainly amosite and chrysotile) due to incidental spillage of asbestos-containing products during earlier years of transportation of processed asbestos and asbestos ores by rail during the transit of the products via railway lines, from mines within South Africa to harbours for export. The composition of waste has the potential to include mixed asbestos waste (Loose Amphibole asbestos - amosite and chrysotile fibres present in soil, asbestos cement pipes, asbestos cement sheets, asbestos rope, asbestos lagging) and asbestos fibres (Amosite and Chrysotile) present in the soil.

No asbestos waste material has been identified via visual inspections and soil sampling undertaken as part of the Asbestos Risk Assessment study undertaken (CSS, 2010). **TFR, however intend to clean up this site in the case that undetected asbestos is present at the Nsese railway station.** Asbestos waste is defined as a Class 6 Hazardous Waste, with a Hazard Rating of 1 (Extreme Hazard), in terms of the Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste (Department of Water Affairs, 1998). Asbestos contaminated soil is anticipated to be removed and disposed of at the nearest H: H Landfill Sites (High hazardous landfill sites) or H:h Landfill Sites (Low hazardous sites - if clean soil is added to the waste).

A simplified diagram of the asbestos clean-up and site remediation at the Nsese railway station is shown in **Figure 3** and **Figure 4**. The procedure below applies to all the asbestos removal works specified. It is intended to be used as a framework and neither supersedes the requirements of the asbestos legislation nor any instruction to be issued by the Approved Inspection Authority during rehabilitation. It is solely directed to enhance compliance during the rehabilitation of sites assessed and quantified. If significant amounts of asbestos are found at the site, the following asbestos clean-up is proposed at the discretion of TFR:

» **Demarcation of Remedial Area**

Chevron Tape/ marking powder / red paint will be used to demarcate the areas for removal of contaminated soil. Wire fencing will be used for high risk areas. Warning & Safety signage will be placed at the areas within the railway station for clean-up. Skilled staff will be required as well as a site supervisor (an approved inspection authority (approved by the Department of Labour)) and will use the required personal protection equipment (PPE).

<sup>2</sup> Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

Warning/hazard signs will also be placed on the site. No member of the public will be allowed within 100m of the works area. All personnel involved with the asbestos remediation process will be subjected to medical surveillance as per the Transnet Freight Rail's Medical Code Of Practice as well as compliance to the requirements of the Asbestos Regulations under the Occupational Health and Safety Act, Act 85 of 1993.

» **Establish base camps, decontamination facility & temporary storage areas**

A mobile site office will be established and mobile ablution facilities will also be brought onto the site. Base camps will be installed near contamination sites and shall be of movable nature to ensure that these will be placed upwind of the work being carried out, thus minimising any chance of dust contamination caused by disturbance of asbestos fibre during the work process. Base camps will be constructed outside the area earmarked for remediation. Temporary storage areas will be established at the railway station.

» **Decontamination Facility for workers**

The asbestos workers coming into direct contact with asbestos waste will need to shower (using clean-water) to remove any asbestos fibres from their PPE – decontamination suits - on a daily basis (at least twice a day (i.e. before lunch breaks, and at the end of the working day and prior to leaving the site)). A fully functioning decontamination unit or trailer will be utilised at each site. The decontamination unit will be located within 100 feet (roughly 30 metres) of the property and as near the removal area as practical. The decontamination unit will consist of 3 chambers and will have a fully operational hot and cold running water system, adjustable at the shower tap, and a functioning water filtration unit that will filter the waste water down to 5 microns prior to being drummed for offsite disposal, or discharged into the contaminated soil loaded truck. Workers should wear a clean outer protective suit as they exit from the work area to the decontamination area. Workers should either wear double suits and remove the exterior suit or don a second, clean suit over the single suit within the work area prior to moving into the decontamination unit. The decontamination unit should be utilised by the workers each time they exit the work area. Workers may not wear street clothes under suits.

» **Manual surface removal and/or excavation of asbestos waste**

Prior to commencement of the clean-up, the asbestos contaminated site shall be sprayed with water to suppress the release of fibres. Stockpiled asbestos waste shall be continuously sprayed with a mist of water during the clean-up so as to effectively reduce and control the release of fibres. Damp asbestos should be manually lifted by the use of shovels, forks, or by hand and placed into 200 micro-plastic bags (double bagged and labelled) as per Asbestos Regulations. Clearing of asbestos at any site shall be completed entirely before moving onto a new working site as per asbestos regulations. Any remaining fibres or contaminated ballast or other material remaining shall be manually lifted and disposed of as per Asbestos Regulations. Cleaned areas will then then be marked off with green paint over the existing red paint marks, to ensure that no spill areas are missed. Asbestos contaminated sites shall be excavated as per the scope of work to be provided by the TFR Project Manager. The areas where soil has been removed will be backfilled with clean soil and compacted. The areas between the railway lines into the railway station can be backed filled with stone for active railway stations that utilise ballast.

» **Bagging**

Bags shall be of a size large enough to accommodate semi-intact asbestos bales without having to break them up where applicable. Intact bales (without bags) may be suitably punctured to promote water uptake. Where asbestos has spilled over the sides of embankments or cuttings this shall be removed, bagged and appropriately disposed of. Where applicable, intact or semi intact bags or bales should be picked up, double bagged and labelled for disposal, to prevent further spread of the spillage. Bags available on site shall be large enough to accommodate the intact or semi intact bales thereby avoiding unnecessary breaking up of bales to fit into smaller bags. Encapsulated or damp asbestos shall be placed into 200 micro-plastic bags (double bagged and labelled) as per Asbestos Regulations. A dedicated and demarcated temporary storage area for bags shall be provided within the remediation site.

» **Temporary storage of waste**

Temporary storage of waste shall be in accordance with the requirements of the NEM: Waste Act, No 59 of 2008. The area earmarked for stockpiling of excavated material shall be lined with impermeable material.

» **Handling and Transportation**

The handling and transportation of Asbestos contaminated waste shall be in accordance with SANS code 10228 and 10229 and Asbestos Regulations. All machinery involved in an asbestos remedial process will be jet-washed for asbestos contamination prior to leaving site.

» **Disposal**

Disposal of asbestos waste shall be at a licensed disposal site specifically designated for this purpose and in accordance with the requirements of NEM: Waste Act, No 59 of 2008 and Asbestos Regulations. The Asbestos Contractor shall furnish TFR with a safe disposal certificate as issued by the management of the Licensed Waste Disposal site.

» **Encapsulation**

Encapsulation will ensure that asbestos fibres are not emitted from sites. The same quantity of fill material will be used to replace the vacuum left by the excavation of contaminated material. All affected areas with a high social or worker risk (other than the clean-up workers) shall be encapsulated with an approved encapsulating agent that is capable of providing long term binding of asbestos fibres. This product shall be non-biodegradable and penetration of product into the asbestos substrate shall be approximately 2 to 3 millimetres.

In addition, all employees will wear protective clothing. Each asbestos worker will be provided and equipped with:

- o An approved unused disposable overall
- o Clean gum boots
- o Clean PVC gloves
- o New approved dust mask (FF2)

» **Air quality monitoring**

Asbestos air sampling will be conducted on a daily basis during clean-up activities by the Approved Inspection Authority (AIA). The results will be provided to the contractor on site

daily. The consolidated air sampling report will be provided to the contractor and TFR Risk Management on weekly basis. The AIA shall supply the regional office of the Department of Labour concerned with copies of all monitoring results and inspection reports, regularly as they are issued. When there is a visible dust or winds in excess of 20 knots, any asbestos remedial process will be stopped.

» **Establishment of Environmental Covenant Sites**

An Environmental Covenant is an administrative device that restricts activities of tenants and contractors on sites where some asbestos contaminated soil remains in place. It restricts land-uses that involves the digging of foundations or those that might result in the exposure of asbestos to the surface. The purpose of an Environmental Covenant is to limit potential future occupational and environmental liability for residual asbestos contaminated soil. Areas that are to be encapsulated with asbestos still underneath, shall be declared Environmental Covenant Areas and the future management will involve the following:

- o Placing of signage around the sites to notify business operators and to declare the sites as Environmental Covenant sites.
- o Sites will be capped with concrete or a layer of 300mm clean soil compatible with the surrounding soil type and free of alien infestation.
- o No digging or excavation within the demarcated area would be allowed in the future.
- o Environmental Covenants shall be registered in accordance with the National Environmental Management: Waste Act, 2008.

The declaration of remediated areas as covenant sites will be a separate process undertaken by TFR.

» **Completion Of Work And Closure Of Rehabilitation Process**

Before closure and hand-over, it must be certified that the work sites are deemed clear of asbestos as defined, prior to AIA final inspection. Decontamination of the marshalling yards or spillage on open lines shall continue until a close visual inspection confirms that there are no signs of asbestos spillage nor asbestos fibres at each working site, and two static samples taken at least 48 hours after the completion of the clean confirm that less than 0.1 fibres per millilitre air are present. Clearing of asbestos at any specific location will be deemed complete only once the Approved Inspection Authority has issued a written certification to this effect. As a first step in the approval process, the TFR Environmental Manager must ensure that the Clean-up terms of reference have been met by both the contractor and the Approved Inspection Authority. In all instances, completion of work and clearing of asbestos shall be deemed to have occurred only when random sampling within 48 hours by the AIA at cleared sites shall confirm that no work site is capable of releasing fibres contrary to the legal limit of 0.1 fibres per ml of air.

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

*“Alternatives,”* in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to -

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity;

- (e) The operational aspects of the activity; and
- (f) The option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both are appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent

Paragraphs 3 – 13 below should be completed for each alternative.

The assessment of technology alternatives is limited due to asbestos being a hazardous substance; however the risk assessment report identified various options for remediation, and thereafter determined the preferred remediation options (removal and disposal) for the railway station is details in Section 1 of this report.

The Risk assessment report prepared by CSS (2010) explored remediation options. Based on this process, the best-suited remediation option for the railway station was determined by CSS and will be adopted by TFR. The following remediation options were considered (CSS, 2010):

» **Option A - Removal**

The removal of friable asbestos material in South Africa is subject to a variety of regulations, including the Occupational Health and Safety Act, 1993, the Environment Conservation Act, 1989, the National Environmental Management Act, 1998 and the National Environmental Management: Air Quality Act, 2004. Removal involves a licenced Asbestos Contractor excavating (either by hand or mechanically) the asbestos containing waste material down to a depth sufficient to remove all of the identified waste materials and contaminated soil, then placing it into airtight containers and disposing of the material as asbestos waste in accordance with the Environment Conservation Act (ECA). The excavated area would then be covered with clean fill. Under the ECA, asbestos waste is defined as clause 6 Hazardous Waste, with a Hazard Rating of 1 (Extreme Hazard), (DWA). It is permitted for disposal with General Waste within a permitted landfill with a recommended ratio of 1 to 9 (volume to volume). All waste with a Hazard Rating of 1 to 2 is to be disposed at a permitted H:H landfill site. The H:H designation is the most stringent of the landfill classifications as these sites can accept all four hazard ratings. Their design, construction and operational standards are higher than other hazardous or general waste landfill classifications.

