



environment & tourism

Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

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Application Number:

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Date Received:

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Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2006

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2006 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided are not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed. In addition, if it is clear to the EAP that because of the particular circumstances of the case it is not sensible to complete any of the sections indicated under paragraph 3 of this report, he or she may apply for exemption from completing that part of the report in the spaces provided in the report. It must however be noted that if the application for exemption is turned down, the report may have to be resubmitted.

SECTION A: APPLICATION FOR EXEMPTION

The relevant parts of this section must be completed if the environmental assessment practitioner (EAP) on behalf of the applicant wishes to apply for exemption from completing or complying with certain parts of this basic assessment report.

1. APPLICATION FOR EXEMPTION FROM ASSESSING ALTERNATIVES:

At least two alternatives (site or activity) should be assessed. If that is not possible, the applicant should apply for exemption from having to assess alternatives. Such exemption will, however, not apply to the no-go alternative that must be assessed in all cases.

Provide a detailed motivation for not considering alternatives including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):

Whilst studying the capacity of the existing Iron Ore Handling Facility (IOHF), Transnet determined that, with optimisation of the handling procedures, the facility could achieve an annual throughput of 60 million tonnes per annum (MTPA). A key element of this optimisation is that no additional infrastructure will be required to achieve this throughput, which relies on the implementation of more efficient operational practices.

Any alternative to the optimisations of these operational practices would include the addition of further costly infrastructure, which is not financially feasible and would result in additional impacts through the increase of the facility's footprint.

Transnet therefore applies for exemption from having to assess site and activity alternatives in the BA.

I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the Environmental Impact Assessment Regulations, 2006, from having to assess alternatives in this application as required in section 24(4)(b) in the National Environmental Management Act, 1998 (Act No. 107 of 1998)

Signature of the EAP: _____

Date:

2. APPLICATION FOR EXEMPTION FROM COMPLYING WITH PARTS OF REGULATION 23(2) REGARDING THE CONTENT OF THIS BASIC ASSESSMENT REPORT:

Application for exemption from certain parts of regulation 23(2) regarding the completion of certain parts of this basic assessment report may be made by completing the relevant sections below.

Indicate the numbers of the sections of this report for which exemption is applied for:

Section B:	7(a)	7(b)	7(c)	7(d)	8	9	10(c)	10(e)	10(f)	10(g)	10(h)	10(j)	10(k)	12
Section C:	1	2	3	4	5	6								
Section D:	1(a)	1(b)	1(c)	1(d)	1(f)	1(g)	3							

Provide a detailed motivation including an explanation of the reason for the application for exemption (supporting documents, if any, should be attached to this report):

I declare that the above motivation is accurate and, hereby apply for exemption in terms of regulation 51 of the EIA Regulations, 2006, from having to complete the indicated sections of the Basic Assessment Report.

Signature of the EAP: _____

Date:

SECTION B: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for in detail (A1):

The infrastructure at the Iron Ore Handling Facility (IOHF) at the Port of Saldanha is currently being upgraded as part of the approved 'Phase 1B' expansion, which is expected to increase the throughput of iron ore at the facility to 45 MTPA in 2010.

By optimising the efficiency of handling procedures at the facility, Transnet estimates that a throughput of 60 MTPA of iron ore can be achieved without the need for construction of any additional infrastructure. Kumba, one of the main suppliers of iron ore to the IOHF, is currently in the process of developing its new Sishen-South iron ore mine, which is expected to increase the iron ore supply for export through the Port to 60 MTPA (see Section 13 in this Basic Assessment Report (BAR) for further motivation for the proposed activity.)

In terms of the Atmospheric Pollution Prevention Act 45 of 1965 (APPA)¹, Transnet currently holds a provisional emissions licence allowing up to 47 MTPA² of iron ore to be handled at the IOHF. **An increase in the iron ore throughput at the IOHF to 60 MTPA thus requires an amendment of the emissions licence**, which triggers Activity 25 listed in the Environmental Impact Assessment (EIA) Regulation GN R386 promulgated in terms of the National Environmental Management Act 107 of 1998. These listed activities require a Basic Assessment (BA) and authorisation by the Department of Water and Environmental Affairs (DWEA)³.

The proposed project does not involve the installation of any additional infrastructure at the IOHF. The increase in volume of iron ore that will be handled by the facility will, however, require more trains and ships to call at the Port to deliver and export the additional ore. Existing infrastructure will also operate more continuously (i.e. for longer periods of time) to handle the additional ore volume.

The proposed increase in throughput is not expected to generate additional employment at the Port.

The physical zone of influence of activities considered in this BA extends from the Salkor Yard to the mouth of Saldanha Bay. Impacts relating to any required upgrades of the rail corridor between the mines and Salkor Yard are being investigated in a separate Environmental Impact Assessment process that has been commissioned by Transnet.

2. ALTERNATIVES

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 is 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.

2(a) Site alternatives:

Describe site alternative 1 (S1), for the activity described above, or for any other activity alternative:

The proposed activity involves the increase in iron ore throughput at the existing IOHF by improving operational efficiencies. As such, this is an existing and established location and no site alternative has been or sensibly can be identified. An alternative site would entail additional infrastructure and either create a new footprint or expand the footprint of the existing facility.

The proponent has therefore applied for exemption from considering site alternatives (see Section A1 in this form).

Describe site alternative 2 (S2), if any, for the activity described above, or for any other activity alternative:

¹ ► **Note:** The National Environmental Management: Air Quality Act 39 of 2004 (NEM:AQA) replaced the APPA when it came into effect in 2005. However, as a transitional provision, NEM:AQA identifies listed activities that require an atmospheric emissions licence as those activities listed in the Second Schedule of APPA, pending the listing of activities under NEM:AQA by the Minister. 'The bulk storage and handling of ore or coal [...] at dumps designed to hold 100 000 tons or more and not situated on the premises of a mine [...]' is listed in the Second Schedule of APPA (activity 59) and thus requires an emissions licence from the Department of Water and Environmental Affairs (DWEA).

² ► **Note:** Although the environmental authorisation in terms of the Environment Conservation Act (ECA) is for the handling of 45 MTPA at the port, the emissions licence is for 47 MTPA, which includes an additional 2 MTPA not exported from Saldanha, but directed from the tipplers to Mittal Steel. The remainder of this report will refer to an authorized throughput volume of 45 MTPA, in line with the more stringent limit imposed by the ECA authorization.

³ ► **Note:** As Transnet is a state-owned enterprise, the application will be dealt with by the National Department, rather than the Provincial Department of Environmental Affairs and Development Planning (DEA&DP).

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N/a

Describe site alternative 3 (S3), if any, for the activity described above, or for any other activity alternative:

N/a

(2)(b) Activity alternatives:

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

The proposed activity involves the increase in iron ore throughput at the existing IOHF by means of improved operational efficiency. As such, this is an existing and established activity and no activity alternative has been or sensibly can be identified.

The proponent has therefore applied for exemption from having to consider activity alternatives (see Section A1 in this form).

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

N/a

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

N/a

4. 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.

Alternative:

Alternative S1⁴ (preferred or only site alternative)

Alternative S2 (if any)

Alternative S3 (if any)

In the case of linear activities:

Alternative:

Alternative S1 (preferred or only route alternative)

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

Alternative S2 (if any)

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

Alternative S3 (if any)

- Starting point of the activity
- Middle 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 250 meters along the route for each alternative alignment.

Latitude (S):

Longitude (E):

33°	00'	11"	17°	59'	52"
°	'	"	°	'	"
°	'	"	°	'	"

Latitude (S):

Longitude (E):

°	'	°	'
°	'	°	'
°	'	°	'
°	'	°	'
°	'	°	'
°	'	°	'
°	'	°	'
°	'	°	'

5. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative:

Alternative A1⁵ (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

or, for linear activities:

Alternative:

Alternative A1 (preferred activity alternative)

Alternative A2 (if any)

Alternative A3 (if any)

Size of the activity:

Entirely within the footprint of the existing facility
m ²
m ²

Length of the activity:

M
M
M

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

Alternative:

Alternative A1 (preferred activity alternative)

Size of the site/servitude:

Entirely within current site

⁴ "Alternative S.." refer to site alternatives.

⁵ "Alternative A.." refer to activity, process, technology or other alternatives.

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Alternative A2 (if any)
Alternative A3 (if any)

boundaries
m ²
m ²

6. SITE ACCESS

Does ready access to the site exist, or is access directly from an existing road?

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

m

Describe the type of access road planned:

--

Include the position of the access road on the site plan.

7. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

7(a) Solid waste management

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

YES	NO ✓
-----	------

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

m ³

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

--

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?

see below

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

<p>The proposed increased throughput of iron ore at the IOHF will result in the production of somewhat larger quantities of some of the solid waste that is currently produced by the existing operation of the IOHF. Such additional waste will be disposed of as according to current procedures, which are laid out in the Draft Environmental Management Programme (EMP) attached as Appendix D. It is not expected that any new type of solid waste will be produced.</p>
--

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

<p>All waste from the IOHF is temporarily stored on site and removed and disposed of by either the municipality or contractors, in line with the existing waste management procedures at the IOHF. These are laid out in the Draft EMP.</p>

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, the application 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?

YES ✓	NO
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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, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

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

Scrap metal, scrap conveyor belts, paper, cardboard and similar waste is being collected in designated bins or skips distributed throughout the facility, from where it is transported to temporary waste storage sites within the IOHF. Waste management contractors collect the waste for recycling as per the existing waste management procedures at the IOHF, which are laid out in the Draft EMP.

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

YES	NO ✓
-----	------

If YES, please complete:

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

If YES, is such a report(s) attached?

YES	NO
-----	----

Signature of specialist:

Date:

⁶ **Note:** Solid waste currently produced at the IOHF includes the following, which are considered hazardous waste: asbestos, chemicals, batteries and fluorescent tubes. It is possible that there may be an increase in the production of some of these waste materials as a result of the increased throughput, although this is not expected to be significant. This waste is currently handled in terms of the waste management procedures for hazardous substances, as laid out in the Draft EMP. It is thus not expected that this would result in the need for scoping and EIA.

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7(b) Liquid effluent

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

YES	NO ✓
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If yes, what estimated quantity will be produced per month?

		m ³
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Will the activity produce any effluent that will be treated and/or disposed of on site?⁷

YES	NO ✓
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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?

YES	NO ✓
-----	------

If yes, provide the particulars of the facility:

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:

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

YES	NO ✓
-----	------

If YES, please complete:

Name of the specialist:	
Qualification(s) of the specialist:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

Are any further specialist studies recommended by the specialist?

YES	NO
-----	----

If YES, specify:

--	--

If YES, is such a report(s) attached?

YES	NO
-----	----

Signature of specialist: Date:

7(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES ✓	NO
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If yes, is it controlled by any legislation of any sphere of government?⁸

YES ✓	NO
-------	----

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA⁹.

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

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

YES ✓	NO
-------	----

If YES, please complete:

Name of the specialist:	
Qualification(s) of the specialist:	
Postal address:	
Postal code:	
Telephone:	Cell:
E-mail:	Fax:

Are any further specialist studies recommended by the specialist?

YES ✓	NO
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If YES, specify:

The specialist undertook an air quality impact assessment for iron ore throughput of 60 MTPA, taking into account previous experience with air quality issues investigated as part of the (incomplete) Phase 2 EIA ¹⁰ .	
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If YES, is such a report(s) attached?

YES ✓	NO
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Signature of specialist: Date:

7(d) Generation of noise

Will the activity generate noise?

YES ✓	NO
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If yes, is it controlled by any legislation of any sphere of government?

YES ✓	NO
-------	----

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.

⁷ **Note:** Stormwater is being routed to evaporation ponds on site. Ponds are cleaned when necessary and material that has settled out is disposed off as per the Port's waste management procedures.

⁸ **Note:** The activity requires an emissions licence in terms of the NEM:AQA. The facility currently holds a provisional licence authorizing the throughput of 47 MTPA of iron ore.

⁹ **Note:** The activity triggers a listed activity in terms of GN R386, requiring Basic Assessment.

¹⁰ **Note:** The Phase 2 EIA was for the previous proposal to increase the throughput at the IOHF to 93 MTPA, although this is no longer considered financially viable.

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

The type of noise and expected noise levels are described in detail in Section E, Impact OD3 of this report.
 Has a specialist been consulted to assist with the completion of this section? YES NO

If YES, please complete:

Name of the specialist: Demos Dracoulides
 Qualification(s) of the specialist: Diploma (Mechanical Engineering), MSc (Engineering)
 Postal address: PO Box 60034, Table View
 Postal code: 7439
 Telephone: 021 551 1836 Cell:
 E-mail: demosd@xsinet.co.za Fax: 021 557 1078
 Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: The specialist provided input into the assessment of the relevant noise impacts, based on his previous experience with noise issues investigated as part of the (incomplete) Phase 2 EIA. A stand alone specialist noise impact assessment study was not undertaken.

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

8. WATER USE

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

<input type="checkbox"/> Municipal	<input type="checkbox"/> water board	<input type="checkbox"/> groundwater	<input type="checkbox"/> river, stream, dam or lake	<input checked="" type="checkbox"/> Other	<input type="checkbox"/> the activity will not use water
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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: See Note below

Note: The envisaged source of water for dust suppression at the IOHF is sea water abstracted from Saldanha Bay that has been desalinated by a Reverse Osmosis (RO) Plant located at the IOHF. The RO Plant was the subject of a Basic Assessment, which also investigated abstraction volumes and received environmental authorization from the Department of Environmental Affairs and Tourism (DEAT) on 17 November 2008 (Reference 12/12/20/958). The authorisation is however currently under appeal. The approved capacity of the RO Plant is sufficient to provide the full amount of water required to operate the IOHF at the proposed throughput of 60 MTPA.

Should the authorization of the RO Plant not be upheld, alternative sources of water have to be identified before the authorization for increase in throughput to 60 MTPA can be granted.

