

SECTION 7: ALTERNATIVE ANALYSIS

7.1 INTRODUCTION

The IEM procedure stipulates that an EIA process needs to consider feasible alternatives for any proposed development. Therefore, DEAT requires that a number of possible proposals or alternatives for accomplishing the same objectives be considered. For the purposes of this report these include the layout, the no-development option, timing alternatives and strategic alternatives.

7.2 LAYOUT ALTERNATIVES

A preliminary site location alternative analysis was undertaken for the development, with obvious limitations being the current layout of operations and regional location of the port where the additional expansion is needed. Based on a preliminary assessment, Transnet has identified three possible layout footprints within the study area. These alternative layouts have been described in the Background Information Document. Transnet has completed a more detailed study of the layouts and the revised alternative layouts 1, 2 and 3 are described below (see Figures 14, 15 and 16). These three options were selected since they are considered as the best alternatives that will minimise the environmental impact of the proposed expansion. In addition to other aspects in the decision-making process, the preferred layout will be determined, by:

- the opinion of the public, ascertained through the public consultation process;
- specialists' recommendations;
- environmental characteristics and constraints; and
- techno-economic cost-benefit analyses.

The preferred layout also depends on engineering and operational feasibility and costs associated with each layout, i.e. capital costs for construction; a balance between the environmental costs associated with each layout and the engineering and operational costs.

Based on a preliminary identification of physical, biological and social constraints, none of the three alternative layouts can be identified as the preferred option. It should be mentioned however, that the comprehensive impact assessment phase will specifically assess the impacts of the final site layout plan. Only at the end of this phase can the exact layout of the iron ore expansion facility be determined.

7.2.1 Alternatives to the proposed iron ore handling facility

As a SOE, Transnet's mandate is to reduce the cost of doing business in South Africa, whilst remaining profitable by reducing costs, improving efficiencies and investing in infrastructure as well as upgrading ageing rolling stock (State of the Nation Address, 2005). Therefore, Transnet has committed R65 billion to capital investment over the next 5 years.

In terms of the transportation of iron ore freight, the alternative means of transporting ore from Sishen to Saldanha must be considered as part of the EIA process for the expansion of the railway from Sishen. This alternative assessment will be assessed in the EIA Report.

7.2.1.1 Alternatives for satisfying the need for additional iron ore handling facilities options

The alternatives for satisfying the need for additional iron ore handling facility options were investigated by Transnet in a pre-feasibility study. As discussed in the motivation for the proposed development and taking into consideration the current operations at the port of Saldanha, the proposed expansion of the iron ore handling facility will be the best option to satisfy the future need of the internationally competitive market in line with Transnet's goal to contribute to South Africa's economic growth targets.

7.2.1.2 Upgrade existing facilities

The physical load of iron ore parcels that will be transported from Sishen will increase substantially and the current facilities and infrastructure will be inadequate. Therefore, there is a definite need to expand the infrastructure. Failure to expand and upgrade the current infrastructure could lead to a substantial amount of financial losses, which Transnet could earn and use to further expand its services.

7.3 ALTERNATIVES

Alternative layout 1: Southward expansion, required reclamation of approximately 56ha of the bay.

In the original port master plan, a portion of the bay was reclaimed and set aside for future stockyard expansion. This area is separated from the bay by a reclamation dam. This area was formerly used for oyster cultivation. The first alternative proposes to locate the stockyards in this area, which is already earmarked for future stockyard expansion, with about half of the footprint extending into the bay. This

would require that an area of approximately 56 ha be reclaimed into the bay, south of the existing sea wall of the area for stockyard expansion and east of the quay. Reclamation will take place along the entire southern edge of the presently reclaimed area, including backfilling of about half of the tidal dam. The area to be reclaimed extends into the bay by up to approximately 955 m to the east of the sea wall of the quay, and 724 m south of the tidal dam wall. Thus, two of the proposed Stockyards and Stacker Reclaimers would be located on the reclaimed area, while the other infrastructure would be built in the area (30 ha) earmarked for future expansion. For this alternative, the entire footprint of the expansion would be approximately 86 ha (refer to

Figure 14).

The advantages associated with layout 1 is that it makes use of the reclamation dam and limits the impacts on the dune system.

The disadvantages associated with layout 1 will be that it requires that an area of approximately 56 ha be reclaimed into the bay, south of the existing sea wall of the area for stockyard expansion and east of the pier. Reclamation will take place along the entire southern edge of the presently reclaimed area, including backfilling of about half of the reclamation dam. The impact associated with reclamation into the bay could potentially be very high and difficult to mitigate.