Removal of asbestos-containing material, including soil, is very dangerous work. Appropriate caution must be taken to minimise the potential for release of fibres into the environment, and to causing exposure to the removal contractor employees or to persons in the vicinity of the work being conducted. Appropriate barriers, work procedures and personal protective equipment (PPE) must be employed throughout the duration of work in order to minimise the risk.

» **Option B - Encapsulation**

The encapsulation of asbestos material in particular asbestos waste and soil is considered an appropriate means of minimising risk where it can be shown that removal is not warranted or technically feasible. As an example, in the case of asbestos, large quantities of asbestos waste that is in poor condition but cannot be removed without considerable risk of fibre release, encapsulation may be the most appropriate method. A new layer of soil or better, an impervious material, designed to minimise the potential for fibre release is considered encapsulation. This method is not recommended in areas prone to erosion through wind or water, or mechanical abrasion from continuous use or where it is likely that the material will be disturbed through subsequent digging or excavations. Also, in South Africa, termites have been shown to burrow into soil covers bringing asbestos contamination to the surface. For this reason, and others, encapsulation in-situ is only recommended in instances where the surface is hardened with concrete or macadam and the future land use can be more closely controlled. In addition, signage and legal restrictions are necessary to permanently protect the area from future disturbances.

The drawback to this particular form of remediation is that the asbestos remains in place. Whilst in many cases this is a less expensive option as compared to full removal and offsite disposal, it does not completely remove the risk of re-exposure, in particular if the material is sealed from view and no precautions are taken to warn or educate the occupants as to the potential risk. There are numerous documented examples of individuals unknowingly exposing themselves and others to asbestos materials that were previously encapsulated.

» **Option C - Maintenance and Inspection**

Where material is found to be in good condition, non-friable, or is otherwise not deemed to be a threat for fibre release, maintenance and routine inspection is appropriate. This entails a periodic inspection of the material to ensure that it has not suffered any damage, is still in good condition (adequately sealed, painted or contained), and that no changes to the vicinity have occurred that would introduce additional risk. If these conditions can be maintained, then the need for removal or other abatement procedures is removed. However, the material should be adequately identified and labelled as containing asbestos to minimise the risk of unintentional disturbances by contractors, building workers, maintenance personnel, or others.

For the purpose of this assessment, Maintenance and Inspection is not a recommended option (as a remediation method) as the waste material identified at railway station sites investigated is not in an acceptable condition (non-friable) and presents an immediate threat to public health and safety. Only removal and encapsulation are being considered for this site.

The asbestos specialists CSS **recommended that Option A – Removal of the asbestos waste and disposal to a hazardous landfill is the best-suited option** for the railway station clean-up process proposed by TFR. Therefore this is the preferred option and Option A is the only feasible option assessed in this Basic Assessment Report.

### 3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. List alternative sites, if applicable.

**Note:**

**There are not alternative sites, as the asbestos clean-up will take place at the contaminated areas at the Nsese railway station which needs remediation.**

	Latitude (S):		Longitude (E):	
Nsese Railway Station	28°	43.621'	32°	0.535'

**In the case of linear activities:**

**Alternative:**

**Latitude (S):**

**Longitude (E):**

Alternative S1 (preferred or only route alternative)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


Alternative S2 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


Alternative S3 (if any)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity


For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250m along the route for each alternative alignment.

#### 4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

**Note:**

The physical size of the Railway Station itself is provided below, as the potential areas containing asbestos contaminated soil are dispersed within the railway station footprint.

**Size of the activity:**

Nsese Railway Station

~4 712 000 m<sup>2</sup>

Or, for linear activities:

Alternative:

Alternative A1

m

Alternative A2 (if any)

m

Alternative A3 (if any)

m

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

**Size of the site/servitude:**

**Alternative:**

Alternative A1

m<sup>2</sup>

Alternative A2 (if any)

m<sup>2</sup>

Alternative A3 (if any)

m<sup>2</sup>

#### 5. SITE ACCESS

Does ready access to the site exist?

YES ✓

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

## 6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as **Appendix A** to this document.

The site or route plans must indicate the following:

- 6.1 The scale of the plan which must be at least a scale of 1:500;
- 6.2 The property boundaries and numbers of all the properties within 50 metres of the site;
- 6.3 The current land use as well as the land use zoning of each of the properties adjoining the site or sites (*the current land-use of the site is industrial*);
- 6.4 The exact position of each element of the application as well as any other structures on the site;
- 6.5 The position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 All trees and shrubs taller than 1.8 metres;
- 6.7 Walls and fencing including details of the height and construction material;
- 6.8 Servitudes indicating the purpose of the servitude;
- 6.9 Sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
  - Rivers;
  - The 1:100 year flood line (where available or where it is required by DWA);
  - Ridges;
  - Cultural and historical features;
  - Areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 For gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 The positions from where photographs of the site were taken.

**A detailed site plan of the Nsese railway station has been included as part of this report as Appendix A. The positions from where the site photographs were taken are included in Appendix B, together with the site photographs.**

## 7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

**Colour photographs taken in the eight major compass directions with a description of each photograph are attached within Appendix B.**

## 8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

**Not Applicable to the asbestos clean-up activities.**

## 9. ACTIVITY MOTIVATION

### 9(a) Socio-economic value of the activity



What is the expected capital value of the activity on completion?	This information is not available currently, as the asbestos clean-up will go out for tender, where financial proposals will have to be made to TFR.	
What is the expected yearly income that will be generated by or as a result of the activity?	Not applicable – this is a waste clean-up activity.	
Will the activity contribute to service infrastructure?	[REDACTED]	<b>NO ✓</b>
Is the activity a public amenity?		<b>NO ✓</b>
How many new employment opportunities will be created in the development phase of the activity?	A contractor will be appointed for the clean-up process. A scope of work will be developed which will inform the number of people required for the work. An independent inspection authority who will develop work plans for the clean-up will also be appointed. There are no anticipated permanent employment opportunities, as the remediation activities are of a short-term, temporary nature.	
What is the expected value of the employment opportunities during the development phase?	Undetermined at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	This will be in line with TFR's procurement procedure.	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Not applicable	
What is the expected current value of the employment opportunities during the first 10 years?	Not applicable	


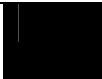

What percentage of this will accrue to previously disadvantaged individuals?	Not applicable
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**9(b) Need and desirability of the activity**

Motivate and explain the need and desirability of the activity (including demand for the activity):

Asbestos waste is defined as a Class 6 Hazardous Waste, with a Hazard Rating of 1 (Extreme Hazard), in terms of the Minimum Requirements for the Classification, Handling and Disposal of Hazardous Waste (Department of Water Affairs, 1998). It is an exposure to asbestos fibres that presents the health risk to people. Many studies have described a link between occupational exposure to various types of asbestos and lung cancer and associated diseases. Asbestos has therefore been designated as a known human carcinogen and hazardous substance. This carcinogenic activity is directly linked to the air pathway and ingestion of the fibres when swallowed. The potential presence of asbestos due to the transportation of asbestos products by TFR at the Nsese Railway Station in KwaZulu-Natal poses a long term environmental and human health risk to people who operate on the site, and therefore the need and urgency to undertake the clean-up and eliminate any further environmental risks at contaminated areas within the railway station is imperative.

<b>NEED:</b>			
1.	Was the relevant provincial planning department involved in the application?		NO ✓
2.	Does the proposed land use fall within the relevant provincial planning framework?		NO ✓
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation:	The asbestos clean-up is regulated by the Asbestos Regulations of 2001. The provincial planning department's role in the clean-up process itself is not applicable. No changes in land-use will occur, however when the sites are remediated and declared as "environmental convent sites" then no future land-use will be permitted on the site – this however does not require re-zoning of the land-use.	

<b>DESIRABILITY:</b>			
1.	Does the proposed land use / development fit the surrounding area?	Not Applicable	
2.	Does the proposed land use / development conform to the relevant structure plans, SDF, and planning visions for the area?	Not Applicable	
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES ✓	
4.	If the answer to any of the questions 1 - 3 was NO, please provide further motivation / explanation:		
5.	Will the proposed land use / development impact on the sense of place?		NO ✓
6.	Will the proposed land use / development set a precedent?		NO ✓

7.	Will any person's rights be affected by the proposed land use / development?		<b>NO</b> ✓
8.	Will the proposed land use / development compromise the "urban edge"?		<b>NO</b> ✓
9.	If the answer to any of the question 5 - 8 was YES, please provide further motivation / explanation.		

<b>BENEFITS:</b>			
1.	Will the land use / development have any benefits for society in general?		<b>NO</b> ✓
2.	Explain: The asbestos clean-up is not a development, it is in response to soil and air contamination due to the transportation of asbestos, therefore the asbestos clean-up will have no benefits to society in general.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	<b>YES</b> ✓	
4.	Explain: By removing the asbestos contaminated soil, further human health risk to TFR employees and nearby communities will be eliminated.		

## 10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
<b>Legislation</b>			
National Environmental Management Act (Act No 107 of 1998)	National Department of Environmental Affairs	1998	» Principle 4 (a) of NEMA Principles provides for Sustainable development. It requires the consideration of all relevant factors including the following: <ul style="list-style-type: none"> <li>○ That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>○ that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;</li> <li>○ that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and</li> </ul>

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
			<p>otherwise disposed of in a responsible manner.</p> <ul style="list-style-type: none"> <li>» Principle 4 (p) of NEMA (Polluter- Pay-Principle) advocates that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.</li> <li>» Section 28 of NEMA (Duty of Care) states that "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or insofar as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."</li> </ul>
<p>National Environmental Management: Waste Act (Act No 59 of 2008)</p>	<p>National Department of Environmental Affairs</p>	<p>2008</p>	<ul style="list-style-type: none"> <li>» The Act reforms the law regulating waste management in order to protect health, and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecological sustainable environment, to provide for specific waste management measures, to provide for the control of waste management activities, to provide for the remediation of contaminated land and to provide for the national waste management system.</li> <li>» The Act covers a wide range of subjects that include storage, collection, transportation, treatment, re-use and recycling, processing and the disposal of waste.</li> <li>» The asbestos clean-up triggers the need for a waste licence in terms of Schedule A, Activity 12 - "The remediation of contaminated land". In this regard, the EIA Regulations of June 2010 applies (i.e. Basic Assessment process and report).</li> </ul>