Does the activity require a water use permit from the Department of Water Affairs and Forestry? YES NO

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

9. ENERGY EFFICIENCY

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

As the existing infrastructure at the IOHF will be used, no new energy efficiency measures are being implemented as part of the proposed project.

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

All energy requirements are provided by Eskom. No alternative energy sources are utilised directly by the IOHF.

10. 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:

- 10(a) The scale of the plan which must be at least a scale of 1:500;
- 10(b) the property boundaries and numbers of all the properties within 50m of the site;
- 10(c) the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 10(d) the exact position of each element of the application as well as any other structures on the site;
- 10(e) 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;
- 10(f) all trees and shrubs taller than 1.8m;
- 10(g) walls and fencing including details of the height and construction material;
- 10(h) servitudes indicating the purpose of the servitude;
- 10(i) sensitive environmental elements within 100m 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 DWAF);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);

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- 10(j) for gentle slopes the 1m 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
 10(k) the positions from where photographs of the site were taken.

11. SITE PHOTOGRAPHS

Colour photographs from the center 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 should be supplemented with additional photographs of relevant features on the site, if applicable.

12. 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.

13. ACTIVITY MOTIVATION

13(a) Socio-economic value of the activity

- What is the expected capital value of the activity on completion?
 What is the expected yearly income that will be generated by or as a result of the activity?

R 0 ¹¹	
See Section E: OD7	
<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
None	
R 0 ¹²	
n/a	
None	
n/a	
n/a %	

- Will the activity contribute to service infrastructure or is it a public amenity?
 How many new employment opportunities will be created in the development phase of the activity?
 What is the expected value of the employment opportunities during the development phase?
 What percentage of this will accrue to previously disadvantaged individuals?
 How many permanent new employment opportunities will be created during the operational phase of the activity?
 What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

13(b) Need and desirability of the activity

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

In late 2008, the world economy experienced a major slowdown, which translated into a significant drop in commodity prices. This prompted Transnet, in conjunction with the mining companies supplying the iron ore handled at the IOHF (Kumba and Assmang), to re-visit the business case driving the previously proposed (Phase 2) expansion to 93 MTPA. Transnet and the mining companies agreed that, under the current conditions, the Phase 2 project does not make business sense and will not be continued in its current form.

The demand for iron ore, although much lower than previously projected, is still expected to grow beyond the volume that the IOHF is currently authorised to handle. Projections indicate that the port will be required to handle iron ore volumes of up to 60 MTPA by 2012 to meet iron ore supply and export demand.

Transnet has completed an assessment of the IOHF operations and determined that the throughput of iron ore at the IOHF could be increased to 60 MTPA, through the enhancement of existing operational practices, without any requirement to invest in additional infrastructure. Once Kumba's new Sishen-South mine in the Northern Cape becomes fully operational, it will be able to provide the additional supply of iron ore required to meet these throughput targets.

Increasing throughput of iron ore at the handling facility to 60 MTPA, utilising the existing infrastructure, is thus the most cost-effective and efficient option at this time.

In terms of the Integrated Development Plan (IDP)¹³ of the Saldanha Bay Municipality, the Port is considered to be a major economic growth point in the Western Cape Province and part of a future integrated urban complex and primary growth centre that also includes Saldanha and Vredenburg. Proposed upgrading and expansion of the Port is expected to generate industrial development at the Port and the surrounding area and to be the catalyst for the industrial linking of Saldanha and Vredenburg envisaged in the IDP. As such, the proposed increase in iron ore throughput at the IOHF, and hence intensification of Port-related activities, is in keeping with the general planning vision for this area.

Indicate any benefits that the activity will have for society in general:

The main benefits associated with the proposed increase in throughput at the IOHF are an increase in income generation for South Africa, through export revenues, and employment generation in related operations, such as the mines located in the Northern Cape.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

¹¹ ► **Note:** The existing infrastructure will be used and no additional installations are associated with the project.
¹² ► **Note:** As the existing infrastructure will be used, there is no development phase associated with the project.
¹³ ► **Note:** IDP Review 2008/2009 – Saldanha Bay Municipality – May 2009

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The project is driven by improved operational efficiency, and, as it does not generate capital investment or additional employment, has few additional tangible benefits for the local community.

14. 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:
National Environmental Management Act 107 of 1998 (NEMA)	Department of Water and Environmental Affairs (DWEA)	1998
Environmental Impact Assessment Regulations GN R385, 386 and 387 promulgated in 2006 in terms of NEMA, as amended by GN719 dated 3 July 2009	Department of Water and Environmental Affairs (DWEA)	2009
National Environmental Management: Air Quality Act 39 of 2004 (NEM:AQA) and Atmospheric Pollution Prevention Act 45 of 1965 (APPA)	Department of Water and Environmental Affairs (DWEA)	2004
National Environmental Management: Waste Act 59 of 2008 (NEM:WA)	Department of Water and Environmental Affairs (DWEA)	2008
List of waste management activities that have, or are likely to have a detrimental effect on the environment, GN718 promulgated in 2009 in terms of the NEM:WA	Department of Water and Environmental Affairs (DWEA)	2009
Western Cape Provincial Spatial Development Framework (WCPSDF)	Provincial Government Western Cape	2005
Saldanha Bay Municipality Integrated Development Plan (IDP) 2006 and IDP Review 2008/2009	Saldanha Bay Municipality	2006 / 2009
Noise Control Regulations (Provincial Notice 627/1998)	Western Cape Department of Environmental Affairs and Development Planning	1998

SECTION C: SITE/AREA DESCRIPTION

Important note: For linear activities (pipelines etc) as well as activities that cover very large sites, it may be necessary to complete Section C 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):
(complete only when appropriate)

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites.

Alternative S1:

Flat ✓	4:50 – 1:20	4:20 – 1:15	4:15 – 1:10	4:10 – 1:7,5	4:7,5 – 1:5	Steeper than 1:5
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Alternative S2:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

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

Alternative S1:

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front ✓
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Alternative S2:

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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Alternative S3:

Ridgeline	Plateau	Side slope of hill/mountain	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		Alternative S2:		Alternative S3:	
	YES ✓	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES ✓	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO ✓	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO ✓	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO ✓	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO ✓	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO ✓	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO ✓	YES	NO	YES	NO
An area sensitive to erosion	YES	NO ✓	YES	NO	YES	NO

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).

Has a specialist been consulted to assist with the completion of this section? YES NO

If YES, please complete:

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone: Cell:

E-mail: Fax:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify:

If YES, is such a report(s) attached? YES NO

BASIC ASSESSMENT REPORT

Signature of specialist: _____ Date: _____

4. GROUNDCOVER

Tick the types of groundcover present on the site.

Alternative S1:

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface ✓	Building or other structure ✓	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.

Has a specialist been consulted? YES NO ✓

If YES, please complete the following:

Name of the specialist: _____
 Qualification(s) of the specialist: _____
 Postal address: _____
 Postal code: _____
 Telephone: _____ Cell: _____
 E-mail: _____ Fax: _____

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

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

Alternative S2:

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	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.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: _____
 Qualification(s) of the specialist: _____
 Postal address: _____
 Postal code: _____
 Telephone: _____ Cell: _____
 E-mail: _____ Fax: _____

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

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

Alternative S3:

Natural veld - good	Natural veld with	Natural veld with	Veld dominated by	Gardens

BASIC ASSESSMENT REPORT

condition ^E	scattered aliens ^E	heavy alien infestation ^E	alien species ^E	
Sport field	Cultivated land	Paved surface	Building or other structure	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.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: _____
 Qualification(s) of the specialist: _____
 Postal address: _____
 Postal code: _____
 Telephone: _____ Cell: _____
 E-mail: _____ Fax: _____

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are there any special or sensitive habitats or other natural features present on any of the alternative sites? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

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

5. LAND USE CHARACTER OF SURROUNDING AREA

Black out land uses and/or prominent features that does not currently occur within a 500m radius of the site

Alternative S1:

Natural area ✓	Low density residential	Medium density residential	High density residential	Informal residential ^A
Retail	Commercial & warehousing	Light industrial	Medium industrial ^{AN}	Heavy industrial ^{AN} ✓
Power station ^A	Office/consulting room ✓	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam ^A	Quarry, sand or borrow pit	Dam or reservoir ¹⁴ ✓
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant ^A	Train station or shunting yard ^N	Railway line ^N ✓	Major road (4 lanes or more) ^N	Airport ^N
Harbour ✓	Sport facilities	Golf course	Polo fields	Filling station ^H
Landfill or waste treatment site ^A	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):	Iron Ore Handling Facility ✓			
	<p>► Note: The Langebaan Lagoon located to the south of Saldanha Bay as well as the islands within the bay form part of an internationally recognized and protected RAMSAR site. The Lagoon is an important nursery area for a number of fish species, supports diverse and ecologically important algal and shoreline biota and is an important area for migrating and resident wading birds and numerous breeding birds.</p>			

If any of the boxes marked with an "N" are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? YES ✓ NO

If YES, please complete the following:

Name of the specialist: Demos Dracoulides
 Qualification(s) of the specialist: Diploma (Mechanical Engineering), MSc (Engineering)
 Postal address: PO Box 60034, Table View
 Postal code: 7439

¹⁴ ► **Note:** This is a small reservoir for the storage of water used by Transnet on site, and not for public water supply.

BASIC ASSESSMENT REPORT

Telephone: 021 551 1836 Cell:
 E-mail: demosd@xsinet.co.za Fax: 021 557 1078

Will the ambient noise level have a negative impact on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist or studies recommended by the specialist? YES NO

If YES, specify:

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date:

If any of the boxes marked with an "A" are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: Vis Reddy

Qualification(s) of the specialist: BSc (Chemistry and Geology), MSc (Environmental Geochemistry)

Postal address: SRK Durban, PO Box 1969, Westville

Postal code: 3630

Telephone: 031 279 1200 Cell:

E-mail: vreddy@srk.co.za Fax: 031 279 1204

Will the ambient air pollution level have a negative impact on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: An air quality specialist study was undertaken to assess the impact of the proposed activity on the air quality in surrounding communities.

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date:

If any of the boxes marked with an "H" are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: Prof. Petro Terblanche

Qualification(s) of the specialist: MSc and DSc in Medical Oncology, Post-doctorate training programme in Environmental Health Management at Harvard University, Boston, USA.

Postal address: 56 Dely Road, Waterkloof

Postal code: 0181

Telephone: 012 339 8570 Cell:

E-mail: petro.terblanche@mrc.ac.za Fax: 012 323 1893

Will the surrounding land use pose any unacceptable health risk on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: A health specialist study was undertaken to assess the health impact of the proposed activity on the surrounding communities.

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date:

Alternative S2:

Natural area	Low density residential	Medium density residential	High density residential	Informal residential ^A
Retail	Commercial & warehousing	Light industrial	Medium industrial ^{AN}	Heavy industrial ^{AN}
Power station ^A	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam ^A	Quarry, sand or borrow pit	Dam or reservoir
Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant ^A	Train station or shunting yard ^N	Railway line ^N	Major road (4 lanes or more) ^N	Airport ^N
Harbour	Sport facilities	Golf course	Polo fields	Filling station ^H

BASIC ASSESSMENT REPORT

Landfill or waste treatment site ^A	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):				

If any of the boxes marked with an "N" are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: _____

Qualification(s) of the specialist: _____

Postal address: _____

Postal code: _____

Telephone: _____ Cell: _____

E-mail: _____ Fax: _____

Will the ambient noise level have a negative impact on the proposed activity? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

If any of the boxes marked with an "Au" are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: _____

Qualification(s) of the specialist: _____

Postal address: _____

Postal code: _____

Telephone: _____ Cell: _____

E-mail: _____ Fax: _____

Will the ambient air pollution level have a negative impact on the proposed activity? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

If any of the boxes marked with an "Hu" are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist: _____

Qualification(s) of the specialist: _____

Postal address: _____

Postal code: _____

Telephone: _____ Cell: _____

E-mail: _____ Fax: _____

Will the surrounding land use pose any unacceptable health risk on the proposed activity? YES NO

If YES, specify and explain: _____

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify: _____

If YES, is such a report(s) attached? YES NO

Signature of specialist: _____ Date: _____

Alternative S3:

Natural area	Low density residential	Medium density residential	High density residential	Informal residential ^A
Retail	Commercial & warehousing	Light industrial	Medium industrial ^{AN}	Heavy industrial ^{AN}
Power station ^A	Office/consulting room	Military or police base/station/compound	Casino/entertainment complex	Hospitality facility
Open cast mine	Underground mine	Spoil heap or slimes dam ^A	Quarry, sand or borrow pit	Dam or reservoir

BASIC ASSESSMENT REPORT

Hospital/medical center	School	Tertiary education facility	Church	Old age home
Sewage treatment plant ^A	Train station or shunting yard ^N	Railway line ^N	Major road (4 lanes or more) ^N	Airport ^N
Harbour	Sport facilities	Golf course	Polo fields	Filling station ^H
Landfill or waste treatment site ^A	Plantation	Agriculture	River, stream or wetland	Nature conservation area
Mountain, koppie or ridge	Museum	Historical building	Graveyard	Archeological site
Other land uses (describe):				

If any of the boxes marked with an "N" are ticked, please consult an appropriate noise specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist:
 Qualification(s) of the specialist:
 Postal address:
 Postal code:
 Telephone: Cell:
 E-mail: Fax:

Will the ambient noise level have a negative impact on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify:

If YES, is such a report(s) attached? YES NO

Signature of specialist: Date:

If any of the boxes marked with an "Au" are ticked, please consult an appropriate air quality specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist:
 Qualification(s) of the specialist:
 Postal address:
 Postal code:
 Telephone: Cell:
 E-mail: Fax:

Will the ambient air pollution level have a negative impact on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify:

If YES, is such a report(s) attached? YES NO

Signature of specialist: Date:

If any of the boxes marked with an "H" are ticked, please consult an appropriate health assessment specialist to assist in the completion of this section.