Alternative layout 2: Eastward expansion of into reclamation dam and partly into undeveloped dune area

In the second option a reduced amount of reclamation into the bay will be required, to accommodate conveyors from the stockpile area to the sampler building. An area of approximately 14 ha will be reclaimed into the bay, south of the existing sea wall of the reclamation dam. The area to be reclaimed extends into the bay by up to approximately 979 m east of the sea wall of the quay, and 106 m south of the dam wall. The dam area would be completely reclaimed. About 30 ha of the future stockpile area, would be used for two new stockyards, while 27 ha of land to the north of the existing operations, in the dunes, would be used for the remaining stockyards. For this alternative, the entire footprint of the expansion would be approximately 71 ha. The entire footprint of the expansion would lie mainly on the reclamation dam, with a small portion on the fringes of the dunes (refer to Figure 15).

The advantage of layout 2 is that significantly less reclamation into the bay will be required, which could result in a lower impact on the marine environment and associated ecology.

The disadvantage of layout 2 is that the dune systems, which are considered to be sensitive, will be negatively affected by the expansion footprint, but this impact is somewhat limited by the restricted footprint of the layout on the dunes.

Alternative 3: Northward expansion into the dune area and eastward into reclamation dam area.

The third alternative has a similar amount of reclamation into the bay. As in Layout 2, an area of approximately 14 ha will be reclaimed into the bay, south of the existing sea wall of the reclamation dam. The area to be reclaimed extends into the bay by up to approximately 979 m east of the sea wall of the quay, and 106 m south of the dam wall. The dam area would be completely reclaimed. About 30 ha of the future stockpile area, would be used for the new stockyards. All the stock yards would be located in the area earmarked for future expansion, up to the eastern boundary of the tidal berm. For this alternative, the entire footprint of the expansion would be approximately 44 ha within the tidal dam.

The third alternative has a similar amount of reclamation into the bay as alternative 2. However the dune area to the north of the reclamation dam will be impacted as the stockyards would be located in this area (refer to Figure 16).

The advantage is that part of the facility will be developed on already existing infrastructure, decreasing the associated environmental impacts. However, the disadvantage is that a good portion of the stockyard will be located on the sensitive coastal dunes.

A detailed alternative analysis of these 3 options will be undertaken in the EIA phase.



Figure 14: Alternative layout No. 1



Figure 15: Alternative Layout No. 2



Figure 16: Alternative Layout No. 3

7.3.1 Common features of all these alternatives

a) Lay down Area: For all three alternatives two contractors' lay down areas have been indicated and are indicated as two rectangular plots: a large area on the current reclamation dam and a smaller area on an open piece of land east of the main service road to the west of the dunes.

b) Tipplers: Both existing Tipplers are located within the port boundary, in close proximity to and southeast of the main port entrance gate. The construction of Tippler No. 2 was completed in December 2005. The existing two Tipplers are bordered on the west side by the main port entrance road and rail lines and on the eastern side by the Haul Road.

The proposed location for the proposed new Tipplers number 3 and 4 has to be located north of the MR 559 Road Bridge, east of the Haul Road and west of the conveyors feeding Mittal Steel Products to suit the railway line.

c) Quay: A number of design alternatives are being considered for the new Quay. These could include a travelling linear or radial design. The design is for 322 000 tonne ships at a 24 m draft.

7.4 NO-GO ALTERNATIVES

The Department of Environmental Affairs and Tourism stresses that the no-go option should be considered in cases where the proposed development could have a significant negative impact that cannot be effectively or satisfactorily mitigated.

If the expansion of the iron ore handling facility is not implemented, Transnet will be unable to meet the export demand, or existing contractual commitments or maintain existing reliability and quality of service. In addition, it will not be possible to meet the commitment of improving capital investment over the next 5 years in order to improve its infrastructure. This option will be further assessed in the EIA phase.

7.5 TIMING ALTERNATIVES

There is a definite need to overcome the current and future problems on the existing activities at the Saldanha port. The forecasted growth in demand over the next few years urgently requires Transnet to plan and execute goals well in advance. It is therefore necessary to ensure extra expansion capacity into the port area in the medium to long-term, provided that all expansion is undertaken in a sustainable manner.

The new expansion facility will be brought into operation at the time when the load growth and demand require it. It is however necessary to secure the necessary legal

authorisations and associated environmental permits before hand, and to construct the necessary infrastructure to ensure that Transnet's long-term needs can be met.

The impact of not implementing the project on time must therefore be a critical part of the assessment process.