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
EIA Regulations, published under Chapter 5 of the NEMA (GNR R545, GNR 546 in Government Gazette 33306 of 18 June 2010)	National Department of Environmental Affairs	2010	<ul style="list-style-type: none"> <li>» Specifies the process to be followed to conduct a Basic environmental assessment.</li> <li>» Specifies the content of the basic assessment report.</li> <li>» Requires public consultation with interested and affected parties.</li> <li>» Requires independent environmental assessment by an EAP.</li> </ul>
Environment Conservation Act (Act No 73 of 1989): Regulations for the prohibition of the use, Manufacturing, import, and Export of Asbestos and Asbestos containing material.	National Department of Environmental Affairs	1989	<p>Asbestos Regulations were promulgated in terms of Government Notice No. 878 under Section 20 of the Environment Conservation Act, 1989.</p> <ul style="list-style-type: none"> <li>» Schedule 2 (1) of the regulations states that no person may acquire, process or repackage asbestos; manufacture asbestos containing material, or distribute asbestos-containing material (i.e. the banning of use of asbestos in South Africa).</li> <li>» Schedule 2 (2) of the regulations states that no person may import asbestos or asbestos containing material into the republic or export asbestos containing material from the Republic.</li> <li>» Schedule 3 states that the provisions of Schedule 2 shall not apply to persons importing asbestos or asbestos containing material which is in transit from a state outside South Africa to another State outside the South Africa, unless further repackaging or processing of the asbestos or asbestos containing material is performed in the South Africa.</li> </ul>
Occupational Health and Safety Act, 1993: Asbestos Regulations, 2001	Department of Labour	2001	<ul style="list-style-type: none"> <li>» Asbestos Regulations 2001 promulgated in terms of the Occupational Health and Safety Act, 1993 applies to every employer or self-employed person who carries out work at a work place that may expose any person to asbestos dust at that workplace.</li> <li>» Regulation 4 states that no employer or self-employed person shall require or permit any person to work in an environment in which he or she would be exposed to asbestos in excess of the prescribed Occupation Exposure Limit (OEL) for airborne asbestos is 0.2 regulated fibres per cubic centimetre of air or</li> </ul>

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
			<p>0.2 f/ml, averaged over a 4-hour working period, measured in accordance with MDHS 39/4.</p> <ul style="list-style-type: none"> <li>» Regulation 21 requires any person who intends to carry out “demolition work” involving asbestos, such as cleaning –up spilt raw asbestos, must be a Registered Asbestos Contractor, registered with the Department of Labour. In addition, asbestos contractors must ensure that that a Plan of Work is submitted to an Approved Asbestos Inspection Authority for approval before commencing with the demolition work. In TFR’s case, the handling of asbestos contaminated soil.</li> <li>» Regulations 7 – 13 require that an assessment for potential exposure, air monitoring is undertaken, medical surveillance of employees is undertaken, a respiratory zone is demarcated and that exposure to asbestos is controlled.</li> <li>» Regulation 13 (1) states that an employer shall ensure that the release of asbestos dust into any environment complies with the provisions of the Atmospheric Pollution Prevention Act, 1989 (Act. No. 73 of 1989), the National Water Act, 1998 (Act No. 36 of 1998) and the National Environmental Management Act, 1998 (Act. No.107 of 1998)</li> <li>» Regulation 14 (1) (a) and (b) regulate asbestos that forms part of structures of workplace, building, plant or premises. These regulations require that steps be undertaken to identify the location of asbestos in workplace areas and make and maintain a written inventory of the location of asbestos.</li> <li>» 200 micron plastic bags (double bagged and labelled) to be used for asbestos removal.</li> </ul>
Hazardous Substances Act, 1973 (Act No. 15 of 1973)	Department of Health	1973	The object of the Hazardous Substances Act 15 of 1973 (“the Hazardous Substances Act”) is to provide for the control of substances which may cause injury or ill health to or death of human beings by reason of the toxic, corrosive, irritant, strongly sensitising or flammable nature or a

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
			generation of pressure thereby in certain circumstances, and for the control of certain electronic products.
South African National Standard 10288: 2010	SABS	2010	Class 6: Toxic and infectious substances.
South African National Standard: The identification and classification of dangerous goods for transport	SABS	2010	Section 12 of this standard deals with the transportation of toxic and infectious substances.
South African National Standard: Transport of dangerous goods — Packaging and large packaging for road and rail transport	SABS	2010	This standard specifies the requirement of the packing of dangerous goods, in the case of asbestos waste from the clean-up.
Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste	DWA	, 1998	This document sets out a systematic framework for identifying a Hazardous Waste and classifying it in accordance with the degree of risk that it poses. From the classification, requirements are set that will ensure Hazardous Waste is treated and safely disposed of. These requirements represent the lowest acceptable standard and are therefore termed Minimum Requirements.
<b>Guidelines</b>			
Companion to the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2010 (Draft Guideline; DEA, 2010)	National Department of Environmental Affairs	Draft: 2010	Provides guidelines on the application of the EIA Regulations of June 2010.
Public Participation	National	2010	Provides guidelines to undertake public

Title of legislation, policy or guideline	Administering authority	Date	Relevance to the Asbestos Clean-up
in the EIA Process	Department of Environmental Affairs		consultation in EIA / basic assessment processes in terms of the EIA Regulations of June 2010.
Guide: Asbestos Regulations 2001	Department of Labour	2003	Provides guidance on the application and interpretation of the Asbestos Regulations of 2001.
Framework for the Management of Contaminated Land	National Department of Environmental Affairs	2010	» This Framework was compiled in support of Part 8 of the National Environmental Management: Waste Act (Act 59 of 2008) in order to provide norms and standards for the practical implementation of remediation activities in compliance with Section 7 (2) (d) of the Waste Act (2008) for 'the remediation of contaminated land'. » Site Remediation Plan required.

## 11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

### 11(a) Solid waste management

*Will the activity produce solid construction waste during the construction/initiation phase?*

*If yes, what estimated quantity will be produced per month?*

YES ✓	
	During the asbestos clean-up, mixed asbestos waste (hazardous waste) will be removed from the railway station. Quantities cannot be estimated at this stage since this site was designated as a NAD site in the Risk Assessment Study.

*How will the construction solid waste be disposed of (describe)?*

**Note that the asbestos waste from the clean-up is a once-off activity and does not involve any construction, therefore construction or operational waste per se is not applicable.** No asbestos waste material has been identified via visual inspections and soil sampling undertaken as part of the Asbestos Risk Assessment study (Conservation Support Services, 2010). Should Asbestos be detected on site, the contaminated soil will be removed and disposed of at the nearest H: H Landfill Sites (High hazardous landfill sites) or H:h Landfill Sites (Low hazardous sites - if clean soil is added to the waste). TFR are still investigating a suitable landfill to dispose of any waste (should remediation take place on this site).

Where will the construction solid waste be disposed of (describe)?

--

Will the activity produce solid waste during its operational phase?

YES	NO
-----	----

If yes, what estimated quantity will be produced per month?

	m <sup>3</sup>
--	----------------

How will the solid waste be disposed of (describe)?

--

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

--

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

--	--

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

### 11(b) Liquid effluent

Liquid effluent in the form of wastewater will be produced from the asbestos clean-up itself, as the asbestos workers coming into direct contact with asbestos waste will need to shower (using clean-water) to remove any asbestos fibres from their PPE – decontamination suits - on a daily basis (at least twice a day (i.e. before lunch breaks, and at the end of the working day and prior to leaving the site)). A decontamination unit or trailer will be utilised at each site. Water for the unit will be sourced from TFR's existing municipal supply at the railway station. The decontamination unit will be located within 100 feet (roughly 30 metres) of the property and as near to the removal area as practical. The decontamination unit will consist of 3 chambers, will have a have fully operational hot and cold running water system, adjustable at the shower tap, and a functioning water filtration unit that will filter the waste water down to 5 microns prior to being drummed for offsite disposal, or discharged into contaminated soil loaded trucks. The amount of wastewater to be generated (only during the clean-up (once-off activity) from the decontamination unit / trailer) cannot be determined at this stage, as the number of employees onsite has not been determined, and will be determined when the project goes out for tender. The asbestos contractor will make financial provisions for the disposal of the wastewater to a hazardous waste landfill site.

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

	NO ✓
--	---------

If yes, what estimated quantity will be produced per month?

m <sup>3</sup>
<b>NO</b> ✓

Will the activity produce any effluent that will be treated and/or disposed of on-site?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

<b>YES</b> ✓
-----------------

If yes, provide the particulars of the facility:

A suitable hazardous landfill facility closest to the site will be used for the disposal of the wastewater. (This is still under investigation by TFR).

Details are not available at this time and will be included in the final basic assessment report to DEA.

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Re-use or recycling of wastewater from the decontamination facility will not be undertaken, as it may contain asbestos fibres (hazardous material). Measures to avoid environmental contamination from the decontamination facility include the following:

- » The decontamination unit will be located as near to the removal area as practical.
- » The decontamination unit will have a fully operational hot and cold running water system, adjustable at the shower tap, and a functioning water filtration unit that will filter the waste water down to 5 microns prior to being drummed for offsite disposal, or discharged into contaminated soil loaded trucks.
- » Workers to wear a clean outer protective suit as they exit from the work area to the decontamination area. Workers should either wear double suits and remove the exterior suit or don a second, clean suit over the single suit within the work area prior to moving into the decontamination unit.
- » The decontamination unit should be utilised by the workers each time they exit the work area. Workers may not wear street clothes under suits.
- » The drums containing the wastewater should be checked on a regular basis (daily) to ensure that there are no leaks and when the containers are filled to capacity.
- » The drums containing the wastewater must be placed on an impervious surface / bunded area (to avoid spillage directly onto the soil / surfaces) within a demarcated area on site.

**11(c) Emissions into the atmosphere**

During the asbestos clean-up asbestos fibres could potentially be released into the air due to disturbance of soil containing asbestos fibres. The Asbestos Regulations 2001 promulgated in terms of Occupational Health & Safety Act, 1993 applies to every employer or self-employed person who carries out work at their workplace that may be exposed to dust containing asbestos. The asbestos exposure limit is currently set at 0,2 fibres per millilitre of air averaged over a four-hour working period. TFR will introduce a formal air quality monitoring programme to establish the airborne concentration of asbestos in a particular work place when there is a possibility that workers could be exposed to airborne asbestos in excess of the occupational exposure limit. An Approved Inspection Authority (AIA) shall supply the regional office of the Department of Labour concerned with copies of all monitoring results and inspection reports, regularly as they are issued.

Will the activity release emissions into the atmosphere?

YES ✓	<input type="checkbox"/>
YES ✓	<input type="checkbox"/>

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

**11(d) Generation of noise**

Will the activity generate noise?

<input type="checkbox"/>	NO ✓
--------------------------	---------

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

The asbestos clean-up will not generate any significant noise. Limited noise will be generated during the clean-up from the staff, motor vehicles and excavators (if used instead shovels). This noise level will however be insignificant.