Has a specialist been consulted? YES NO

If YES, please complete the following:

Name of the specialist:
 Qualification(s) of the specialist:
 Postal address:
 Postal code:
 Telephone: Cell:
 E-mail: Fax:

Will the surrounding land use pose any unacceptable health risk on the proposed activity? YES NO

If YES, specify and explain:

Are any further specialist studies recommended by the specialist? YES NO

If YES, specify:

If YES, is such a report(s) attached?

Signature of specialist: Date:

BASIC ASSESSMENT REPORT

6. CULTURAL/HISTORICAL FEATURES

Alternative S1

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 archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO ✓
Uncertain		
If YES, explain: <div style="background-color: #cccccc; height: 15px; width: 100%;"></div>		
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: <div style="background-color: #cccccc; height: 20px; width: 100%;"></div>		
Will any building or structure older than 60 years be affected in any way?	YES	NO ✓
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	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.		

Alternative S2

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 archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO
Uncertain		
If YES, explain: <div style="background-color: #cccccc; height: 15px; width: 100%;"></div>		
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: <div style="background-color: #cccccc; height: 20px; width: 100%;"></div>		
Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	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.		

Alternative S3

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 archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO
Uncertain		
If YES, explain: <div style="background-color: #cccccc; height: 15px; width: 100%;"></div>		
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: <div style="background-color: #cccccc; height: 20px; width: 100%;"></div>		
Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	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 D: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The environmental assessment practitioner must follow any relevant guidelines adopted by the competent authority in respect of public participation and must at least –

- 1(a) Fix a notice in a conspicuous place, on the property where it is intended to undertake the activity which states that an application will be submitted to the competent authority in terms of these regulations and which provides information on the proposed nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations on the application may be made.
- 1(b) inform landowners and occupiers of adjacent land of the applicant's intention to submit an application to the competent authority
- 1(c) inform landowners and occupiers of land within 100 metres of the boundary of the property where it is proposed to undertake the activity and whom may be directly affected by the proposed activity of the applicant's intention to submit an application to the competent authority;
- 1(d) inform the ward councillor and any organisation that represents the community in the area of the applicant's intention to submit an application to the competent authority;
- 1(e) inform the municipality which has jurisdiction over the area in which the proposed activity will be undertaken of the applicant's intention to submit an application to the competent authority; and
- 1(f) inform any organ of state that may have jurisdiction over any aspect of the activity of the applicant's intention to submit an application to the competent authority; and
- 1(g) place a notice in one local newspaper and any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of these regulations.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

Advertisements and notices must indicate that an application will be submitted to the competent authority in terms of the EIA 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;

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 site alternatives where appropriate.

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.

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.

6. LOCAL AUTHORITY PARTICIPATION

Local 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. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

Has any comment been received from the local authority?

YES NO

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

Comment will be obtained from the local authority during the public comment period.

BASIC ASSESSMENT REPORT

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

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):

Comments will be obtained from stakeholders during the public comment period.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2006, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the issues raised by interested and affected parties.

No issues have been raised by I&AP's to date as part of this process, although it is anticipated that issues will be raised during the public comment period. The applicant, EAP and specialists have however identified issues based on their very extensive previous knowledge of Interested and Affected Party (I&AP) concerns regarding the IOHF.

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):

N/a. Responses to all issues raised by I&AP's will be provided in the final Basic Assessment Report.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, including impacts relating to the choice of site alternatives.

Alternative S1 (preferred alternative)

Direct impacts:

The proposed activity entails the increase in throughput of iron ore at the existing IOHF at the Port of Saldanha. No site alternatives have been identified, and as such **no planning and design phase impacts are associated with site alternatives.**

Indirect impacts:

None, see comment above.

Cumulative impacts:

None, see comment above.

Alternative S2

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative S3

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

The no-go alternative implies that the operations at the IOHF would continue in terms of the current authorisation to handle 45 MTPA. As such, **there is no planning and design required and no associated impact.**

Indirect impacts:

None, see comment above.

Cumulative impacts:

None, see comment above.

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Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative S1	Alternative S2	Alternative S3
As there is no planning and design phase or associated impact, no mitigation measures have been identified.		

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase:

Alternative A1 (preferred alternative)

<p>Direct impacts:</p> <p>The proposed activity entails the increase in throughput of iron ore at the existing IOHF beyond the capacity currently approved, without the need for installation of additional equipment or infrastructure. Higher throughput will rather be achieved by more efficient operational management of the handling process, although there would not be any activity or technology alternatives associated with this. As such, no planning and design phase impacts are associated with activity or technology alternatives.</p> <p>Indirect impacts:</p> <p>Cumulative impacts:</p>

Alternative A2

<p>Direct impacts:</p> <p>Indirect impacts:</p> <p>Cumulative impacts:</p>

Alternative A3

<p>Direct impacts:</p> <p>Indirect impacts:</p> <p>Cumulative impacts:</p>

No-go alternative (compulsory)

<p>Direct impacts:</p> <p>The no-go alternative implies that the operations at the IOHF would continue in terms of the current authorisation to handle 45 MTPA. As such, there is no planning and design required and no associated impact.</p> <p>Indirect impacts:</p> <p>None, see comment above.</p> <p>Cumulative impacts:</p> <p>None, see comment above.</p>

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative A1:	Alternative A2:	Alternative A3:
As there is no planning and design phase or associated impact, no mitigation measures have been identified.		

3. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the construction phase:

Alternative S1 (preferred alternative)

<p>Direct impacts:</p> <p>The proposed activity entails the increase in throughput of iron ore at the IOHF beyond the capacity currently</p>

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authorised, without the need for installation of additional equipment or infrastructure. Higher throughput will rather be achieved by more efficient operational management of the handling process. Hence, no construction activities related to the proposed activity will take place. As such, **there is no construction phase and no associated impact.**

Indirect impacts:

None, see comment above.

Cumulative impacts:

None, see comment above.

Alternative S2

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative S3

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

The no-go alternative implies that the volume of iron ore handled at the facility does not exceed 45 MTPA, the volume currently authorised in terms of ECA and for which a licence has been obtained in terms of APPA . In this scenario, no construction is required as the existing facility can accommodate this throughput. As such, **there is no construction phase and no associated impact.**

Indirect impacts:

None, see comment above.

Cumulative impacts:

None, see comment above.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative S1	Alternative S2	Alternative S3
As there is no construction phase or associated impact, no mitigation measures have been identified.		

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the construction phase:

Alternative A1 (preferred alternative)

Direct impacts:
Indirect impacts:
Cumulative impacts:

Alternative A2

Direct impacts:
Indirect impacts:
Cumulative impacts:

Alternative A3

Direct impacts:
Indirect impacts:
Cumulative impacts:

No-go alternative (compulsory)

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Direct impacts:

The no-go alternative implies that the volume of iron ore handled at the facility does not exceed 45 MTPA, the volume currently authorised in terms of the ECA and for which a licence has been obtained in terms of APPA. In this scenario, no construction is required as the existing facility can accommodate this throughput. As such, **there is no construction phase and no associated impact.**

Indirect impacts:

None, see comment above.

Cumulative impacts:

None, see comment above.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative A1:

Alternative A2:

Alternative A3:

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4. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the operational phase:

► Note: *The proposed activity entails the throughput of up to 60 MTPA of iron ore at the IOHF at the Port of Saldanha, using the existing infrastructure and equipment but improved operational procedures. The potential impacts of the activity that are assessed below are therefore purely related to the increased volumes of iron ore that will be handled, and not to any other aspects of the existing facility or process (e.g. visual impact of the already existing facility itself).*

As the approved handling capacity of the IOHF is 45 MTPA, this is the baseline against which potential direct impacts will be assessed (and which may be of most relevance to the competent authority, i.e. DWEA), although at the time of undertaking this study this throughput had not yet been achieved. The expected change in conditions relative to the current throughput of approximately 32 MTPA is thus also discussed, mainly for the benefit of IAPs who may be interested in the difference between current (September 2009) and predicted (60 MTPA) conditions. The impacts were rated using the SRK impact rating methodology attached as Appendix G1.

The following potential impacts are discussed in this section¹⁵:

Direct impacts:

- OD1: Dust fallout from the IOHF in surrounding communities
- OD2: Possible health effects on surrounding residents through potential exposure to PM₁₀ from the IOHF
- OD3: More frequent noise in surrounding residential areas through more frequent use of equipment at the IOHF
- OD4: Increased interference of iron ore carriers with other shipping traffic in the Bay
- OD5: Disturbance of Saldanha Bay's marine ecosystem from increased ballast water discharge from iron ore carriers
- OD6: Increased risk of oil spills in Saldanha Bay associated with more iron ore carriers
- OD7: Additional generation of wealth for South Africa

Indirect impacts:

- OI1: Additional foreign exchange income for South Africa from mine taxes and royalties
- OI2: Generation of additional employment at the mines supplying the iron ore

Cumulative impacts:

- OC1: Increased pressure on the environment and its carrying capacity in conjunction with other existing industries in the area
- OC2: Increased pressure on the environment and its carrying capacity in conjunction with planned industrial facilities in the area

Alternative S1 (preferred alternative)

Direct impacts:

Impact OD1: Dust fallout from the IOHF in surrounding communities

The discussion and assessment of this impact is based on the Air Quality Specialist Baseline Study and Impact Assessment undertaken by Vis Reddy for this BA and attached in Appendix D of this report.

¹⁵ **► Note:** "OD" stands for operational phase direct impact, "OI" stands for operation phase indirect impact, "OC" stands for operational phase cumulative impact

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Dust generation at the IOHF

During the handling of iron ore, dust is released into the air, becoming a nuisance to surrounding communities when it settles out, mainly due to its red colouring. At higher concentrations, dust fallout can also affect health. Dust is generated at a number of points in the IOHF, including the conveyor transfer points, the stacker / reclaimers, by vehicles on roads, through wind erosion from e.g. stockpiles, at the tipplers and during ship loading¹⁶.

Transnet has implemented a number of dust suppression measures in recent years at the IOHF. These are required in terms of the environmental authorisations granted for the expansion phases 1A (increase from 24 MTPA to 38 MTPA¹⁷) and 1B (increase from 38 MTPA to 45 MTPA¹⁸) and include:

- Maintaining the moisture content of the iron ore at 1.2%;
- Enclosing conveyor belts to prevent iron ore from being blown off the belts particularly by strong winds;
- Spraying iron ore at transfer points and on the stockpiles;
- Paving roads within the IOHF (other than those within the stockpile area); and
- Cleaning spilled iron ore from beneath conveyor belts and sweeping of roads.

While Transnet confirms that all required dust mitigation measures are in place, Transnet is still in the process of fully implementing the operation of some of those to effectively manage the dust. The current effectiveness of dust suppression at the IOHF has not been evaluated, although based on existing air quality monitoring data and observations on site, it is estimated to not yet have reached the level required in terms of the Record of Decision (RoD) for the Phase 1B expansion, which is currently being implemented.

Existing dust conditions in surrounding communities

Dust deposition standards published in the South African National Standard (SANS) 1929:2004 provide an indicator of the potential nuisance and, at higher levels, health effect of dust (see Table E4-1 below).

Table E4-1: SANS 1929:2004 dust deposition standards (30 day average emission levels)

Level	Emission (mg/m ² /day)	Permitted exceedances	Level definition
Target level	300	n/a	Long-term goal to be pursued through cost-effective progressive methods, "long-term acceptable thresholds"
Action residential	600	Three per year	Exceedance requires investigation of the specific causes of high dustfall and taking of remedial steps
Action industrial	1 200	Three per year	
Alert threshold	2 400	None	Immediate risk to human health from brief exposure, exceedance necessitates priority action

To gain an understanding of the existing dust fallout levels in receptor areas, Transnet has monitored levels at three points since late 2002, two within the Port's boundaries (at the jetty and the NPA building¹⁹) and at Vredenburg. The recorded dust fallout levels register emissions from all contributing sources, natural and man-made, and not only those from the IOHF. The contribution of the IOHF alone to dust fallout levels at those monitoring stations can therefore not be determined. However, the monitoring stations provide an overview of the current conditions.

Generally, levels of dust fallout at Vredenburg were higher in summer and autumn (December to May) than in winter and spring (June to November). Average daily levels recorded in Vredenburg between March 2008 and April 2009 ranged from 3 to 274 mg/m²/day, which indicates that the target level was not exceeded during this period for which data is available.

Dust dispersion modelling

The expected dust emission levels from the IOHF were modelled for the proposed throughput of 60 MTPA. Historic climatic data was then used to simulate ambient concentrations of dust in surrounding communities²⁰, notably Blue Water Bay (the closest receptor) and Vredenburg (downwind of the dominant dry season wind). Maps (provided in Appendix A of the attached Air Quality Study) show the predicted average maximum concentrations for these areas

¹⁶ ► **Note:** Other sources of air pollution related to Port activities, such as exhaust emissions from vehicles and ore ships, were considered by the specialist. However, these are not expected to be significant sources of air emissions in the case of the IOHF operations. The impact related to Particulate Matter (PM) is discussed in OD2.

¹⁷ ► **Note:** Condition 2.14 of the Record of Decision (RoD) from 22 March 2002 stipulates that "[...] the South African Ports Operations must implement an effective air quality management plan for the entire Port of Saldanha. This plan must be in place by May 2003 [...]". In addition, Condition 2.22 makes other recommendations and mitigation measures stipulated in the Environmental Impact Report, including dust mitigation measures, part of the authorisation.

¹⁸ ► **Note:** The RoD from 4 August 2006 stipulates in Condition 7.2.1 that "The applicant must extend the newly installed sprayer system to all new ore heaps, and must ensure that the system [...] is fully operational at all times. This may include the use of dust suppressing additives with all sprays". Condition 7.2.2 states that "The applicant must install wind barriers over the conveyor systems to avoid dust emissions during high wind conditions".

¹⁹ ► **Note:** The BA focuses on impacts in surrounding communities and not those within the boundaries of the Port.

As such, the results of these two monitoring stations are not further discussed here.

²⁰ ► **Note:** Dust dispersion modelling is limited to dust emissions from the Port.

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as well as other residential areas surrounding the Port, e.g. Saldanha, Club Mykonos and Langebaan.

The dust fallout levels likely to reach surrounding communities were modelled for three dust mitigation scenarios at the Port:

- When no dust suppression measures are implemented (referred to as the 'unmitigated scenario'²¹);
- When mitigation measures²² are implemented, with 50% effectiveness at the transfer points (referred to as the 'mitigated scenario'; and
- When mitigation measures are implemented, with 75% effectiveness at the transfer points.

Modelling indicated that maintaining the moisture level of the iron ore at 1.2% and operating the dust suppression system at 50% effectiveness is the most efficient level (considering effort, water requirements, costs and achieved emissions reduction) to reducing dust emissions at the proposed throughput. These results are presented below.

In order to calibrate the model, emissions were modelled and compared to actual monitoring data from the 2008/09 period, when the IOHF handled approximately 31 MTPA of iron ore. Emissions for 47 MTPA - the throughput authorised in terms of APPA - were also modelled. The specialist considers the simulations based on 47 MTPA sufficiently representative of the 45 MTPA authorised in terms of ECA.

If no mitigation measures are implemented, **dust deposition** attributable to Port activities in the surrounding areas could exceed the 600 mg/m²/day residential action level in an area encompassing Saldanha and the south-eastern parts of Vredenburg. In Blue Water Bay, it is predicted that the maximum average daily dust fallout level attributable to Port activities will lie above the alert threshold level of 2 400 mg/m²/day (see Table E4-2 below and Figure 14 in the appended Air Quality Study).

In the mitigated scenario, the extent of the area where the average maximum daily dust fallout exceeds action levels will reduce to within 2 km of the Port and not include adjacent communities (see Table E4-2 below and Figure 15 in the appended Air Quality Study).

Table E4-2: Predicted average maximum daily dust fallout contribution from the IOHF at selected communities for 60 MTPA

Receptor Community	Modelled Concentration (unmitigated) (mg/m ² /day)	Modelled Concentration (mitigated) (mg/m ² /day)
Blue Water Bay	2 685	313
Vredenburg	176	34

Impact rating and mitigation

The impact of dust fallout is associated with nuisance to and, at higher concentrations, health impacts in the surrounding communities. Under unmitigated conditions, dust fallout is predicted to exceed the target level in communities as far away as Vredenburg. As such, the extent of the impact is considered to be regional.

The predicted level of dust fallout is very high in surrounding communities, with peaks in Blue Water Bay estimated to exceed alert thresholds and peaks in Saldanha exceeding action levels defined by SANS. In addition, the dust attributable to the Port operations is typically red in colour and has staining properties, which makes it more noticeable and difficult to remove. As such, the intensity of the impact is considered to be high.

As the operation of the IOHF, and associated generation of dust, is expected to continue for the foreseeable future, the duration of the impact has been rated as long-term. However, as noted in Footnote 21, it is unlikely that no dust suppression takes place at all at the IOHF, which reduces the probability of the impact occurring to improbable. Overall, the significance of this impact is deemed to be **high (negative) before mitigation** (see Table E4-3).

Effective implementation of the mitigation measures listed in Table E4-3 below is expected to considerably reduce the extent of dust fallout attributable to the Port, with the action levels only exceeded within the greater Port area.

Improving the effectiveness of current dust mitigation at the IOHF to the standards stipulated in this report, and demonstration thereof through monitoring and liaison with the authorities and public, are thus considered to be crucial. Without mitigation, the predicted dust concentrations that will potentially be generated by the 60 MTPA IOHF in adjacent communities, particularly Blue Water Bay, is considered to be too high and a fatal flaw to the project.

²¹ **Note:** This is a worst case scenario which assumes that all equipment at the IOHF (e.g. all stackers / reclaimers, conveyors etc) is in operation at the same time, and that no dust suppression takes place at all. This is unlikely, as some dust suppression measures have been incorporated into the facility's design (e.g. covering of conveyor belts, paving of roads) and thus do not depend on operational management, although maintenance thereof is necessary. In addition, as ore from different stockpiles needs to be mixed during reclaiming to achieve the required export grade, it is unlikely that all reclaimers and conveyors will operate simultaneously. This scenario is thus very conservative.

²² **Note:** Mitigation assumes that:

- A constant ore moisture content of 1.2% is maintained;
- Mitigation measures such as bag filter units at the tippers are operating at optimal efficiency (design specifications);
- Unpaved roads are paved and swept daily;
- Spillages are removed and returned to the main stockpile before they can accumulate;
- Conveyor belts are cleaned and spillages under the conveyors are removed; and
- Dust generated at the transfer points under unmitigated conditions is reduced by either 50% or 75%, depending on the scenario, through spraying and covering of the point.

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With effective mitigation, the extent of the impact is considered to reduce to local and the predicted amount of dust fallout is considerably reduced. However, the staining effect of the iron ore dust cannot be prevented, although it is expected to occur much more slowly with reduced dust levels. The intensity of the impact is thus considered to be low. The duration of the impact remains long-term, but overall the significance of this impact is deemed to be **low (negative) after mitigation** (see Table E4-3).

Table E4-3: Significance of dust fallout attributable to the IOHF at 60 MTPA in surrounding communities

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	Regional	High	Long-term	Very high	Improbable	HIGH	-ve	High
	2	3	3	8				

Key mitigation measures:

- Pave all unpaved roads;
- Implement effective housekeeping measures, which are to include the following at all times:
 - Sweep all paved surfaces (e.g. roads) within the terminal daily. Swept material must be immediately collected and disposed of so that it cannot generate dust;
 - Clean conveyor belts continuously by scraping them, making use of the existing mechanism, to remove iron ore clinging to them, which can disperse as dust; and
 - Remove spilled ore and dust piles throughout the IOHF, e.g. spilled material that has fallen off the conveyor belts. This should occur at least weekly, to avoid accumulation of material. Store this material in such a way that it cannot generate dust;
 - Designate a Transnet employee to inspect the IOHF for compliance with the above housekeeping practices daily and to identify potential sources of dust that need to be cleaned up. Remove such sources immediately.
- Maintain an iron ore moisture content of 1.2%, as monitored at the sampling plant. Conduct additional monitoring of moisture content at other points in the handling chain if necessary;
- Cover all transfer points and conveyor belts, where practical, to reduce wind speeds and re-entrainment of dust into the atmosphere during ore transfer. Maintain existing covers;
- Maintain 50% dust control effectiveness at the transfer points (by using sprayers and covers). This means that emissions from transfer points should only be 50% of the levels measured previously without mitigation;
- Ensure optimal performance of the (cartridge filter) dust extraction system installed at the tipplers. The system must meet design specifications at all times, e.g. total dust emissions levels must be below 10 mg/Nm³. Perform ongoing monitoring of tippler stack emission levels;
- Consider the use of a chemical suppressant (as a complement for moisture control, especially when it is difficult to maintain a stable moisture level over a long period of time);
- Amend, where required, and implement the air quality monitoring and management plan stipulated as a condition of the Phase 1B Record of Decision²³;
- Monitor dust levels at suitable sites within the Port and/or on its boundary (e.g. NPA building) to measure actual emissions related to the Port. Use these monitoring results to continually assess the effectiveness of dust mitigation at the Port. Immediately respond to a decline in effectiveness, e.g. an increase in dust levels beyond the predicted levels (such as 812 mg/m²/day at the NPA building for 60 MTPA throughput, at 50% mitigation effectiveness), by identifying the source of increased emissions within the IOHF, reinstating effective mitigation or temporarily shutting down the relevant operation until emissions can be reduced.

Additional recommendations are listed in Section 8 of this report.

With mitigation	Local	Low	Long-term	Low	Probable	LOW	-ve	High
	1	1	3	5				

Predicted change relative to the current situation

The dust fallout impacts assessed above evaluate the impacts of a throughput of 60 MTPA, irrespective of the baseline.

When comparing the mitigated scenarios at the 32 MTPA and 60 MTPA throughput levels, predicted dust fallout levels in Blue Water Bay attributed to Port activities will approximately triple but are expected to remain well below action levels. For Vredenburg, the predicted increase is much less pronounced. However, the IOHF does not appear to be currently operating at the full mitigation effectiveness required for the Phase 1B operation. If full required mitigation effectiveness is achieved and maintained with a throughput of 60 MTPA, the predicted dust fallout levels may increase only slightly from current, less effectively mitigated, dust fallout levels.

Although the nuisance relating to dust fallout will thus continue, ongoing improvement of dust mitigation is expected to maintain the nuisance factor at the levels approximately experienced at present.

²³ **Note:** Condition 7.2.8 of the RoD. The stipulated plan includes aspects such as dust monitoring and control, dust suppression and mitigation and source emission monitoring and control.

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Impact OD2: Possible health effects on surrounding residents through potential exposure to PM₁₀ from the IOHF

The discussion and assessment of this impact is based on the Air Quality Specialist Baseline Study and Impact Assessment undertaken by Vis Reddy and the Health Specialist Study undertaken by Prof. Petro Terblanche for this BA, both attached in Appendix D of this report.

Potential health implications of PM₁₀

During the handling of iron ore at the IOHF, particulate matter (PM), which comprises (dust) particles smaller than 10 microns (PM₁₀), is released. Since particles of this size are small enough to be inhaled by humans, PM₁₀ may present a potential health hazard to people who are exposed to them, depending on the nature of the particles, and the concentration and the duration of exposure.

From a health perspective, both 24 hour peak concentrations and long-term average concentrations of PM₁₀ are of importance. Exposure to high peak concentrations, even if long-term averages are low, may cause acute respiratory illnesses including sinusitis, rhinitis, coughing, bronchitis and lowered lung capacity. The US Environmental Protection Agency has also estimated that the low risk of mortality increases by 1% to 8% per 50 µg/m³ PM₁₀ exposure above background level over a 24 hour period²⁴.

Exposure to high long-term average concentrations may cause people to develop chronic respiratory illnesses and impaired lung function, although these effects are less well understood. Exposure can also result in or contribute to cardiovascular disease, though to a lower extent than to respiratory illnesses.

People that are already vulnerable, e.g. those with existing respiratory diseases (such as asthma, bronchitis or pneumonia), cardiovascular diseases or allergies, diabetics, the elderly and children, are more at risk when exposed to PM₁₀ than people without such conditions.

Iron oxide and other substances that are present in the particulate matter released from the IOHF were not considered to be hazards in themselves and have thus not been assessed separately from the general effect of PM₁₀.

PM₁₀ concentration standards and guidelines applicable to South Africa are contained in the NEM:AQA and SANS1929:2004. The SANS levels are more stringent and are proposed to be listed as the NEM:AQA limits. The World Health Organisation (WHO) and Canadian Working Group on Air Quality Objectives and Guidelines propose even more stringent air quality guidelines, above which they concluded effects on human health can be demonstrated, based on the review of several studies.

Table E4-4: PM₁₀ concentration guidelines (µg/m³)

Guideline	Maximum daily concentration	Annual Average concentration
NEM:AQA	180*	60
SANS 1929:2004	75	40
WHO	50	20
Canadian Working Group	25	n/a

* May not be exceeded more than three times a year.

Current exposure of surrounding communities and vulnerability to PM₁₀

Transnet has monitored ambient PM₁₀ levels at Blue Water Bay and Vredenburg (least likely to be affected by emissions from the IOHF) since late 2002. The recorded concentrations include emissions from all contributing sources, natural and man-made, and not only those of the IOHF. The contribution of the IOHF alone to PM₁₀ levels at those communities can therefore not be determined. However, the monitoring stations provide an overview of the current conditions in those communities.

Generally, PM₁₀ concentrations at the community monitoring stations were higher in summer and autumn (December to May) than in winter and spring (June to November). Daily average PM₁₀ concentrations, available for a period between 2008 and 2009, indicate that the NEM:AQA and SANS guidelines were not exceeded in Blue Water Bay and Vredenburg during that time. The monitoring station in Vredenburg recorded isolated exceedances of the SANS 24 hour limit between February and May 2007, which have not been investigated or linked to a particular source. Approximated annual average concentrations lay considerably below South African limits (see Table E4-5).

Table E4-5: Monitored PM₁₀ concentrations in Blue Water Bay and Vredenburg (µg/m³)

	Blue Water Bay		Vredenburg	
	Highest value	Lowest value	Highest value	Lowest value
Average monthly concentrations (2003 - 2009)	64 µg/m ³	12 µg/m ³	140 µg/m ³	5 µg/m ³
Average daily concentrations (Jul 08 [BW/B: Sep 08] – May 09)	60 µg/m ³	6 µg/m ³	73 µg/m ³	3 µg/m ³
Approximated annual average concentration*	24 µg/m ³		29 µg/m ³	

Source: Vis Reddy, Air Quality Specialist Report attached in Appendix D

²⁴ **Note:** USEPA (2004). Epidemiology of human health effects associated with ambient particulate matter. In: Air Quality Criteria for Particulate Matter. Vol. II of II. Research Triangle Park, NC: USEPA Document no. EPA/600/P-99/002bF. October 2004.

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* Calculated from the averages of monthly concentrations from 2003 – 2009, as gaps in each year's dataset did not allow for reliable calculation of each year's annual average.

General health statistics show a relatively poor performance in the Saldanha Bay Municipality relative to the rest of South Africa and national targets, with regards to aspects such as vaccination rates, cure rate of tuberculosis and availability of health care facilities. This indicates that the general Saldanha Bay Municipality population may be more vulnerable to the effects of PM₁₀ relative to other reference communities such as communities in Canada and the USA, where many PM₁₀ risk assessments have been performed. However, the community closest to the IOHF, Blue Water Bay, is likely to be much less vulnerable than the general population of the Municipality, as the socio-economic status of this community, as well as access to electricity, housing and private healthcare, appears to be much higher than in many surrounding areas.