**12. WATER USE**

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(s)

Municipal ✓	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water
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--	--	--	--	--	--

**Note:**

Prior to commencement of the clean-up, the asbestos contaminated sites shall be sprayed with water to suppress the release of fibres. Stockpiled asbestos waste shall be continuously sprayed with a mist of water during the clean-up so as to effectively reduce and control the release of fibres. The water will be sourced from Transnet's existing supply of water from the municipality available at the railway station.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use permit from the Department of Water Affairs?

	NO ✓

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

### 13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The asbestos clean-up will not require electricity.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Not applicable

**SECTION B: SITE/AREA/PROPERTY DESCRIPTION**

Important notes:

For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

1. Paragraphs 1 - 6 below must be completed for each alternative.
2. Has a specialist been consulted to assist with the completion of this section?

<b>YES</b> ✓	
-----------------	--

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed:

All specialist reports must be contained in **Appendix D**.

**Appendix D contains the following specialist input as well as the declarations signed by each specialist:**

- » **Appendix D1:** Input from Occupational Hygienist
- » **Appendix D2:** Input from Soil Scientist

Property description/physical address:

Property description/physical address:	Nsesse Railway Station, Richards Bay ,KwaZulu-Natal
--	---

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

**See Appendix G3 for the property description (Farm name, portion and 21 digit SG codes) for the railway station**

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

Current land-use zoning:	Industrial (Railway Station)
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In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to , to this application.

- Is a change of land-use or a consent use application required?  
 Must a building plan be submitted to the local authority?

	<b>NO</b> ✓
	<b>NO</b> ✓

Locality map: An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- An indication of the project site position as well as the positions of the alternative sites, if any;
- Road access from all major roads in the area;
- Road names or numbers of all major roads as well as the roads that provide access to the site(s);
- All roads within a 1km radius of the site or alternative sites; and
- A north arrow;
- A legend; and
- Locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

A Locality map is included in **Appendix A**. GPS co-ordinates are contained below.

## 1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

### Nsese Railway Station

<b>Flat</b>	1:50 –	1:20 –	1:15 –	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
✓	1:20	1:15	1:10			

## 2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain**
- 2.7 Undulating plain / low hills
- 2.8 Dune
- 2.9 Seafront

### 3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

**Nsese  
 Railway  
 Station**

Shallow water table (less than 1.5m deep).	<b>YES</b> ✓	<b>NO</b>
Dolomite, sinkhole, or doline areas.	<b>YES</b>	<b>NO</b> ✓
Seasonally wet soils (often close to water bodies).	<b>YES</b> ✓	<b>NO</b>
Unstable rocky slopes or steep slopes with loose soil.	<b>YES</b> ✓	<b>NO</b>
Dispersive soils (soils that dissolve in water).	<b>YES</b>	<b>NO</b> ✓
Soils with high clay content (clay fraction more than 40%).	<b>YES</b>	<b>NO</b> ✓
Any other unstable soil or geological feature.	<b>YES</b>	<b>NO</b> ✓
An area sensitive to erosion.		<b>NO</b> ✓

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

#### 4. GROUNDCOVER

Indicate the types of groundcover present on the site:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	Gardens
Sport field	Cultivated land	Paved surface	<input checked="" type="checkbox"/> <b>Building or other structure</b> (The soils of the Nsesse yard have been transformed to such an extent that naturally occurring soils are only encountered in isolated spots)	Bare soil

If any of the boxes marked with an “E” is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn’t have the necessary expertise.

*A specialist has not been consulted due to the transformed nature of the railway station and its location within urban areas.*

#### 5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500 m radius of the site and give description of how this influences the application or may be impacted upon by the application:

**The area surrounding the Nsesse railway station is used for timber and sugar cane production**

- 5.1 Natural area
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential <sup>A</sup>
- 5.6 Retail commercial and warehousing
- 5.7 Light industrial
- 5.8 Medium industrial <sup>AN</sup>
- 5.9 Heavy industrial <sup>AN</sup>
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound

- 5.13 Spoil heap or slimes dam <sup>A</sup>
- 5.14 Quarry, sand, or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant <sup>A</sup>
- 5.22 Train station or shunting yard <sup>N</sup>**
- 5.23 Railway line <sup>N</sup>**
- 5.24 Major road (4 lanes or more) <sup>N</sup>
- 5.25 Airport <sup>N</sup>
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station <sup>H</sup>
- 5.31 Landfill or waste treatment site
- 5.32 Plantation**
- 5.33 Agriculture**
- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

The land uses and/or prominent features at each of the railway stations are shown in the illustrations below.

If any of the boxes marked with an "<sup>N</sup>" are ticked, how will this impact / be impacted upon by the proposed activity?

- » **Railway Stations <sup>N</sup>** – Parts of the Nseese Railway station may be impacted upon during the remediation activities, as these areas will have to be shut-down and no shunting or use of the area will be permitted during the clean-up. However, the areas not affected by the clean-up will be operational.
- » **Railway line <sup>N</sup>** – Each railway station is connected to railway lines and there are areas between the railway lines within the station that may need to be temporarily shut down during the clean-up.

If any of the boxes marked with an "<sup>AN</sup>" are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain:

If YES, specify:

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain:

If YES, specify:

## 6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including

YES	NO ✓
-----	------

Archaeological or palaeontological sites, on or close (within 20m) to the site?

NO ✓
------

If YES, explain:

--

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

--

Will any building or structure older than 60 years be affected in any way?

NO ✓
------

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

NO ✓
------

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

## **SECTION C: PUBLIC PARTICIPATION**

### **1. ADVERTISEMENTS AND NOTICES**

- » Site notices (English and Afrikaans) were placed at the Nsese railway station Car Park area for maximum exposure to the public. Notices were also placed on notice boards at site offices. Site notices and Background Information documents were also left at the Aquadene School; uMhlathuze Local Municipality; and Nseleni Hospital.
- » A stakeholder letter was distributed to the database of identified and registered parties. This included relevant Organs of State, key stakeholders and neighbouring occupants relevant to the proposed project. The stakeholder letters served to announce the proposed project and invite comment on the Draft Basic Assessment Report.
- » An advert was placed in the following newspaper to advertise the Basic Assessment process: Zululand Observer (publication date – 01 September 2011)
- » An advert announcing the availability of the draft BA report for public review and open day have been placed in the following newspaper: Zululand Observer (publication date – 06 October 2011)

Refer to **Appendix E** for proof of placement of the advertisements, site notice, and letters to stakeholders and organs of state.

### **2. CONTENT OF ADVERTISEMENTS AND NOTICES**

The contents of the notices and adverts were in accordance with the following requirements:

- (a) Indicate the details of the application which is subjected to public participation; and
- (b) State –
  - (i) That the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
  - (ii) Whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental Authorisation;
  - (iii) The nature and location of the activity to which the application relates;
  - (iv) Where further information on the application or activity can be obtained; and
  - (iv) The manner in which and the person to whom representations in respect of the application may be made.

### 3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any Gazette that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations. Advertisements and notices must make provision for all alternatives.

The proposed asbestos clean-up is unlikely to result in any impacts that extend beyond the local municipal area. Therefore, only local newspaper was utilised within the Basic Assessment process. Two rounds of newspaper adverts were placed. The first round of the newspaper advert was placed which served as notification of the BA process and waste licence application. The advertisement placed detailed the Basic Assessment process, the nature, and location of the proposed project, where further information on the proposed activity could be obtained and the manner in which representations on the application could be made.

A second round of the newspaper advert was placed in the same newspaper on 7 October 2011 to advertise the public open days and availability of the draft Basic Assessment Report for Public review at public libraries. Copies of the advertisements and proof of placements are included within Appendix E.

### 4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

The following public consultation measures were deemed to be appropriate for this proposed project:

- » Two rounds of newspaper adverts were placed as detailed above.
- » Site notices were placed on-site and in public places.
- » A Public Open Day was held as an information sharing session for any members of the public to attend as follows:
  - o Date: 25 October 2011
  - o Time: 12:00 – 17h00
  - o Venue: Imbizo Conference Centre, Empangeni
- » Neighbouring landowners and occupiers of land were identified and provided with written

notice of the clean-up project (stakeholder letter) and a background Information Document (BID) which provided more details of the proposed activities.

- » A background information document was circulated in and around the local towns and public places.
- » A letter was circulated to all relevant Organs of State to inform them of the proposed asbestos clean-up (refer to section 6 below).
- » A meeting request was sent to the uMhlathuze Local Municipality, but the meeting was declined as the municipality did not feel the need to meet and discuss the project, as they feel it is not a contentious project (Refer to Appendix E- Record of events).

The above- mentioned mechanisms including site notices and newspaper advertisements were deemed appropriate due to the nature of the proposed asbestos clean-up (a remedial activity, short-term in nature, and one which is not a construction project and expected to have overall positive impacts on the environment).

## 5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

No issues, and/or concerns have been raised thus far in the process. All comments received during the public review period of the draft Basic Assessment Report, as well as responses provided was captured and recorded within the Comments and Response Report and attached to this Final Basic Assessment Report. (Refer to Appendix E for Comments and response report).

## 6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

A list of the relevant organs of state for the asbestos clean-up is attached to Appendix E4. Authorities were informed of the Basic Assessment process through the submission of a stakeholder letter and background information document including the following organs of state:

- » National/ Provincial Authorities:
  - Department of Agriculture, Environmental Affairs and rural Development (HOD)
  - Department of Economic Development and Tourism (HOD)
  - Department of Transport, Community Safety & Liaison (HOD)

- Department of Health (HOD)
  - Department of Co-operative Governance and Traditional Affairs (HOD)
  - Department of Public Works (HOD)
  - Department of Water Affairs (DWA)
  - Department of Water Affairs (DWA)
  - Amafa aKwazulu Natal (Heritage Kwazulu natal)
  - South African National Roads Agency
  - Department of Agriculture, Forestry and Fisheries (Acting Chief Director - Stakeholder relations and communications)
  - Department of Water Affairs (Acting Chief Director)
  - Department of Labour (Unit Manager)
- » Local Authorities
- Uthungulu District Municipality (Municipal Manager)
  - uMhlathuze Local Municipality (Municipal Manager)
  - uMhlathuze Local Municipality (Ward Councillor)
  - Umhlathuze Municipality: Senior Town Planner: Environment
  - uThungulu District Municipality: Air Quality Officer
  - uThungulu District Municipality (Environment)
  - Umhlathuze Municipality: Environmental Health Dept. (Air)
  - Umhlathuze Municipality: Environmental Health Dept. (Air)
  - Umhlathuze Municipality: Environmental Health Dept. (Water)
  - Umhlathuze Municipality: Environmental Health Dept.

List of authorities from whom comments have been received:

To date no comments have been received from any organs of state on the proposed project. Refer to Appendix E5 for proof of notification to organs of State on the project. The uThungulu District Municipality confirmed via email that they would like to be registered on the project Database, and telephonically declined the focus group meeting. (Refer to Appendix E All comments received, as well as responses provided have been captured and recorded within this Final Basic Assessment Report.