Modelled PM₁₀ concentration in surrounding communities attributable to the IOHF at 60 MTPA throughput

In the unmitigated scenario, the predicted maximum average daily PM₁₀ concentration at Blue Water Bay attributable to Port activities is estimated to exceed the NEM:AQA (180 µg/m³) guideline 40 times per year and the SANS (75 µg/m³) guideline 89 times per year. The predicted concentrations in other communities are generally compliant with South African limits, although peak daily concentration in the eastern parts of Saldanha might also approach the SANS limit (see Table E4-6 below and Figure 4 in the appended Air Quality Study).

Implementing mitigation measures which reduce emissions at the transfer points by 50% and maintaining a 1.2% ore moisture content will reduce the area where the average maximum daily PM₁₀ concentration attributable to Port activities exceeds the SANS guideline to within the general Port area. No exceedances of South African guidelines are expected in the communities.

Annual average concentrations attributable to Port activities at all communities lie well within stipulated guidelines both for unmitigated and mitigated circumstances (see Table E4-6 below and Figure 5 in the appended Air Quality Study).

Table E4-6: Predicted PM₁₀ contribution from the IOHF at selected communities at 60 MTPA

	Vredenburg		Blue Water Bay	
	Unmitigated	Mitigated*	Unmitigated	Mitigated *
Averaged daily max concentration	12 µg/m ³	2 µg/m ³	198 µg/m ³	25 µg/m ³
Averaged annual concentration	2 µg/m ³	0 µg/m ³	10 µg/m ³	1 µg/m ³
24 hour peak concentrations above 75 µg/m ³	None	None	89 exceedances	None
24 hour peak concentrations above 180 µg/m ³	None	None	40 exceedances	None

* This scenario entails 50% mitigation effectiveness at the transfer points, as discussed in Section OD1.

Impact rating and mitigation

The impact significance has been assessed separately for potential acute respiratory illnesses, linked to high peak (24 hour) exposure, and for potential chronic effects, linked to high long-term exposure.

Without mitigation, a throughput of 60 MTPA at the IOHF could result in a high number of exceedances at Blue Water Bay of 24 hour peak PM₁₀ concentration guidelines, in excess of the three exceedances allowed in terms of the guidelines. Predicted concentrations in communities further away are considerably lower. The extent of the impact has thus been rated as local. Due to the predicted very high maximum 24 hour concentration at Blue Water Bay and the potentially large number of exceedances of the guideline levels, the intensity of the potential impact of PM₁₀ from the IOHF on acute respiratory illnesses at Blue Water Bay is considered to be high.

As the operation of the IOHF, and associated generation of PM₁₀, is expected to continue for the foreseeable future, the duration of the impact has been rated as long-term. Overall, the significance of the health impact with regards to **acute respiratory illnesses** caused by high 24 hour exposure to PM₁₀, is deemed to be **high (negative) before mitigation** (see Table E4-7).

Improving the effectiveness of current dust mitigation at the IOHF to the standards stipulated in this report, demonstration thereof through monitoring and liaison with the public are thus considered to be crucial. Without mitigation, the predicted maximum 24-hour PM₁₀ concentrations that will potentially be generated by the 60 MTPA IOHF in adjacent communities, particularly Blue Water Bay, is considered to be too high and a fatal flaw to the project.

Applying effective mitigation measures as recommended in Section OD1 is expected to considerably reduce PM₁₀ peak concentrations and hence the impact intensity: there will be no exceedance of South African NEM:AQA and SANS guidelines, and maximum peak values are expected to lie close to the stringent Canadian and WHO recommendations. The resulting impact significance is rated as **low (negative) after mitigation** (see Table E4-7).

Table E4-7: Significance of acute community health impacts due to 24 hour peak PM₁₀ exposure attributable to a 60 MTPA IOHF

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Local	High	Long-term	High	Probable	HIGH	-ve	High
	1	3	3	7				

Key mitigation measures:

- Implement all mitigation measures listed in Section OD1.

Additional recommendations are listed in Section 8 of this report.

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With mitigation	Local	Low	Long-term	Low	Probable	LOW	-ve	High
	1	1	3	5				

With regards to the long term exposure levels, the predicted annual average concentrations at Blue Water Bay and the other communities in unmitigated circumstances are considered acceptable for health purposes, as modelled concentrations are below the South African guidelines stipulated in NEM:AQA (60 µg/m³) and SANS (40 µg/m³) as well as the much more conservative WHO guidelines (20 µg/m³).

The impact of the operation of the IOHF at 60 MTPA on the risk of **chronic respiratory** illnesses in the surrounding communities, due to exposure to high long-term concentrations of PM₁₀, is considered to be **insignificant** both **before and after mitigation** at all receptor areas surrounding the Port.

Predicted change relative to the current situation

Health impacts associated with PM₁₀ exposure assessed above evaluate the impacts of a throughput of 60 MTPA, irrespective of the baseline.

When comparing the mitigated scenarios at the 32 MTPA and 60 MTPA throughput levels, the predicted PM₁₀ concentrations in Blue Water Bay attributed to Port activities will approximately double. For Vredenburg, the predicted increase is much less pronounced. However, the IOHF does not appear to be currently operating at the full mitigation effectiveness required for the Phase 1B operation. If full required mitigation effectiveness is achieved and maintained with a throughput of 60 MTPA, the predicted PM₁₀ levels may increase only slightly from current, less effectively mitigated, PM₁₀ levels. In addition, the predicted concentrations in the mitigated scenario are so low that no noticeable change relative to the current situation is anticipated.

Impact OD3: More frequent noise in surrounding residential areas through more frequent use of equipment at the IOHF²⁵

Noise sources and receptors

Noise at the IOHF is generated by a number of existing sources, which will be utilised more frequently when throughput rises to 60 MTPA. These include:

- Ore offloading operations and wagon shunting at the tipplers;
- Conveyor belt systems and their engines;
- Stacker / reclaimers; and
- Ship loaders.

The nearest noise receptors in the surroundings of the IOHF are located at:

- **Blue Water Bay** holiday resort and residential area, which is situated approximately 2.2 km west of the facility on the coast. While some noise from port operations can be heard, especially activity at the tipplers, surf (waves breaking) from the sea is also a dominant noise source in this area.

This is a suburban area, where SANS guidelines stipulate average noise limits of 50 dBA during the day and 40 dBA at night. Both levels were being exceeded in 2007²⁶, with average noise levels of 52.4 dBA during the day and 50.0 dBA at night, both largely attributable to the surf. These levels are considered representative of an area along the shore which are generally expected to be higher than the SANS guideline for suburban districts with little road traffic. Under completely windless conditions with no surf-generated noise, the noise level in the Blue Water Bay area is estimated to be approximately 42 dBA²⁷;

- **Saldanha**, which is situated approximately 5.5 km west of the facility on the coast. This is an urban area, where SANS guidelines stipulate average noise limits of 55 dBA during the day and 45 dBA at night. No baseline noise measurements were conducted in 2007, since Saldanha is located further away from the Port than Blue Water Bay, and thus noise impacts from the Port operations are expected to be lower;
- **Club Mykonos**, which is located approximately 6 km east of the Port on the coast. This is a suburban area, where SANS guidelines stipulate average noise limits of 50 dBA during the day and 40 dBA during the night. However, noise levels at Club Mykonos are largely dominated by the surf, leading to largely uniform daytime and night-time average noise levels of 48.9 dBA and 49.3 dBA respectively in 2007.

Under completely windless conditions with no surf-generated noise, the average noise level at Club Mykonos is estimated to be approximately 42 dBA (as approximated by the L90 measurement);

- **Langebaan**, which is located approximately 10 km east of the Port on the coast. This is an urban area, where SANS guidelines stipulate average noise limits of 55 dBA during the day and 45 dBA at night. No baseline noise measurements were conducted in 2007; and

²⁵ **Note:** The discussion and assessment of this impact is based on discussions with and has been reviewed by a noise specialist (Demos Dracoulides).

²⁶ **Note:** The iron ore throughput at the Port amounted to approximately 29 MTPA at that time. Please refer to NGD3 in the 'No-go alternative' section below for more information.

²⁷ **Note:** This is equal to the background noise level L90 measured in the area, which represents noise levels that prevail 90% of the time and disregards the Port operation, as well as the surf-generated noise.

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- **Vredenburg**, which is located approximately 10 km north and inland of the Port. This is an urban area and the business centre of the West Coast, where SANS guidelines stipulate average noise limits of 55 dBA during the day and 45 dBA at night. Average noise levels measured in 2007 were 52.8 dBA during the day and 45.6 dBA at night, and hence below or very close to guideline limits.

Effect of increased throughput on noise sources

With a throughput of 60 MTPA, existing noise generating equipment and infrastructure will be used more efficiently with less downtime. This means that **the same noise levels will be experienced under the increased throughput scenario, but more frequently and / or for longer periods.**

Iron ore is transported from the mines in trains consisting of 342 wagons each, with a capacity of between 80 and 100 tonnes. One train therefore transports approximately 30 780 tonnes of iron ore (assuming an average wagon capacity of 90 tonnes).

At this train capacity, which is expected to remain the same, the number of trains required to deliver the iron ore to the handling facility is expected to increase from 1 462 trains per year for 45 MTPA to 1 949 trains per year for 60 MTPA. This will lead to an increase in tippler working hours from 17 hours per day to 22 hours per day (see Table E4-8).

Table E4-8: Anticipated number of trains and tippler working hours for various iron ore volumes

Handling volume	Trains per year	Trains per week	Tippler working capacity	Tippler hours per day
32 MTPA (current)	1 040	20	50%	12
45 MTPA (approved)	1 462	28	70%	17
60 MTPA (proposed)	1 949	37	93%	22

Noise modelling

Based on noise modelling previously undertaken to assess noise impacts from the IOHF, the train shunting at the tippers is likely to be the most dominant noise source that can be heard outside of the IOHF. This is also one of the aspects of the Port operations that will be most affected by the proposed increase in throughput, as described above.

Shunting is an impulse noise, i.e. it generates short bursts of sound that considerably exceed the residual (background) noise. Impulse noise therefore does not necessarily result in high continuous (average) noise levels, as measured by sound equipment and regulated by guidelines. The resulting noise experienced by receptors is, therefore, more disturbing and irritating to people than continuous noise of the same level. For the modelling of the expected noise levels, in order to compensate for the annoying nature of the shunting noise, a 'penalty' of 12 dBA was added to the predicted levels, in line with standard modelling practice in such cases as per SANS 10103. In addition, the shunting noise was treated as if it was constant²⁸, thereby increasing the average noise level that was being considered. However **it is important to note that actual noise levels will not increase**, but increased levels are used as a methodological proxy to account for the increased frequency of noise events.

This means that the predicted noise levels generated by the model represent a worst case scenario.

Predicted noise levels

In *Blue Water Bay* shunting can currently be heard as an audible but not intrusive²⁹ noise. The modelled noise level of the two tippers, as heard at Blue Water Bay, is approximately 51 dBA, i.e. similar to existing noise levels at Blue Water Bay. As a result, the ambient noise level at Blue Water Bay is expected to increase by approximately 3 dBA, which equates to a change in noise levels that is 'slightly noticeable' to people (according to SANS 10103).

Under calm wind and relatively surf-free conditions, which occur less than 2% of the time in summer and less than 10% of the time in winter, the background noise levels at Blue Water Bay are much lower. The contribution from the tippers at the IOHF could then increase noise levels at Blue Water Bay by between 5 dBA and 10 dBA, which is considered to be both noticeable and intrusive.

As the tippers will be operating more frequently, the impulse shunting noise will also be heard more frequently, and it will be more likely that tippers operate in the infrequent periods when calm wind conditions prevail.

Other receptors are located further away from the facility than Blue Water Bay, and the contribution of noise generated by the IOHF at these locations is estimated to be much lower. Based on modelling, the noise attributable to Port operations was estimated to be below 35 dBA in Saldanha, below 30 dBA at Club Mykonos and below 25 dBA at Vredenburg and Langebaan (compared to the 51dBA at Blue Water Bay). Adding the noise generated by the tippers to the existing ambient noise levels at those receptors is not expected to produce a noticeable change in noise levels in those areas.

Impact rating and mitigation

As the noise from the tippers in particular and the IOHF in general is not expected to result in a noticeable change in noise levels in the surrounding areas other than Blue Water Bay, the impact of more frequent noise is deemed to be of a local extent.

²⁸ ► **Note:** Even if the tippers work at 100% capacity, shunting noise will only be present approximately 25% of the time, generated at regular intervals when wagons are shunted after being offloaded.

²⁹ ► **Note:** This is based on expected responses to an increase in certain noise levels as published in *SANS 10103: The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication*. This study therefore considers noise levels that are 7 dBA or more above the general environmental noise level as being intrusive.

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The intensity of the impact at Blue Water Bay is rated as medium, as the increased noise levels are likely to result in some modified behaviour, e.g. residents closing their windows more often, but is not expected to severely alter the current situation.

As the operation of the IOHF is expected to continue for the foreseeable future, the duration of the impact has been rated as long-term. Overall, the significance of this impact is deemed to be **medium (negative) before mitigation**.

Noise mitigation should focus on reducing the shunting noise, which was repeatedly identified by both stakeholders and the specialist as being the main contributor to noise levels from the Port. In response to previous concerns, Transnet embarked on an investigation of mitigation measures that were also documented and stipulated in the RoDs issued for previous expansion phases³⁰. As such, Transnet is currently in the process of testing the effectiveness of a brake wagon system, which, if effective, is expected to considerably reduce shunting noise. However, the effectiveness of brake wagons in reducing noise to acceptable levels is still under investigation by Transnet, and shunting noise continues to affect surrounding communities, such as Blue Water Bay, and, to a lesser extent, Saldanha.

Given the long, known record of noise impacts and prolonged investigation of mitigation, shunting noise must be effectively mitigated as soon as possible to alleviate stakeholder concerns and comply with conditions of previous RoDs.

In light of the proposed increase in throughput at the IOHF and more frequent shunting, it is recommended that a noise barrier such as a wall must be installed along the shunting lines within a year of authorisation of an increase in throughput to 60 MTPA, should brake wagons be found to be ineffective. Effective mitigation is expected to result in a minimum reduction of noise levels of approximately 7 dBA for both daytime and night-time conditions. The noise from the shunting under very calm conditions may then still be audible at Blue Water Bay but will not be intrusive, i.e. within 5 dBA of the background noise level.

Implementation of effective mitigation is expected to reduce the intensity of the impact to low. Overall, the significance of this impact is deemed to be **low (negative) after mitigation**.

Table E4-9: Significance of more frequent noise in surrounding residential areas

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	Local	Medium	Long-term	Medium	Probable	MEDIUM	-ve	Medium
	1	2	3	6				
Key mitigation measures:								
<ul style="list-style-type: none"> • Use brake wagons for the elimination of shunting noise, if proven effective; <i>alternatively</i>: • Utilise alternative coupling mechanisms for the reduction of shunting noise; and/or; • Construct a noise barrier to the west of the shunting line after tippler 1 with the following specifications: <ul style="list-style-type: none"> ○ Barrier height: 4 m (measured from the level of the shunting line); ○ Barrier position: 3 m or less to the west of shunting line 1; ○ Barrier weight: >20 kg/m²; ○ Barrier absorption coefficients in accordance with European Committee for Standardisation (CEN) standards project (CEN 7 dBA); and ○ Barrier with T crowning; • Monitor noise levels emanating from the shunting lines at Blue Water Bay and Saldanha at least monthly, over a 24-hour period, to assess effectiveness of mitigation measures. Share the results of the monitoring with the authorities and community in quarterly reports. 								
With mitigation	Local	Low	Long-term	Low	Probable	LOW	-ve	Medium
	1	1	3	5				

Predicted change relative to the current situation

Due to the nature of the noise modelling, the predicted average noise levels generated by the noise model relate to a worst case scenario that applies to all throughput levels using the two tippers and shunting lines, as the shunting is modelled as a continuous noise, in addition to applying the 12 dBA 'penalty' to account for its impulsive nature (thereby modelling a higher average noise level). As such, the modelled increase in average noise at Blue Water Bay as a result of the Port activities equally applies relative to the current situation.

The actual disturbance of the impulse type shunting noise is however deemed to be higher relative to the current situation, as opposed to a baseline of 45 MTPA, due to the greater increase in shunting frequency. No noticeable increase in noise levels as a result of the increase in iron ore throughput from 32 MTPA to 60 MTPA at the Port is expected in the other surrounding residential areas of Saldanha, Club Mykonos, Langebaan and Vredenburg.

³⁰ ► **Note:** The RoD for the Phase 1A expansion, dated 22 March 2002, stipulates in Condition 2.20 that "SA Port Operations must honour their commitment to mitigate the noise impact [...]. SA Ports Operations has made a commitment to implement both the shield and coupling base concepts [...]." Condition 7.2.8 of the Phase 1B expansion RoD, dated 4 August 2006, requires the implementation of a noise impact mitigation programme at the Port of Saldanha.

Impact OD4: Increased interference of iron ore carriers with other shipping traffic in the Bay³¹

Effect of increased throughput on ship numbers

Iron ore is exported from the Port by large bulk iron ore carriers, which are loaded at one of the two iron ore berths on the iron ore jetty. On average, each vessel carries approximately 156 000 tonnes of iron ore. The size of ore carriers entering the Port, and thus ore volume exported per ship, is not expected to change in the near future, as current trends do not indicate an impending overall change in ship size.

As such, the number of ships required to export the iron ore from the handling facility is expected to increase from 288 ships per year for 45 MTPA export volume to 385 ships per year for 60 MTPA of exported ore. This is expected to lead to an increase in the average number of moored ships waiting to berth to approximately 7-8 ships at any given time, notwithstanding the envisaged increase in the ship handling efficiency and resulting increase in berth occupancy rate to 75%.

In 2006/07, 64 other (non-iron ore carrier) ships entered the Port monthly. Five of these were tankers that moored at the oil berth located at the tip of the iron ore jetty, and the remaining 59 utilised the Multi Purpose Terminal (MPT), which currently has a 33% occupancy rate. This excludes the large number of fishing vessels based at Saldanha. Assuming that the number of non-iron ore carriers will not change considerably, it is expected that at the proposed export volume of 60 MTPA, approximately 96 larger ships (including ore vessels), plus fishing vessels, will enter the Bay every month (see Table E4-10), which is an increase of approximately 9% compared to 45 MTPA.

Table E4-10: Anticipated number of ships required for the export of various iron ore volumes

Export volume	Iron ore carriers per year	Iron ore carriers per month	Average number of iron ore carriers waiting	Total number of ships using the iron ore jetty per month
32 MTPA (current)	205	17	3-4 (inside Bay if possible)	81
45 MTPA (approved)	288	24	6-7 (incl. 3-4 outside of Bay)	88
60 MTPA (proposed)	385	32	7-8 (incl. 4-5 outside of Bay)	96

Impact discussion

Iron ore carriers waiting to berth are anchored either inside Saldanha Bay (up to two ships can anchor in Big Bay and one in Small Bay) or outside the bay. Waiting vessels may also anchor in St. Helena Bay. When a berth becomes available, the vessel sails towards the berth and two to three tugboats turn the vessel either in the 24 m deep turning circle directly south of the jetty or off the berth if the draught permits. Ships are then moored to the berth with their bow (front) facing towards the sea before being loaded.

The normal operation of iron ore vessels in the Bay may result in possible interference of other vessels using the Bay, such as smaller fishing and recreational boats (and vice versa). The present port policy is to have only one piloted ship moving at a time. All ships in the Port larger than 5 000 deadweight tonnes (DWT) have to be piloted while sailing.

It is anticipated that the export of 60 MTPA of iron will require an average of 32 ships to call at the Port per month, i.e. approximately one carrier per day. Since the carriers spend most of their time in the Bay anchored or moored to the berth, they spend relatively little time in actual transit in the Bay or entrance channel, when they would most likely present a potential obstacle to other boat traffic. Moreover, the iron ore carriers are piloted, very visible, escorted by tugs and move at slow speeds and within the pre-determined route of the deeper entrance channel. As such, their movements are predictable.

Impact rating and mitigation

As the iron ore vessels are only expected to affect shipping traffic within and in the close vicinity of Saldanha Bay, the extent of the impact has been rated as local. The intensity of the impact is considered to be low, as the ore carriers are expected to have very little effect on other ships, due to their relatively low numbers, limited time they spend moving in the Bay and the predictability of their movements. The impact duration has been rated long-term as the Port operation, and hence iron ore carrier traffic, is expected to continue for the foreseeable future. The probability of interference of iron ore carriers with other vessels is considered to be low and has thus been rated as possible. The significance of this potential impact is thus rated as **very low (negative)** before mitigation. Recommended mitigation measures are shown in Table E4-11 but are not expected to reduce the predicted overall very low significance any further.

³¹ **Note:** The discussion and assessment of this impact is based on discussions with and has been reviewed by a shipping risk specialist (Hans Moes, CSIR).

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Table E4-11: Significance of the possible interference of more iron ore carriers with other shipping traffic in the Bay

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	Local	Low	Long-term	Low	Possible	VERY LOW	-ve	High
	1	1	3	5				
<p>Key mitigation measures:</p> <ul style="list-style-type: none"> Follow established procedures for iron ore carrier movements in and around the Bay and communicate these to all other shipping operators. Closely observe the presence of small vessels in or near the entrance channel. Warn such vessels by e.g. blowing the iron ore carrier's horn. Maintain present Port policy of moving one (piloted) ship at a time within the confinements of the Port. 								
With mitigation	Local	Low	Long-term	Low	Possible	VERY LOW	-ve	High
	1	1	3	5				

Predicted change relative to the current situation

Although the number of iron ore carriers entering the Bay would nearly double from current levels to reach the proposed export volume of 60 MTPA, this is not expected to markedly change shipping traffic in the bay due to the low frequency of carrier arrivals.

Impact OD5: Disturbance of Saldanha Bay's marine ecosystem from increased ballast water discharge from iron ore carriers³²

As described in Section OD4, the number of ships required to export the iron ore from the handling facility is expected to increase from 288 ships per year for 45 MTPA export volume to 385 ships per year for 60 MTPA of exported ore. These carriers arrive with no or little cargo and therefore enter the Port of Saldanha with ballast water in their tanks to improve the ship's stability and manoeuvrability. The ballast water is then discharged continuously at the berth while the ship is loaded with iron ore.

Discharging ballast water risks releasing organisms and substances that were contained in the water from the intake port into Saldanha Bay. This can include alien species, which may become invasive and outcompete indigenous species, as well as viral pathogens and contaminants, which may reduce water quality. This could pose a particular problem as the Langebaan Lagoon, which is registered as a wetland of international importance under the RAMSAR convention, is connected to the bay, with tidal flow of water from the Bay into the lagoon and vice versa. Invasive species or pathogens and contaminants could also negatively affect mariculture practiced in Saldanha Bay.

A typical iron ore carrier enters the Port of Saldanha with some 41 600 m³ of ballast water, which is released within the Bay³³. With approximately one ship arriving per day, this means a release of about 21 500 m³ of ballast water per tidal cycle of 12.4 hours. The additional 97 iron ore carriers expected to enter the Port every year to accommodate the proposed increase in export volumes will release approximately 4 million m³ of ballast water in the Bay per year, in addition to the approximately 12 million m³ of ballast water released per year by carriers for the 45 MTPA export scenario. Ballast water discharge volume is an insignificant 0.1% of the tidal exchange volume³⁴.

The Port of Saldanha enforces the International Maritime Organisation (IMO) guidelines regarding the management of ballast water, which require exchange of ballast water in the open sea before entering the Port. As such, more than 95% of the ballast water currently discharged from foreign ships at the Port is of oceanic origin. It is expected that 99% of all organisms uplifted with the original ballast water would have been discharged to open sea in this way³⁵, with the residual organisms potentially retained not expected to pose a significant threat to the local ecosystem in the Bay. Nevertheless, the residual **risk** posed by surviving organisms does increase with the increase in the overall volume of ballast water discharged, e.g. by 33% for the increase from 45 MTPA to 60 MTPA export volume.

The possible threat to the local ecosystem and mariculture in Saldanha Bay from ballast water is considered to be of local extent and low intensity, with a long-term duration. The overall significance of this impact has been rated as **low (negative) before mitigation** (see Table E4-12). This assessment assumes that vessels comply with the Port's requirements to adhere to IMO guidelines. Should this not be the case, the impact is likely to be significantly higher. The recommended mitigation measures, particularly those not referring to practices already implemented at the Port (e.g. the early adoption of ballast water treatment methods) are expected to further reduce the probability of the impact occurring, resulting in an overall impact significance rating of **very low (negative) after mitigation if those treatment methods are implemented and effective**.

³² **Note:** The discussion and assessment of this impact is based on discussions with and has been reviewed by a shipping risk specialist (Hans Moes, CSIR).

³³ **Note:** Carter R. (2007) Ecological Effects of increased Ballast Water Discharges: Draft specialist study for Phase 2 EIA (unreleased).

³⁴ **Note:** The volume of water that enters and leaves Small Bay and the northern sector of Big Bay per mean tidal cycle of 12.4 hours (the so-called mean tidal prism, which flows past the iron ore loading jetty) is about 20 million m³. The discharged ballast water volume will then increase from 0.08% of this tidal prism for 45 MTPA export volume to 0.1% for 60 MTPA export volume.

³⁵ **Note:** Det Norske Veritas (2005). Ballast water scoping study. Report No. 2005-0638, Revision No. 02, cited in: Carter R. (2007) Ecological Effects of increased Ballast Water Discharges: Draft specialist study for Phase 2 EIA (unreleased).

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Table E4-12: Impact significance of the possible disturbance of the Bay's marine ecosystem due to increased ballast water discharge

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	Local	Low	Long-term	Low	Probable	LOW	-ve	High
	1	1	3	5				
<p>Key mitigation measures:</p> <ul style="list-style-type: none"> Continue to enforce adherence of vessels with IMO guidelines regarding ballast water management (Global Ballast Water Management Programme Resolution A868(20)). Regularly monitor compliance with the IMO guidelines and penalise non-compliance. Adopt IMO approved improved ballast water treatment methods that are currently being tested internationally (such as in-tank heat treatment, filtration, disinfection, oxygen deprivation or combinations of these) with the aim to reduce the survival rate of organisms in the originally uplifted ballast water to less than 0.1% as early as possible, if feasible. 								
With mitigation	Local	Low	Long-term	Low	Possible	VERY LOW	-ve	High
	1	1	3	5				

Predicted change relative to the current situation

The ballast water volume is largely exchanged with oceanic water before a ship enters the Port, removing an estimated 99% of invasive organisms and significant amounts of pathogens and contaminants that might have been in the original ballast water. Although the volume of ballast water released under the proposed throughput will approximately double relative to the current situation, the ballast water volume is still considered to be insignificant relative to tidal exchange water volume. The additional ballast water is thus not expected to have a noticeable effect on the bay's marine ecosystem. However, the small residual risk that any surviving organisms pose to the bay's ecosystem will increase with the increased volume of ballast water.

Impact OD6: Increased risk of oil spills in Saldanha Bay associated with more iron ore carriers³⁶

In addition to the *impacts* resulting from normal operation of the extra iron ore vessels discussed in Sections OD4 and OD5, there are *risks* associated with the additional number of carriers at and around the Port, most notably an accidental release of oil as a result of e.g. a collision or grounding of vessels.