## 7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable.

Adjacent landowners or occupiers of land, located directly next to the railway station were identified and informed as part of the basic assessment process. These included owners and/or occupiers of retail shops, commercial buildings, light industrial complexes and, in some cases, low

density residential areas. Refer to Appendix E4 for a list of I&APs which have been identified.

Has any comment been received from stakeholders?

Yes

✓

NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

No official comments have been received from any stakeholders on the proposed project. Refer to Appendix E5 for proof of notification to stakeholders on the project. All comments received, as well as responses provided have been captured and recorded within this Final Basic Assessment Report. General comments received from Focus Group Meetings and the Open Day included the following:

1. Interest to register as an I&AP.
2. Positive response towards the project.
3. Landfills.
- 4.

## SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should consider applicable official guidelines. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

In line with the EIA Regulations of June 2010, the following methodology was used in assessing impacts related to the proposed asbestos clean-up. All impacts are assessed according to the following criteria:

- » The **nature**, a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high).
- » The **duration**, wherein it is indicated whether:
  - \* The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* Medium-term (5–15 years) – assigned a score of 3;
  - \* Long term (> 15 years) - assigned a score of 4; or;
  - \* Permanent - assigned a score of 5.
- » The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment;
  - \* 2 is minor and will not result in an impact on processes;
  - \* 4 is low and will cause a slight impact on processes;
  - \* 6 is moderate and will result in processes continuing but in a modified way;
  - \* 8 is high (processes are altered to the extent that they temporarily cease); and
  - \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - \* Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - \* Assigned a score of 3 is probable (distinct possibility);
  - \* Assigned a score of 4 is highly probable (most likely); and
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- » The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- » The **status**, which is described as either positive, negative or neutral.
- » The degree to which the impact can be reversed.
- » The degree to which the impact may cause irreplaceable loss of resources.
- » The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S=(E+D+M)P$ ; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance** weightings for each potential impact are as follows:

- » < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > **60 points**: High (i.e. where the impact must have an influence on the decision process to develop in the area).

## 1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

To date no comments have been received from any I&APs on the proposed project. Refer to Appendix E5 for proof of notification to I&APs on the project. All comments received, as well as responses provided will be captured and recorded within the Final Basic Assessment Report.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

## 2. IMPACTS THAT MAY RESULT FROM THE PLANNING, DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING, AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

### Note:

**This basic environmental assessment has considered the impact of the asbestos clean-up on the receiving environment. It is not a retrospective impact assessment of what asbestos contamination has occurred on the site –which has already been adequately covered by the Risk Assessment undertaken by CSS (2008 - 2010). The remediation of**

**asbestos contaminated land will be a once-off activity and therefore planning, design, construction and operational phases are not applicable to the asbestos clean-up at the Nseese railway station in KwaZulu-Natal. The potential impacts from the asbestos clean-up (direct, indirect and / cumulative) are detailed below.**

**An assessment of the “no-go alternative” (i.e. the option for not undertaking the asbestos clean-up) is included in this assessment as a baseline assessment of current conditions, however the no-go option it is not preferred.**

**No location alternatives have been assessed for the proposed asbestos clean-up as these are not applicable (i.e. the asbestos contamination occurred at specific locations). The assessment of technology alternatives – i.e. different methods to undertake the clean-up was considered in the risk assessment report which had identified various options for remediation. Thereafter, the best-suited and preferred remediation options for high risk sites were developed by CSS and adopted by TFR, which are detailed in Section 1 on this report.**

## **2.1 The No-Go Option**

Asbestos is heat resistant and mostly impervious to chemical treatment. It has no odour and is not soluble in water. When asbestos fibres are airborne then it poses the main health risk to people operating at the railway station or in the surrounding areas (either by inhalation or ingestion of the fibres). **According to the soil sampling undertaken by CSS as part of the Risk Assessment study, the Nseese Railway Station is classified as a No Asbestos Detected “NAD” site. Furthermore no visible asbestos contamination and/or waste was observed during the site inspections undertaken by Savannah Environmental and the Specialists.**

It is however possible for Clumps of asbestos to be mixed within soil within the Nseese Railway yard (soil that has been handled many times) to a point where the asbestos has separated literally into millions of small fibres that are invisible to the naked eye. TFR has, therefore, identified the potential for asbestos to be present in the soil which may be released into the atmosphere from materials that may be present on the site, including material buried at insufficient depths, as well as wind erosion, weathering and/or disturbance, for example by heavy vehicle movement or construction work. They have therefore identified the need to obtain a waste license which would be applicable in the event that remediation of this site is required in the future.

Asbestos concentrations as low as 0.001% (weight basis) in loose, coarse textured soil may give rise to measurable levels of airborne asbestos, if disturbed. In an attempt to provide some sense of risk, the following must be borne in mind: A single asbestos bundle the size of a human hair through a microscope has the appearance of a large untwisted, steel cable i.e. made up of hundreds of smaller strands (fibres, in the case of asbestos). Asbestos fibres tend to fracture longitudinally (along their length) and if airborne, could release thousands of fibres into the air. These small diameter fibres (not visible to the human eye) and fibre-containing particles may remain suspended in the air for a long time and can be carried long distances by wind or water before settling.

Input from an asbestos specialist and occupational hygienist (Apex Environmental was obtained – See **Appendix D1**). The occupational hygienist took air monitoring samples during a site visit in August 2011, which revealed that current asbestos levels were Below the Detectable Limit (BDL) i.e. below 0.01 f/ml. This is the lowest level of detection for analysis by phase contrast microscopy (PCM) (MDHS 39/4). This result was largely expected since the Nsesse Railway Station is classified as a “NAD” site. However, Asbestos occur on site, and should that soil containing asbestos fibres be disturbed and asbestos fibres released into the atmosphere, the main health risks that the asbestos potentially pose to TFR employees and people located directly next to the sites include:

- » Asbestosis: Exposure to airborne asbestos fibres can cause pulmonary fibrosis. The lungs build up fibrotic scar tissue around asbestos fibres which causes difficulty in breathing, decrease blood flow to lungs which results in poor oxygen exchange, enlarged heart, a persistent dry cough and ultimately death.
- » Lung Cancer: A disease characterised by uncontrolled cell growth in tissues of the lung. If left untreated, this growth can spread beyond the lung in a process called metastasis into nearby tissue and, eventually, into other parts of the body.
- » Mesothelioma: This is a rare form of cancer that affects thin membranes which surround the lungs and other internal organs.
- » Cancer of pleura and peritoneum.
- » Cancer of bronchus.
- » Cancer of intestines.
- » Warts or corns: Dermal contact with asbestos can result in the formation of warts or corns.

Asbestos fibres are chemically inert. They do not evaporate, dissolve, burn or biodegrade in the environment. However, single fibres and clumps of fibres may be released in the air as dust as a result of wind erosion and other types of activities that generate dust. Once inhaled, fibres may be deposited and retained in the airways and lung tissue. Because asbestos fibres remain in the body, each exposure to asbestos increases the likelihood of developing an asbestos related disease. Many of these diseases caused by asbestos (asbestosis, mesothelioma, lung cancer) take between 15 and 40 years to be diagnosed.

The human respiratory system is therefore assumed to accumulate fibres linearly with concentration. For this reason alone, the cumulative nature of asbestos in the lungs be it in small doses over long periods of time or a single large dose over a few hours or days, the health risks posed to potentially exposed Transnet employees and contractors, should not be underestimated. The illnesses listed above are dependent on the degree and frequency of exposure by an individual. In addition, there is a long time period between initial exposure and the development of asbestos-related disease. The mining and use of asbestos in South Africa were banned in 2008 under the Environmental Conservation Act of 1989 due to the human-health effects listed above. The option for not implementing the asbestos clean-up is therefore not preferred from a legal and human-health perspective. A summary table of the impact (baseline conditions) that may continue to occur at the railway station, should the asbestos clean-up not take place (in the event that asbestos is detected on site), is provided below.

The illnesses listed above are dependent on the degree and frequency of exposure by an individual. In addition, there is a long time period between initial exposure and the development of asbestos-related disease. The mining and use of asbestos in South Africa were banned in 2008 under the Environmental Conservation Act of 1989 due to the human-health effects listed above.

The option for not implementing the asbestos clean-up is therefore not preferred from a legal and human-health perspective. A summary table of the impact (baseline conditions) that may continue to occur at the railway stations, should the asbestos clean-up not take place, is provided below.

<b>Nature:</b> <i>Negative effects of airborne asbestos fibres on human health (TFR employees who access the areas containing asbestos fibres) prior implementation of remediation measures.</i>	
	<b>Without mitigation</b>
<b>Extent</b>	Local (1)
<b>Duration</b>	Permanent (5)
<b>Magnitude</b>	High (8)
<b>Probability</b>	Improbable (2)
<b>Significance</b>	<b>Low (28)</b>
<b>Status (positive or negative)</b>	negative
<b>Reversibility</b>	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes (may result in illness and mortality of people)
<b>Can impacts be mitigated?</b>	Yes
<b>Mitigation:</b>	
(1) Undertake the asbestos clean-up to remove visible asbestos waste and contaminated soil as soon as any asbestos is detected.	
(2) If removal of the asbestos is not feasible, other options can be considered, such as encapsulation of the specific areas using an encapsulating agent.	
<b>Cumulative impacts:</b>	
Cumulative health impacts may result on TFR employees and people who operate at the Nseke railway station if asbestos found on site is not removed / encapsulated.	

## 2.2 Potential Impact on health of asbestos workers and TFR employees during the Clean-Up

Asbestos containing dust is a complex mixture of fibrous structures. Not only do single fibres vary in dimensions but also such fibres may be found combined with other fibres in the form of bundles, clusters, or matrices. These are known as asbestos structures that can be inhaled. The relationship between soil and air levels of asbestos fibres is therefore considered complex. The potential for asbestos fibres to become airborne depends on the type of work activities as well as natural activities such as wind, i.e. the potential for mechanical disruption of the soil by human and/or natural activities. The removal of asbestos and asbestos containing materials, including soil, is anticipated to be **high risk** work. Suitable precautionary measures must be implemented during asbestos removal or even the disturbance of asbestos contaminated soil in order to minimise the potential for the release of the fibres into the air, in line with the Asbestos Regulations of 2001.

Mitigation measures are essential to avoid exposure of the asbestos workers, TFR employees who operate at the railway station and members of the public that may use the railway stations or reside in close proximity (within 500 metres) to the sites, when the asbestos is being excavated by an excavator or manually using shovels and forks (the depth of soil to be excavated will be determined should any asbestos be detected, and would generally range between 4cm – 30cm). In the absence of mitigation measures, and if people (mainly employees conducting the

clean-up) inhale or ingest asbestos fibres while the asbestos clean-up is underway, the following negative human health effects may occur in the long term (note that it takes years before these effects could materialise and would be related to the level of exposure):

- » Asbestosis (note that asbestosis is incurable).
- » Lung Cancer (can be treated but however can also result in death).
- » Mesothelioma (can be treated but however can also result in death)
- » Cancer of bronchus, Cancer of intestines (can be treated but however can also result in death)
- » Warts or corns (Dermal) (can be treated)

A potential public health risk within 100metres of the areas of the asbestos clean-up, unless the recommended mitigation measures are implemented.