Unlike the potential impacts discussed above, an oil spill should not occur as part of the **normal vessel operation**, but will be the result of an accident or incident. It is considered very unlikely that such an accident will occur, as management procedures are in place to minimise these risks, and such accidents have rarely or never happened in the 30-year operational history of the Port of Saldanha³⁷. However, should such an incident occur, it might have significant consequences. Therefore, the discussion below addresses the possible significance of an impact *if* the incident occurs, which in itself is considered very unlikely.

Oil pollution may harm or kill animals living within the Bay or on the shore, depending on the extent of the spill, by oiling of the animals themselves and smothering their habitats. This is a particular concern with regards to the tourism and mariculture sectors and Langebaan Lagoon, which is recognised as a wetland of international importance under the RAMSAR convention.

Models predict that a minor oil spill due to grounding of an ore carrier could occur about once every 30 years for the present shipping intensity, but that this would increase to once in 25 years for the proposed export of 60 MTPA.

The iron ore vessels calling at Saldanha carry limited amounts (generally about 2 000 tonnes) of bunker (fuel) oil, which is small compared to the volume of oil transported by tankers. Furthermore, a spill is considered unlikely to reach the Langebaan Lagoon because of the separation in tidal flow between Small Bay and Big Bay, the prevailing southerly wind and wind-driven current circulation³⁸.

Due to the sensitivity of the Langebaan Lagoon and its international importance, as reflected by its status as a RAMSAR site, the possible unmitigated impact of an oil spill is rated as being of national extent (and beyond). The maximum intensity of a possible impact related to an oil spill is considered to be high, again due to the proximity of the Langebaan Lagoon and potential impact on livelihoods if mariculture is affected. The impact duration from a single event is considered to be medium term, as polluted areas could take a long time to recover. As such, the overall significance of this impact is rated as **very high (negative) before mitigation**. Implementing the recommended mitigation is expected to reduce both the extent and intensity of the impact (e.g. by adequately containing a spill before it can reach sensitive receptors), reducing the impact significance to **low (negative) after mitigation** (see Table E4-13 below).

³⁶ ► **Note:** The discussion and assessment of this impact is based on discussions with and has been reviewed by a shipping risk specialist (Hans Moes, CSIR).

³⁷ ► **Note:** In its 30-year operational history, the Port of Saldanha has experienced two accidents involving grounding of an ore carrier (but without an oil spill) (Personal communication H. Moes).

³⁸ ► **Note:** Both the tidal flow and the wind-driven (surface) flow can determine the spread of a potential oil spill, depending on which dominates. The dominant wind in Saldanha is southerly, which would drive an oil spill northwards away from the Langebaan Lagoon. In the rare cases of a severe northerly (winter) storm, an oil spill could be driven southward towards the Lagoon. If the tidal flow dominates, then oil from an accident in the northern part of the bay entrance, where the navigation channel is located, is likely to be carried by the tide into Small Bay.

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Table E4-13: Significance of accidental oil spills associated with more iron ore carriers in the Port (in the unlikely event that this occurs)

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability*</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	National	High	Medium-term	Very High	Probable	VERY HIGH	-ve	Medium
	3	3	2	8				
<p>Key recommended mitigation measures are designed to assist in minimising the risk of an oil spill (these measures will however not reduce the presented impact significance, as this was assessed <u>as if</u> the spill occurs) or to provide fast and effective response should it occur:</p> <p><u>Minimising the risk of an incident that could lead to an oil spill:</u></p> <ul style="list-style-type: none"> Alert the captain of a departing vessel of any adverse wave and weather conditions outside of the Port, making use of the Vessel Traffic Service (VTS) system for shipping operations in use at the Port and taking into account data continuously received from the two wave buoys located next to the Saldanha entrance channel and offshore of the Slangkop Lighthouse. Use the Integrated Port Operations Support System (IPOSS) as a support system to decide whether to allow deep-draught ships into the entrance channel at any particular time. Attend to mooring lines and mooring system (winches) continuously to keep the lines tight and mooring secure. Maintain all Port equipment, including tug boats, in excellent working condition. Diminish speed of ore carriers manoeuvring in the Bay sufficiently (to a few knots) to allow tug boats to change the course of the vessel should this be necessary e.g. to avoid a collision, Ensure ongoing and adequate training of all staff involved in the handling of iron ore carriers. Training must encompass both routine ship handling as well as emergency procedures such as detection and responses to oil spills or fires. <p><u>Response to an oil spill:</u></p> <ul style="list-style-type: none"> Implement the Port of Saldanha Oil Spill Contingency Plan, included in the Draft EMP in Appendix D. Regularly review and update Port safety guidelines, rules and regulations, taking into account international best practice and any previous incidents at the Port. 								
With mitigation	Regional	Medium	Short-term	Low	Probable	LOW	-ve	Medium
	2	2	1	5				

* This probability relates to the likelihood of the described impact occurring if the incident occurs, e.g. it does not rate the overall likelihood of the incident occurring in the first place, with is considered to be small.

Predicted change relative to the current situation

The overall likelihood of an incident occurring is higher relative to the current situation rather than a baseline of 45 MTPA, due to the increase in shipping traffic. Nevertheless, the overall likelihood of such accidents is considered to be very low. As the impact rating presented above did not take into account the probability of the incident occurring, but rather the significance should the impact occur, the significance of an oil spill remains the same as in the current situation.

Impact OD7: Additional generation of wealth for South Africa

As the sole shareholder of Transnet, the State of South Africa derives wealth from the proceeds of iron ore export. The increase in throughput of iron ore from 45 MTPA to 60 MTPA is expected to generate additional revenue from the Port and rail line (which cannot be separated financially as they form an integral operation) of approximately R2 billion. This represents an estimated 50% increase in revenue due to a staggered tariff system that pays higher rates per ton for higher throughputs. This increase is achieved with very little additional expenditure in Port operations (although it has to finance certain upgrades to the rail corridor). This revenue supports the operation of the rail line and Port, and any profits will be channelled through Transnet and accrue to South Africa as State income for spending by the Government.

As the earnings from the Port are expected to contribute at least partly to national income, the anticipated benefit is considered to be of national extent. Within the national budget, the potential earnings of the Port (and rail line) are expected to have an impact of low intensity. The impact duration was rated as long term, in line with the anticipated long term lifespan of the Port. As such, the overall significance of this impact is rated as **high (positive)**. No optimisation measures applicable to this benefit applicable to Port operations have been identified (see Table E4-14 below).

Table E4-14: Impact significance of the possible additional foreign income generated for South Africa

	<i>Extent</i>	<i>Intensity</i>	<i>Duration</i>	<i>Consequence</i>	<i>Probability</i>	<i>Significance</i>	<i>Status</i>	<i>Confidence</i>
Without mitigation	National	Low	Long-term	High	Probable	HIGH	+ve	Medium
	3	1	3	7				

Indirect impacts:

Impact OI1: Additional foreign exchange income for South Africa from mine tax and royalties

The iron ore exports generated revenues for the mining companies of approximately R10.5 billion in 2007 (Kumba Iron Ore: R9 billion and Assmang: R1.4 billion)³⁹, which translated into tax income for South Africa of an estimated R950 million in 2007⁴⁰. Revenue, and as a result, tax income will fluctuate depending on the market price for iron ore at the time.

If export volume was increased to 60 MTPA, revenue and resulting tax income of the South African State at any prevailing market price is expected to increase by approximately 33% relative to the revenue associated with an export volume of 45 MTPA. Based on 2007 figures, when approximately 29 MTPA of iron ore were exported, this could translate into an estimated R2 billion of State tax income.

Impact OI2: Generation of additional employment at the mines supplying the iron ore

Kumba is currently in the process of developing its new Sishen-South iron ore mine, which will be crucial in supplying additional ore to increase the throughput at the Port of Saldanha to 60 MTPA.

The Sishen-South mine is expected to provide work for 750 permanent employees⁴¹. As such, the proposed increase in throughput at the Port of Saldanha will be the basis for creating a viable new operation and jobs at the Sishen-South mine, besides maintaining those at the existing Sishen and Assmang mines.

Cumulative impacts:

Cumulative impacts occur when:

- Different impacts of one activity or impacts of different activities on the environment take place so frequently in time or so densely in space that they cannot be assimilated; or
- Impacts of one activity combine with the impacts of the same or other activities in a synergistic manner.

For the most part, cumulative effects or aspects thereof are too uncertain to be quantifiable, due to mainly lack of data availability and accuracy. This is particularly true of cumulative effects arising from potential or future projects, the design or details of which may not be finalised or available and the direct and indirect impacts of which have not yet been assessed.

Impact OC1: Increased pressure on the environment and its carrying capacity in conjunction with other existing industries in the area

Within the last 30 years, Saldanha Bay has been transformed from a minor fishing port into a significant centre of heavy industry within the Western Cape. Since the construction of the Port of Saldanha and dredging of the Bay to accommodate large bulk carriers in the 1970s, several other companies have developed large operations in the area. These include Namakwa Sands (a mineral sands mining company that operates a smelter at Saldanha Bay), Mittal Steel (a steel producer located approximately 3 km from the entrance of the Port of Saldanha) and the Duferco Steel Mill. These entities use the general cargo facilities at the Port of Saldanha.

These facilities also emit pollutants into the air. Due to the location of the individual facilities relative to each other, it is expected that some emissions from the different facilities will affect the same areas and hence have a cumulative effect. These industries also tend to use large amounts of water, a scarce resource in the area. The water requirements of the Port in conjunction with other industries, especially in the event that the RO Plant appeal is upheld, as well as their combined waste water discharges, are likely to put the existing resources under pressure.

However, a comprehensive study to determine the individual and cumulative impacts of these different large industries, as well as the many other smaller point and non-point emitters and consumers in the area, has not been compiled and is arguably the responsibility of the local authority.

Impact OC2: Increased pressure on the environment and its carrying capacity in conjunction with planned industrial facilities in the area

Based on the previous investigation by Transnet of an increase in the IOHF's capacity to 93 MTPA, currently put on hold, and the anticipated long-term increase in demand for and supply of iron ore mined in the Northern Cape, it is highly likely that the capacity of the IOHF will be expanded beyond 60 MTPA at some point in the future.

The Saldanha Bay Municipality is also in the process of investigating the feasibility of establishing an Industrial Development Zone stretching inland from the port.

Depending on the specific aspects of these projects, they are likely to have additional impacts on the marine environment of the Bay, the air quality of the area and the socio-economic conditions in communities surrounding the Port.

³⁹ Kumba Iron Ore Annual Report 2007, p. 144 and Assmang Limited Annual Report 2006, p. 52.

⁴⁰ Kumba Iron Ore Annual Report 2007, p. 147 and Assmang Limited Annual Report 2006, p. 53.

⁴¹ http://www.kumba.co.za/ops_sishen_south.php

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The Strategic Environmental Assessment which the municipality is in the process of commissioning for the proposed Industrial Development Zone should consider the cumulative impacts of the current, and potential future, industrial developments in the area.

Alternative S2

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative S3

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

The IOHF is an existing facility that currently handles some 32 MTPA of iron ore. The proposed project entails the increase in iron ore throughput to 60 MTPA, using the existing infrastructure.

The no-go alternative implies that the existing handling operations at the IOHF will be continued, but that the volume of iron ore handled will not exceed 45 MTPA, the volume currently authorised in terms of the Phase 1B RoD and the provisional emissions licence. The direct impacts associated with the no-go alternative (i.e. increased throughput to 45 MTPA) are those previously investigated in the Phase 1B Environmental Impact Assessment process. These impacts are briefly summarised below:

- Dust emitted by the IOHF is expected to be deposited in the adjacent communities. However, due to relatively low levels of dust generated by the IOHF (when mandatory mitigation is applied), this is expected to result in nuisance rather than health impacts;
- Dust emitted by the IOHF also contains PM₁₀, which are detrimental to health. However, due to low levels of PM₁₀ generated by the IOHF (when mandatory mitigation is applied), this is not expected to result in significant health impacts;
- Noise from the IOHF, particularly from train shunting, is expected to be a nuisance in nearby communities, especially Blue Water Bay. Mandatory mitigation stipulated in the RoD for Phase 1B is expected to considerably reduce noise levels from the IOHF.
- The estimated 24 iron ore carriers calling at the Port per month will present a small possibility of interference between ore vessels and other shipping traffic in the bay.
- The estimated 12 million m³ of ballast water that will be released into the bay by iron ore carriers per year is not expected to have a significant impact as Port regulations require that ballast water is exchanged with oceanic water before a ship enters the Port (thereby expelling most contaminants) and the ballast water volume is insignificant relative to the tidal prism. *This assumes that vessels comply with the requirements of the Port of Saldanha to adhere to IMO ballast water guidelines. Should this not be the case, the impact is likely to be much higher.*
- The risk of an accident, possibly resulting in an oil spill, is associated with the ore carriers (as well as all other ships) using the Port of Saldanha. Based on the performance of the Port to date, this risk is estimated to be very low, although an oil spill could have potentially high impacts.
- Employment of 297 direct permanent employees is expected to be maintained.
- The Port and rail line are expected to derive a revenue of approximately R3.5 billion from an export of 45 MTPA of iron ore.

Indirect impacts:

Indirect impacts of the no-go alternative are predominantly associated with secondary income and employment generation in the mines supplying the ore, which may not be able to sustain their expansion currently in progress, and local communities, where goods for the IOHF are sourced and money earned by IOHF employees is spent.