The impact table below summarises the potential impact on human health during the clean-up with and with-out mitigation / precautionary measures. TFR has adopted the recommended mitigation measures in line with the Asbestos Regulations of June 2010 and OH&S Act:

<b>Nature:</b> Direct impact on human health during the clean-up due to the release of airborne asbestos fibres		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	permanent (5)	Short – duration (2)
<b>Magnitude</b>	moderate (6)	Moderate (6)
<b>Probability</b>	definite (5)	Improbable (2)
<b>Significance</b>	<b>high(85)</b>	<b>low (18)</b>
<b>Status (positive or negative)</b>	negative	negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes (may result is illness and/ mortality of people)	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» All employees will wear protective clothing during the clean-up. Each asbestos worker will be provided and equipped with: <ul style="list-style-type: none"> <li>o An approved unused disposable overall</li> <li>o Clean gum boots</li> <li>o Clean PVC gloves</li> <li>o New approved dust mask (FF2)</li> </ul> </li> <li>» Chevron Tape/ marking powder / red paint will be used to demarcate the areas of for removal of contaminated soil. A respirator zone is an area where the concentration of regulated asbestos fibres in the air is, or is likely to be greater than the OEL for asbestos. No persons should be allowed to enter the area without wearing respiratory protective equipment and protective clothing. Respirator zones must be clearly demarcated and identified to prevent accidental and chance, albeit brief, entry. Even if a person passes through the area or there is little work being conducted in that area, a respirator must be worn.</li> <li>» Floor markings or chevron tape are examples of demarcation where the area is not defined by walls. In addition, all access routes should be demarcated and identified by SABS symbolic warning signs that are clearly visible.</li> </ul>		

- » Wire fencing will be used for high risk areas.
- » Warning & Safety signage will be placed at the areas within the railways station for clean-up on the site.
- » No member of the public to be allowed 100m of the works area.
- » All personnel involved with the asbestos remediation process will be subjected to medical surveillance as per the Transnet Freight Rail's Medical Code of Practice as well as compliance to the requirements of the Asbestos Regulations under the Occupational Health and Safety Act, Act 85 of 1993. Medical Surveillance should be conducted by an Occupational Medicine Practitioner (OMP).
- » Asbestos contaminated areas shall be sprayed with water prior to commencement of remediation activities in order to suppress the release of fibres.
- » Stockpiled asbestos waste shall be continuously sprayed with a mist of water during the clean-up so as to effectively reduce and control the release of fibres.
- » Damp asbestos should be manually lifted by the use of shovels, forks, or by hand and placed into 200 micron plastic bags (double bagged and labelled) as per Asbestos Regulations. Encapsulated or damp asbestos shall be placed into 200 micron plastic bags (double bagged and labelled) as per Asbestos Regulations. Bags shall be of a size large enough to accommodate semi-intact bales without having to break them up where applicable.
- » Clearing of asbestos at any site shall be completed entirely before moving onto a new working site as per asbestos regulations.
- » Cleaned areas will be marked off with a green paint over the existing red paint marks, to ensure that no spill areas are missed.
- » Plastic Bags shall be of a size large enough to accommodate semi-intact bales without having to break them up where applicable. Intact bales (without bags) may be suitably punctured to promote water uptake.
- » Where asbestos has spilled over the sides of embankments or cuttings this shall be removed, bagged and appropriately disposed of.
- » Intact or semi intact bags or bales should be picked up, double bagged and labelled for disposal, to prevent further spread of the spillage.
- » Bags available on site shall be large enough to accommodate the intact or semi intact bales thereby avoiding unnecessary breaking up of bales to fit into smaller bags.
- » Temporary storage of waste: the area earmarked for stockpiling of excavated material shall be lined with impermeable material.
- » All machinery involved in an asbestos remedial process will be jet-washed prior to leaving site.
- » Disposal of asbestos waste shall be at a licensed waste disposal site specifically designated for this purpose and in accordance with the requirements of NEM: Waste Act, No 59 of 2008 and Asbestos Regulations. Asbestos Contractor shall furnish TFR with a safe disposal certificate as issued by the management of the Licensed Waste Disposal site.
- » Where asbestos cannot be removed from the site, encapsulation will ensure that asbestos fibres are not emitted from sites. The same quantity of fill material is to be used to replace the vacuum left by the excavation of contaminated material.
- » All affected areas (areas on TFR properties containing asbestos) with a high social or worker risk (other than the clean-up workers) shall be encapsulated with an approved encapsulating agent that is capable of providing long term binding of asbestos fibres. This product shall be non-biodegradable and penetration of product into the asbestos substrate shall be approximately 2 to 3 millimetres.
- » Asbestos air sampling will be conducted on a daily basis on the sites for clean-up by the Approved Inspection Authority. The results will be provided daily to the contractor on site. The

consolidated air sampling report will be provided to the contractor and TFR Risk Management on weekly basis. The AIA shall supply the regional office of the Department of Labour concerned with copies of all monitoring results and inspection reports, regularly as they are issued. The air sampling should also measure wind speed and wind direction.

- » Employers must not allow anybody to work in or to enter an environment in which they may be exposed to asbestos that will exceed the exposure limit for asbestos. The exposure limit is currently set at 0,2 fibres per millilitre of air averaged over a four-hour working period. The employer must introduce a formal measurement program to establish the airborne concentration of asbestos in a particular work place when there is a possibility that workers could be exposed to airborne asbestos in excess of half the OEL ( $0.2/2 = 0,1$  regulated fibre). As a general guideline:
  - o The employer must first inform the relevant health and safety representative or health and safety committee of the proposed monitoring and give them a reasonable opportunity to comment;
  - o The monitoring should be conducted by either an approved asbestos inspection authority<sup>3</sup> (AIA), or a person who is registered with the South African Institute of Occupational Hygienists (SAIOH) and whose ability to do the measurements is verified by the AIA.
  - o The AIA is accountable for the entire process of monitoring and takes full responsibility for the validity, accuracy and correctness of measurement results.
  - o The decision regarding the number and duration of samples lies with the AIA. The sampling strategy must, however, be representative of the exposure of all employees. If measurement of a representative employee shows that the exposure is above the OEL, then the exposure of all employees that will have the same exposure must be measured.
- » When there is a visible dust or winds in excess of 20 knots, any asbestos remedial process will be stopped.
- » Areas that are to be encapsulated with asbestos still in place shall be declared Environmental Covenant Areas and the future management will involve the following:
  - o Placing of signage around the sites to notify business operators and to declare the sites as Environmental Covenant sites.
  - o Sites will be capped with concrete or layer of 300mm clean soil compatible with the surrounding soil type and free of alien infestation.
  - o No digging or excavation would be allowed in the future.
  - o Environmental Covenants shall be registered in accordance with the National Environmental Management: Waste Act, 2008.
- » Before closure and hand-over, it must be certified that that the work sites are deemed clear of asbestos as defined, prior to AIA final inspection. Decontamination of the marshalling yards or spillage on open lines shall continue until a close visual inspection confirms that there are no signs of asbestos spillage nor asbestos fibres at each working site, and two static samples are taken at least 48 hours after the completion of the clean confirm that less than 0.1 fibres per millilitre air are present. Clearing of asbestos at any specific location will be deemed complete only once the Approved Inspection Authority has issued a written certification to this effect. As a first step in the approval process, TFR Environmental Manager must ensure that the Clean-up terms of reference have been met by both the contractor and the Approved Inspection

<sup>3</sup> An approved inspection authority approved to monitor asbestos is also known as an approved asbestos inspection authority. The two terms mean the same thing.

Authority. In all instances, completion of work and clearing of asbestos shall be deemed to have occurred only when random sampling within 48 hours by the AIA at cleared sites shall confirm that no worksite is capable of releasing fibres contrary to the legal of 0.1 fibres per ml of air.

- » Thorough, complete and up to date records should be kept of:
  - Medical surveillance of asbestos workers for a minimum period of 40 years;
  - Maintenance of control measures for a period of 3 years;
  - Asbestos inventory for minimum period of 40 years;
  - Training given to employee in terms of Asbestos Regulations for as long as the employee remains employed at the workplace in which he or she is being exposed to asbestos dust; and
  - Assessments and air monitoring at the sites that were remediated for a period of 40 years.
- » Decontamination facility - The wash and change room facilities must consist of at least the following:
  - A clean change room: This is a room where employees take off their own clothes and put on clean protective clothing and equipment. In this room, facilities must also be provided for the protection of clean protective equipment as well as private clothes.
  - Showers and washing facilities: No employee may enter a clean change room from an asbestos area or respirator zone without showering. The showers should preferably have cold and hot water mixed, in other words, coming out of the same tap, and be activated immediately when a person passes under it. Soap should also be provided for each employee.
  - A dirty change room: All asbestos-contaminated protective clothing and equipment must be removed and left in this room. Facilities for the protection and removal of protective equipment and clothing must also be provided. Contaminated clothing will also be treated as hazardous waste for disposal at a hazardous landfill.

***Cumulative impacts:***

Cumulative health impacts may result on TFR employees and people who operate at the railway station if the asbestos is not removed or encapsulated, or if spillage occurs while removing the asbestos.

### **2.3 Safety risk to asbestos workers while working at the railway station**

While working at the railway station, the asbestos workers will face daily safety risks associated with railway stations and railway lines that feed in and out of the stations. The following hazards exist while working at an operational TFR railway station / railway line:

- » Heavy machinery and fast moving trains with multiple tracks.
- » High voltage areas (electrical line above the railway track)
- » Uneven walkways
- » Unmanned level crossings
- » Noise from the trains
- » Dust
- » The handling and transportation of dangerous substances

These hazards have the potential to cause injury or death to the contractors will be undertaking the asbestos-clean-up. In this regard, TFR has a Safety, Health and Environmental Quality (SHEQ)

policy that will apply to the asbestos clean-up contractor to avoid and minimise injuries or fatalities on their premises (the main precautionary measures, as taken from TFRs SHEQ policy is listed in the table below; this list is not exhaustive). In addition, the specific areas identified as requiring asbestos remediation within the railway station will experience occupational "shut-down" for a temporary period of time.