Cumulative impacts:

The cumulative impacts associated with the no-go alternative would be as those discussed in OC1 and OC2, though to a somewhat smaller scale, reflecting the lower throughput at the IOHF.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

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Alternative S1	Alternative S2	Alternative S3
<p>Mitigation measures relating to the direct, indirect and cumulative impacts identified above are listed in the relevant impact discussion Sections. They are also listed in Section 8 of this BAR.</p> <p>Mitigation measures relating to the no-go alternative are listed in the RoD issued on 4 August 2006 for the Phase 1B expansion.</p>		

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the operational phase:

Alternative A1 (preferred alternative)

<p><i>Direct impacts</i></p> <p><i>Indirect impacts:</i></p> <p><i>Cumulative impacts:</i></p>
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Alternative A2

<p><i>Direct impacts:</i></p> <p><i>Indirect impacts:</i></p> <p><i>Cumulative impacts:</i></p>

Alternative A3

<p><i>Direct impacts:</i></p> <p><i>Indirect impacts:</i></p> <p><i>Cumulative impacts:</i></p>

No-go alternative (compulsory)

<p><i>Direct impacts:</i></p> <p>Since the no technology alternative is proposed, the impacts discussed in Section above refer.</p> <p><i>Indirect impacts:</i></p> <p><i>Cumulative impacts:</i></p>

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative A1	Alternative A2	Alternative A3

5. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

List the potential site alternative related impacts (as appropriate) that are likely to occur as a result of the decommissioning or closure phase:

Alternative S1 (preferred alternative)

<p><i>Direct impacts:</i></p> <p>The minimum anticipated life span of the IOHF and all associated infrastructure is 25 to 50 years. As such, no decommissioning procedures or restoration plans have been compiled at this stage, which will require a separate Basic Assessment in terms of GR 386 (listed activity 23). A far more likely scenario is that the IOHF will be expanded further in future.</p> <p><i>Indirect impacts:</i></p> <p>See comment above.</p> <p><i>Cumulative impacts:</i></p> <p>See comment above.</p>
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Alternative S2

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative S3

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

The minimum anticipated life span of the IOHF and all associated infrastructure is 25 to 50 years. **As such, no decommissioning procedures or restoration plans have been compiled at this stage**, which will require a separate Basic Assessment in terms of GR 386 (listed activity 23). A far more likely scenario is that the IOHF will be expanded further in future.

Indirect impacts:

See comment above.

Cumulative impacts:

See comment above.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative S1	Alternative S2	Alternative S3
As decommissioning procedures or restoration plans have not yet been compiled at this stage, no mitigation measures have been identified.		

List the potential activity/technology alternative related impacts (as appropriate) that are likely to occur as a result of the decommissioning and closure phase:

Alternative A1 (preferred alternative)

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative A2

Direct impacts:

Indirect impacts:

Cumulative impacts:

Alternative A3

Direct impacts:

Indirect impacts:

Cumulative impacts:

No-go alternative (compulsory)

Direct impacts:

The minimum anticipated life span of the IOHF and all associated infrastructure is 25 to 50 years. **As such, no decommissioning procedures or restoration plans have been compiled at this stage**, which will require a separate Basic Assessment in terms of GR 386 (listed activity 23). A far more likely scenario is that the IOHF will be expanded further in future.

Indirect impacts:

See comment above.

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Cumulative impacts:

See comment above.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative A1	Alternative A2	Alternative A3

6. PROPOSED MANAGEMENT OF IMPACTS AND MITIGATION

Indicate how identified impacts and mitigation will be monitored and/or audited.

Alternative S1	Alternative S2	Alternative S3
Monitoring and management recommendation are listed in Section 8 of this BAR.		

Alternative A1	Alternative A2	Alternative A3

7. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up 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.

Alternative S1 (preferred alternative)

The proposed increase in iron ore throughput at the IOHF to 60 MTPA is expected to have a number of potential impacts on the surrounding communities and environment⁴². None of these are expected to be of high significance assuming the mitigation measures recommended in this report are effectively implemented. The expected impacts and their significance following mitigation are summarised below:

- The effect of **dust** emitted by the IOHF is considered to be a **negative** impact of **low** significance. Although dust levels are expected to lie below South African action levels, the dust is very visible and staining due to its red colour, and constitutes a nuisance impact. However, it is not expected that dust fallout will reach concentrations that affect health.
- The health effect of **PM₁₀** contained in the dust emitted by the IOHF is considered to be a **negative** impact of **low** significance, as concentrations reached in the nearby community of Blue Water Bay are expected to be low.
- The nuisance effect of **noise** emanating from IOHF operations, particularly train shunting, is considered to be a **negative** impact of **low** significance.
- The potential disturbance of Saldanha Bay's marine ecosystem from **ballast water** discharged by iron ore carriers is considered to be a **negative** impact of **very low** significance, *assuming vessels comply with Port regulations regarding ballast water exchange*.
- The potential disturbance of Saldanha Bay's marine ecosystem and mariculture due to an **oil spill** is considered to be a **negative** impact with **low** significance, *in the very unlikely event that a spill occurs*.
- The **generation of wealth** for the South African State from the export of iron ore is considered to be a **positive** impact with **high** significance.

Under unmitigated conditions, both dust fallout levels and PM₁₀ concentrations are predicted to be very high, thus presenting a potential health risk to people exposed to such high concentrations of dust and PM₁₀. Noise has been an ongoing concern of stakeholders since previous IOHF expansion phases. Measures to mitigate these impacts are being implemented at the Port and have shown improvements in the situation. However, it appears that the mitigation effectiveness stipulated in the authorisation for the IOHF expansion to 45 MTPA (currently being implemented) and recommended in this report has not yet been reached. Improvements in the implementation and monitoring of mitigation measures is thus essential to enable the IOHF to achieve the levels considered acceptable for a throughput of 60 MTPA.

In terms of Section 31 (m) of NEMA, the environmental practitioner is required to provide an opinion as to whether the activity should or should not be authorised. A qualified opinion is ventured and in this regard SRK believes that sufficient information is available for DWEA to take a decision:

Based on the specialist input and assessment of impacts, SRK is of the opinion that the application for the increase of iron ore throughput to 60 MTPA should **be approved**, provided the mitigation measures stipulated in this report are effectively implemented.

⁴² **Note:** The BA focuses on (environmental) impacts in surrounding communities and not those (occupational impacts) within the boundaries of the Port.

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Alternative S2

Alternative S3

Alternative A1 (preferred alternative)

Alternative A2

Alternative A3

No-go alternative (compulsory)

The No-go alternative was subject to a scoping study, which found that the anticipated impacts would be acceptable, **provided that the mitigation measures are implemented**. The development was authorized by DEAT. Transnet is currently in the process of implementing the no-go alternative and related mitigation measures.

8. RECOMMENDATION OF 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 ✓	NO
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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:

► Note: The following mitigation measures and recommendations are based on the specialist studies, which focus on components of the proposed project, as well as the analysis undertaken by the EAP, which provides a holistic assessment of potential impacts of the proposed project. Where mitigation measures and recommendations contained in the BAR and summarised here differ from those contained in the specialist studies, the BAR supersedes the specialist studies.

Mitigation measures:

- Pave all unpaved roads;
- Implement effective housekeeping measures, which are to include the following at all times:
 - Sweep all paved surfaces (e.g. roads) within the terminal daily. Swept material must be immediately collected and disposed of so that it cannot generate dust;
 - Clean conveyor belts continuously by scraping them, using the already installed mechanism, to remove iron ore clinging to them, which can disperse as dust; and
 - Remove spilled ore and dust piles throughout the IOHF, e.g. spilled material that has fallen off the conveyor belts. This should occur at least weekly, to avoid accumulation of material. Store this material in such a way that it cannot generate dust;
 - Designate a Transnet employee to daily inspect the IOHF for compliance with the above housekeeping practices and identify potential sources of dust that need to be cleaned up. Remove such sources immediately.
- Maintain an iron ore moisture content of 1.2%, as monitored at the sampling plant. Conduct additional monitoring of moisture content at other points in the handling chain if necessary;
- Cover all transfer points and conveyor belts, where practical, to reduce wind speeds and re-entrainment of dust into the atmosphere during ore transfer. Maintain existing covers;
- Maintain 50% dust control effectiveness at the transfer points (by using sprayers and covers). This means that emissions from transfer points should only be 50% of the levels measured previously without mitigation;
- Ensure optimal performance of the (cartridge filter) dust extraction system installed at the tipplers. The system must meet design specifications at all times, e.g. total dust emissions levels must be below 10 mg/Nm³. Perform ongoing monitoring of tippler stack emission levels;
- Consider the use of a chemical suppressant (as a complement for moisture control, especially when it is difficult to maintain a stable moisture level over a long period of time);
- Amend, where required, and implement the air quality monitoring and management plan stipulated as a condition of the Phase 1B Record of Decision⁴³;
- Monitor dust levels at suitable sites within the Port and/or on its boundary (e.g. NPA building) to measure actual emissions related to the Port. Use these monitoring results to continually assess the effectiveness of dust

⁴³ **► Note:** Condition 7.2.8 of the RoD. The stipulated plan includes aspects such as dust monitoring and control, dust suppression and mitigation and source emission monitoring and control.

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mitigation at the Port. Immediately respond to a decline in effectiveness, e.g. an increase in dust levels beyond the predicted levels (such as 812 mg/m²/day at the NPA building for 60 MTPA throughput, at 50% mitigation effectiveness), by identifying the source of increased emissions within the IOHF, reinstating effective mitigation or temporarily shutting down the relevant operation until emissions can be reduced.

- Use brake wagons for the elimination of shunting noise, if proven effective; *alternatively*:
- Utilise alternative coupling mechanisms for the reduction of shunting noise; and/or;
- Construct a noise barrier to the west of the shunting line after tippler 1 with the following specifications:
 - Barrier height: 4 m (measured from the level of the shunting line);
 - Barrier position: 3 m or less to the west of shunting line 1;
 - Barrier weight: >20 kg/m²;
 - Barrier absorption coefficients in accordance with European Committee for Standardisation (CEN) standards project (CEN 7 dBA); and
 - Barrier with T crowning;
- Monitor noise levels emanating from the shunting lines at Blue Water Bay and Saldanha at least monthly, over a 24-hour period, to assess effectiveness of mitigation measures. Share the results of the monitoring with the authorities and community in quarterly reports.
- Follow established procedures for iron ore carrier movements in and around the Bay and communicate these to all other shipping operators.
- Closely observe the presence of small vessels in or near the entrance channel. Warn such vessels by e.g. blowing the iron ore carrier's horn.
- Maintain present Port policy of moving one (piloted) ship at a time within the confinements of the Port.
- Continue to enforce adherence of vessels with IMO guidelines regarding ballast water management (Global Ballast Water Management Programme Resolution A868(20)).
- Regularly monitor compliance with the IMO guidelines and penalise non-compliance.
- Adopt IMO approved improved ballast water treatment methods that are currently being tested internationally (such as in-tank heat treatment, filtration, disinfection, oxygen deprivation or combinations of these) with the aim to reduce the survival rate of organisms in the originally uplifted ballast water to less than 0.1% as early as possible, if feasible.

Minimising the risk of an incident that could lead to an oil spill:

- Alert the captain of a departing vessel of any adverse wave and weather conditions outside of the Port, making use of the Vessel Traffic Service (VTS) system for shipping operations in use at the Port and taking into account data continuously received from the two wave buoys located next to the Saldanha entrance channel and offshore of the Slangkop Lighthouse.
- Use the Integrated Port Operations Support System (IPOSS) as a support system to decide whether to allow deep-draught ships into the entrance channel at any particular time.
- Attend to mooring lines and mooring system (winches) continuously to keep the lines tight and mooring secure.
- Maintain all Port equipment, including tug boats, in excellent working condition.
- Diminish speed of ore carriers manoeuvring in the Bay sufficiently (to a few knots) to allow tug boats to change the course of the vessel should this be necessary e.g. to avoid a collision,
- Ensure ongoing and adequate training of all staff involved in the handling of iron ore carriers. Training must encompass both routine ship handling as well as emergency procedures such as detection and responses to oil spills or fires.

Response to an oil spill:

- Implement the Port of Saldanha Oil Spill Contingency Plan.
- Regularly review and update Port safety guidelines, rules and regulations, taking into account international best practice and any previous incidents at the Port.

Monitoring measures and recommendations:

- The effective implementation of all dust and noise mitigation measures should be monitored and confirmed before any future expansions to the port (e.g. beyond 60 MTPA throughput) are undertaken.
- Maintain the existing monitoring network (including the weather stations) at Blue Water Bay, Vredenburg, the Port Jetty and the NPA building. The stations should monitor both PM₁₀ and dust fallout levels.
- Expand the monitoring network in consultation with air quality specialists to ensure that a comprehensive baseline is being established. This may include measurement of dust fallout and PM₁₀ levels in the Langebaan area;
- Ensure that the network remains in good working order and records at least 80% of the data it is supposed to capture. To this effect, install a system with automatic notification in the event of failure or perform at least weekly check-ups of the stations. Immediately repair the unit should it fail;
- Measure stack emissions of the dust extraction systems at the tipplers at monthly intervals to monitor whether

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they are complying with the specified emissions limit of 25 mg/Nm³;

- Assign a person to undertake daily inspections of housekeeping practices, to identify potential sources of dust and of spills that need to be cleaned up and to ensure cleanup occurs immediately. The results of the daily inspection must be recorded, as specified in the Draft EMP.
- Continuously monitor the effectiveness of the dust suppression system by ensuring a minimum 1.2% moisture content of the ore at the sampling plant. Investigate, identify and implement opportunities for optimisation of the system to further decrease dust levels;
- Conduct quarterly audits of the water sprayers and systems to ensure good working condition, resulting in efficient reduction in wind erosion and dust generation;
- Conduct at least biannual independent audits of the monitoring systems and implementation of operational management plans to ensure that the system is being maintained properly and that the outputs of the monitoring system are providing suitable data for support in decision making;
- Conduct at least biannual performance audit on staff that have been appointed to manage the various dust control and mitigation systems recommended in this study; and
- Compile, assess and share monitoring results regarding dust levels and PM₁₀ concentrations from all monitoring stations with stakeholders in quarterly reports.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Information in support of applications for exemption

Appendix G: Other information