<b>Nature: Safety risk to asbestos workers while working at railway stations</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	short (2)	Short – duration (2)
<b>Magnitude</b>	high (8)	Moderate (6)
<b>Probability</b>	probable (3)	Improbable (2)
<b>Significance</b>	<b>medium (33)</b>	<b>low (18)</b>
<b>Status (positive or negative)</b>	negative	negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes (may result is injury and/ mortality of asbestos workers)	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>» TFR's Safety, Health and Environmental Quality (SHEQ) policy will apply to the asbestos contractors.</li> <li>» All employees will wear protective clothing during the clean-up. Each asbestos worker will be provided and equipped with:                             <ul style="list-style-type: none"> <li>o An approved unused disposable overall</li> <li>o gum boots</li> <li>o PVC gloves</li> <li>o dust mask (FF2)</li> </ul> </li> <li>» In addition, high visibility vests must be worn at all times.</li> <li>» The asbestos project team who will access the railway station must be in possession of a valid TFR access card.</li> <li>» If more than 20 employees are employed, the contractor must have a Health and Safety representative (1 per 50 employees).</li> <li>» The asbestos contractor shall establish a health and safety committee. The committee shall comprise of the following personnel:                             <ul style="list-style-type: none"> <li>o Site manager</li> <li>o SHE representative</li> <li>o TFR representative</li> </ul> </li> <li>» The contractor must have a health and safety plan that is kept onsite and must contain appropriate safety measures.</li> <li>» Employees must be trained on the contents of the health and safety plan and TFR's requirements.</li> <li>» Contractors must familiarise themselves with TFR's emergency plan, evacuation procedures and fire alarm procedure.</li> <li>» TFR's first aider must be available to the asbestos contractor or the contractor could have their own one first aider.</li> <li>» A first aid kit must be kept onsite.</li> </ul>		

- » No climbing on or underneath stationery trains or wagons is permitted.
- » Employees to walk alongside tracks (minimum 2m from the edge of the track).
- » Vehicles must be parked clear of tracks.
- » When exposed to noisy machinery, use hearing protection.
- » No work near overhead electrical installations is allowed, without the permission from the TFR electrical department.
- » A distance of 3m away is required when working near overhead wires. If there are areas below the railway lines that require asbestos removal – this must be approved by TFR.
- » All chemicals brought onto site must be labelled and stored in safe containers within a designated area.

**Cumulative impacts:**

The safety risk will be faced whenever the asbestos workers at on the TFR site - an occupational hazard.

**2.4 Potential public health risk during the Transportation of the asbestos contaminated soil and waste to the hazardous landfill**

The excavated asbestos waste and contaminated soil will be placed in covered wagons suitable for disposal of contaminated waste and transported by road to a licenced hazardous landfill (suitable landfill still to be identified by TFR). The transportation of Asbestos contaminated waste will have to be in accordance with SANS code 10229 (Transport of dangerous goods — Packaging and large packaging for road and rail transport) and the Asbestos Regulations of 2001. However, the risk of spillage of the asbestos en-route to the landfill still exists. In the event that one of the trucks containing the asbestos has an accident due to mechanical failure or if the truck has a collision with another vehicle, this may cause additional exposure to asbestos by members of the public in the vicinity (up to 500m) of the vehicle containing the asbestos. The potential public health risk (of contracting asbestos-related diseases) can be avoided through the use of precautionary measures. Protocols will be in place for the safe transportation of the asbestos material (which is detailed in the impact table below) and this risk can be adequately managed.

**Nature:** Potential public health risk during the transportation of the asbestos contaminated soil and waste to the hazardous landfill

	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	regional (2)	regional(2)
<b>Duration</b>	permanent (5)	Short – duration (2)
<b>Magnitude</b>	high (8)	Moderate (6)
<b>Probability</b>	probable (3)	Improbable (2)
<b>Significance</b>	<b>medium (45)</b>	<b>low (18)</b>
<b>Status (positive or negative)</b>	negative	negative
<b>Reversibility</b>	Not reversible	Not reversible
<b>Irreplaceable loss of resources?</b>	Yes (may result in asbestos related diseases)	No

<b>Can impacts be mitigated?</b>	Yes
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>» The truck transporting the asbestos must be securely covered.</li> <li>» Trucks transporting the asbestos must have labels/signs indicating that they are transporting hazardous substances, in line with SANS code 10229 (Transport of dangerous goods — Packaging and large packaging for road and rail transport).</li> <li>» Regulation 20 of the Asbestos Regulations of 2001 requires that, the employer must ensure that asbestos dust is not released during transportation to the landfill, by using tightly sealing containers.</li> <li>» All machinery involved in an asbestos remedial process to be jet-washed prior to leaving site.</li> <li>» The Asbestos Contractor shall furnish TFR with a safe disposal certificate as issued by the management of the Licensed Waste Disposal site.</li> <li>» All employees who are involved in the transportation of asbestos waste must be provided with the required respirators and protective clothing and they are properly trained in the procedure to be followed in the event of spillage or similar emergency or situation that could arise by accident.</li> <li>» All equipment / vehicles must be thoroughly cleaned after disposal to the landfill. This includes vehicles and protective clothing.</li> <li>» All incidental spillage of asbestos waste must be cleaned up immediately. The driver of the vehicle carrying asbestos waste must have the necessary training and be conversant with the instructions to handle such cases.</li> <li>» An emergency procedure to be in place in the event of an accidental spillage of asbestos during transportation to the landfill.</li> <li>» Contractors, and owners of landfills where asbestos waste is disposed, must also comply with the provisions of the Asbestos regulation.</li> </ul>	
<p><b>Cumulative impacts:</b></p> <p>Cumulative health impacts may result if the asbestos is not removed or encapsulated, or if spillage occurs while transporting the asbestos (relevant to TFR employees who operate at the railway station and the public).</p>	

## 2.5 Impact on soil during asbestos clean-up

Input from a soil scientist (See Appendix D2) was included as part of this Basic Assessment study. The soil scientist undertook a site visit to make observations regarding the soils present at the sites. Where possible, augering was done to depth of 1200 mm and soil characteristics were noted. Soil form (Soil Classification, A Taxonomic System for South Africa, Soil Classification Working Group) and soil depth were recorded. Natural occurring soils were not encountered although augering in the landscaped area, outside of the area but inside the yard, indicated that the Fernwood soil form underlies the transformed soil.

The soils at the railway station have been transformed due to occurrence of the railway station as shown in **Figure 5** and **Figure 6**.



**Figure 5:** The Fernwood soil form underlies the landscaped areas



**Figure 17:** Photo indicating the transformation of the naturally occurring soils owing to development on the Nsese yard

During the clean-up activities, the contaminated soil (not naturally occurring soils – transformed soils) will be removed and disposed of at a hazardous landfill – this will result in a loss of soil (albeit, not naturally occurring soils), which will be replaced with either clean soil or stone at relevant areas where asbestos remediation is required. The loss of soil can be completely reversed by the addition of clean soil. However, remediation of the contaminated soils may lead to open excavated areas. The extent of soil removal coupled with the already impacted nature of the area

does not warrant the implementation of mitigation measures. To cover these areas with soil would entail removal of soil from some other (probably not impacted) area and may therefore constitute loss of valuable soil resources. Soil erosion is a minimum in the area owing to the nature of the soils and the extent of urban development. Areas that require a substantial amount of excavation, and pose a safety hazard as a result, can be backfilled with stones or soil.

<b>Nature: Loss of soil due to removal during remediation of asbestos contaminated soil</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	permanent (5)	permanent (5)
<b>Magnitude</b>	small (0)	small (0)
<b>Probability</b>	improbable (2)	improbable (2)
<b>Significance</b>	<b>low (12)</b>	<b>low (12)</b>
<b>Status (positive or negative)</b>	positive	positive
<b>Reversibility</b>	Yes	Note applicable
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» If necessary, backfill areas which have undergone a substantial amount of excavation with stones or soil.		
<b>Cumulative impacts:</b> None		
<b>Residual Impacts:</b> None		

<b>Nature: Soil erosion as a result of the removal of contaminated soil</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	short (2)	short (2)
<b>Magnitude</b>	moderate (6)	low (4)
<b>Probability</b>	highly probable (4)	improbable (2)
<b>Significance</b>	<b>medium (36)</b>	<b>low (14)</b>
<b>Status (positive or negative)</b>	negative	negative
<b>Reversibility</b>	Reversible with erosion control measures	Reversible with erosion control measures
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» Excavated areas should be backfilled with soil or stone as soon as possible to prevent exposure of bare areas to wind or water that may be agents of soil erosion.		
» Should bare areas be exposed for more than 7 days, then the areas should be covered with hessian or other suitable material to prevent further soil loss until backfilling can take place.		
» In the event of heavy rainfall, bare areas should also be covered with hessian or other suitable material to prevent further soil loss until backfilling can take place.		
» Should major erosion features arise, such as gully erosion, then permanent erosion control measures may be required, for inactive stations such as Barberton railway station.		

» The use of vegetation cover at Barberton railway station should be considered by TFR, as it is not an active yard and vegetation (mostly alien vegetation) has regrown.

**Cumulative impacts:**

None

**2.6 Generation of waste (general and hazardous waste) during the clean-up**

Apart from the mixed asbestos waste and asbestos contaminated soil, other waste may be generated by the asbestos clean-up activities, including the following:

- » Hazardous waste:
  - o Asbestos contaminated PPE that will be discarded will become hazardous waste, and if disposed incorrectly on the site or surrounding areas may pose health risk to people who come into contact with the waste.
  - o Wastewater will be generated from the decontamination facility where asbestos workers will shower (on a daily basis, until the clean-up is complete). This water will not go into the municipal system and will be collected in receptacles - drums) and will be treated as hazardous waste, and disposed to a hazardous landfill.
  
- » General waste:
  - o food wrappers
  - o Eating utensils
  - o Paper
  - o plastic
  - o used equipment

General waste can be disposed to a general landfill by the asbestos contractor to avoid cross-contamination with general waste from the daily operations at the active landfills. If general waste is dumped in the surrounding area, it may impact the environment and people who live there, by creating a breeding ground for pests and disease.

If hazardous waste is incorrectly disposed of into the surrounding environment (onto uncontaminated soil, which then can result in the release of asbestos fibres into the air), this will create an exposure route for asbestos related disease and could pose health risks to people in the vicinity of the waste. With proper general and hazardous waste disposal, the impacts of the general and hazardous waste that is generated by the clean-up can be avoided.

<b>Nature: Generation of waste (general and hazardous waste) during the clean-up</b>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	short (2)	short (2)
<b>Magnitude</b>	moderate (6)	low (4)
<b>Probability</b>	highly probable (4)	improbable (2)
<b>Significance</b>	<b>medium (54)</b>	<b>low (20)</b>
<b>Status (positive or negative)</b>	negative	negative
<b>Reversibility</b>	Yes	Yes

<b><i>Irreplaceable loss of resources?</i></b>	No	No
<b><i>Can impacts be mitigated?</i></b>	Yes	
<b><i>Mitigation:</i></b>		
<ul style="list-style-type: none"> <li>» The asbestos contaminated soil and other hazardous waste (such as used PPE and wastewater) from the asbestos clean-up will be disposed to a hazardous landfill by the asbestos contractor.</li> <li>» General waste will be taken to a registered landfill by the contractor.</li> <li>» Littering on the site (general waste) is prohibited.</li> <li>» Waste receptacles for general waste should occur in designated areas, at least 100m away from the areas that are undergoing remediation.</li> <li>» General waste should be collected on a daily basis.</li> <li>» Ablution facilities must be provided for the asbestos clean-up workers. These should be located in a designated area.</li> <li>» Wastewater from the decontamination facility will be treated as hazardous waste and disposed at a hazardous landfill and not be allowed to enter the site or surrounds.</li> <li>» Measures for the decontamination facility / trailer:                         <ul style="list-style-type: none"> <li>o The decontamination unit will be located as near to the removal area as practical.</li> <li>o The decontamination unit will have fully operational hot and cold running water systems, adjustable at the shower tap, and a functioning water filtration unit that will filter the waste water down to 5 microns prior to being drummed for offsite disposal, or discharged into contaminated soil loaded trucks.</li> <li>o Workers to wear a clean outer protective suit as they exit from the work area to the decontamination area. Workers should either wear double suits and remove the exterior suit or don a second, clean suit over the single suit within the work area prior to moving into the decontamination unit.</li> <li>o The decontamination unit should be utilized by the workers each time they exit the work area. Workers may not wear street clothes under suits.</li> <li>o The drums containing the wastewater should be checked on a regular basis (daily) to ensure that there are no leaks and when the containers are filled to capacity.</li> <li>o The drums containing the wastewater must be placed on an impervious surface or bunded area (to avoid spillage directly onto the soil / surfaces) within a designated area.</li> </ul> </li> <li>» Should any spillage of the asbestos waste occur, it must be clean-up up immediately and the affected areas appropriately remediated.</li> </ul>		
<b><i>Cumulative impacts:</i></b>		
None		

## 2.7 Creation of job opportunities during the clean-up

Should asbestos be detected on the Nsese site, a suitably qualified asbestos contractor will be appointed by TFR to undertake the asbestos clean-up. The asbestos contractor will be selected through a competitive tendering process. The number of staff required for the potential cleanup is not established at this stage. However, should remediation be undertaken, it will result in a number of short-term employment opportunities. (The number of staff required will be informed by the scope of work to be determined by the Approved Inspection Authority prior to the start-up of remediation activities.

The timeframes for completion of the clean-up depends on the asbestos contractor. The asbestos clean-up will required skilled and semi-skilled employees. Skilled employees include a site manager, qualified truck drivers, qualified excavator operators, a health and safety officer (if there are 20 or more employees at the site at one time), an occupational hygienist (to conduct the air quality monitoring). Semi-skilled employees will be required as well. Therefore short term job creation will be a minor positive socio-economic impact, although limited to a small team of mainly skilled, asbestos specialist employees.

<b>Nature:</b> <i>Creation of job opportunities during the asbestos clean-up</i>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	short (2)	short (2)
<b>Magnitude</b>	moderate (6)	moderate(4)
<b>Probability</b>	highly probable (4)	Highly probable (4)
<b>Significance</b>	<b>medium (54)</b>	<b>medium (54)</b>
<b>Status (positive or negative)</b>	Positive	positive
<b>Reversibility</b>	Not applicable	Not applicable
<b>Irreplaceable loss of resources?</b>	Not applicable	Not applicable
<b>Can impacts be mitigated?</b>	Yes	
<b>Mitigation:</b>		
» If semi-skilled and specialist asbestos contractors are available in the nearest communities, these should be utilised for the asbestos clean-up and considered in the tender process by TFR.		
<b>Cumulative impacts:</b>		
None		

## 2.8 Long –term positive impact on environment due to the remedial activities – post clean-up

The removal of contaminated soil and any asbestos waste visible on the surface of the railway station will reduce the future health risk for any of TFR's employees or people who operate or reside near the railway station. Once the clean-up is complete, this is seen as having a positive impact on the environmental (air and soil) and social (TFR employees and nearby residents) elements. This is mainly due to the risk of asbestos occurring in the air being reduced to low risk or eliminated altogether and as a result a low risk or elimination of risk of asbestos-related diseases as a result of its historical transportation via TFR's railway lines. Therefore, the long-term impact of removal of asbestos from TFR's Nseke railway station (if detected) is viewed in a positive light (or as a positive action / impact) in terms of TFR's duty of care towards the environment and their social responsibility to remedy contamination due to their rail activities to prevent any further negative environmental (soil and air) or social impacts.

<b>Nature:</b> <i>Positive impact on the environment due to remediation of asbestos contaminated land</i>		
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	local (1)	local (1)
<b>Duration</b>	short (2)	short (2)
<b>Magnitude</b>	moderate (6)	moderate(4)

<b>Probability</b>	highly probable (4)	Highly probable (4)
<b>Significance</b>	<b>medium (54)</b>	<b>medium (54)</b>
<b>Status (positive or negative)</b>	Positive	positive
<b>Reversibility</b>	Not applicable	Not applicable
<b>Irreplaceable loss of resources?</b>	Not applicable	Not applicable
<b>Can impacts be Enhanced?</b>	Yes	
<b>Enhancement Measures:</b>		
<ul style="list-style-type: none"> <li>» As recommended by CSS in the Risk Assessment Report, the areas that are remediated should be encapsulated, by spraying an encapsulating agent and thereafter covered by stone (if within railway lines) or soil (if in yards)</li> <li>» After the clean-up TFR should continue with the declaration of the remediated sites as "covenant sites" and limit future use of these areas.</li> <li>» The covenant sites should have clear signage that is maintained on an annual basis.</li> <li>» If there is a re-surface of asbestos on the railway station, it should be reported to TFR, to initiate remedial activities as set out in their EHS plan for the asbestos clean-up.</li> <li>» After the remedial activities, it is recommended that test soil samples and air quality samples of the remediated areas should be taken at least one year after completion of remedial activities, and the results compiled into a report for submission to DEA such that they can confirm the success of the remedial activities and close the file.</li> </ul>		
<b>Cumulative impacts:</b>		
The potential asbestos clean-up at the Nseese railway station (and other stations and lines outside of this BA report – which are located in the Northern Cape and Eastern Cape) is seen as a cumulative positive impact on the soil, air and reduction in the health risk to TFR employees.		

### 3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

The main potential environmental impacts (negative and positive) of the asbestos clean-up at the Nseese Railway Station in KwaZulu-Natal, which may be required in the event of asbestos being detected in future, are summarised in the table below. As part of the Environmental Management Programme (EMP), mitigation measures will be proposed to avoid and/mitigate potentially negative impacts.

Potential Impact	Negative / Positive Impact	Without Mitigation	With Mitigation
Potential Impact on health of asbestos workers and TFR employees during the Clean-Up	Negative	high	low
Safety risk to asbestos	Negative	Medium	Low

workers while working at railway station			
Potential public health risk during the Transportation of the asbestos contaminated soil and waste to the hazardous landfill	Negative	Medium	low
Loss of soil due to removal during remediation of asbestos contaminated soil	Positive	Low	Low
Impact on soil during asbestos clean-up	Negative	Medium	low
Generation of waste (general and hazardous waste) during the clean-up	Negative	Medium	low
Creation of job opportunities during the clean-up	Positive	Medium	Medium
Long –term positive impact on environment (soil, air quality) due to the remedial activities – post clean-up	Positive	Medium	Medium

Should remediation be required at the Nsesse railway station, the implementation of stringent control and mitigation measures will be required to be implemented in order to ensure that the impacts of the clean-up are reduced to acceptable levels of low risk to the health of the employees undertaking the clean-up activities.

In the long term, the removal of contaminated soil and any asbestos waste visible on the surface of the railway station will reduce the future health risk for any of TFR's employees or people who operate or reside near the railway station. Once the clean-up is complete, this is seen as having a positive impact on the environmental (air and soil) and social (TFR employees and nearby residents) elements. This is mainly due to the risk of asbestos occurring in the air being reduced to low risk or eliminated altogether and as a result a low risk or elimination of risk of asbestos-related diseases as a result of its historical transportation via TFR's railway lines. Therefore, the long-term impact of removal of asbestos from TFR's railway station is viewed in a positive light (or as a positive action / impact) in terms of TFR's duty of care towards the environment and their social responsibility to remedy contamination due to their rail activities to prevent any further negative environmental (soil and air) or social impacts.

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**No-go alternative (compulsory)**

The mining and use of asbestos in South Africa were banned in 2008 under the Environment Conservation Act of 1989 due to the asbestos-related diseases and health risk that it poses to people. The option of not implementing the asbestos clean-up will result in asbestos contaminated areas not being cleaned up and the continuation of risks posed to the environment and human health, This option is therefore not preferred from a legal, environmental and human-health perspective.

## SECTION E. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES  
✓

If "NO," indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES," please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

In light of the current potential health risk posed by the presence of the asbestos waste at TFR's railway station and the long period of time that the asbestos has been present at the railway station, it is recommended that the proposed waste licence and authorisation for the potential asbestos clean-up at the Nsesse Railway Station in KwaZulu-Natal is granted by DEA, subject to the a specific mitigation measured contained in this BA report and the EMP, when handling and disposing of asbestos waste. The potential presence of asbestos at the Railway Station in KwaZulu-Natal poses a long term environmental and human health risk to people who operate on the site, and therefore the need and urgency to undertake the clean-up and eliminate any further environmental risks at contaminated area within the railway station is imperative. It is therefore recommended that the asbestos clean-up be undertaken by TFR as a matter of urgency to avoid or reduce any future health risks to TFR and people that operate at the Nsesse Railway Station in KwaZulu-Natal. The following conditions should be included in the waste licence:

- » The environmental management programme developed as part of the basic assessment report must be implemented by TFR and the asbestos contractors.
- » Training of the asbestos workers on the risks involved with asbestos is essential prior to commencement of the remedial activities.
- » All TFR staff working at the Nsesse Railway station should be trained on Asbestos identification, and as specified in the Transnet SHE Induction for Contractors booklet, all identified and/or suspected asbestos or asbestos containing material shall be reported to the Site Supervisor/ Project Manager/ and/ or Safety Rep.
- » Signage at the remedial area must be placed prior to the commencement of the remedial activities.
- » Visual inspections for asbestos identification should be conducted bi-annually over a period of 4 years by the site manager.
- » Air quality samples must be undertaken by an Approved Inspection Authority once every 2 years for a period of 4 years for asbestos detection.
- » Soil sampling for Asbestos detection must be undertaken once every 2 years for a period of 4 years.
- » Air quality monitoring must be undertaken during the remediation works by an Approved Inspection Authority.
- » Only asbestos contractor/s registered with the Department of Labour to be appointed to do the remedial activities.
- » The asbestos clean-up must be undertaken in line with the requirements of the Asbestos Regulations of 2001 and well as the Occupational Health and Safety Act of 1993.

Is an EMPR attached? The EMPR is attached as <b>Appendix F</b> .	<b>YES</b> ✓