16. CONCLUSIONS AND RECOMMENDATIONS

An Environmental Impact Assessment (EIA) process for the proposed coal-fired power station and ancillary infrastructure has been undertaken in accordance with the EIA Regulations published in Government Notice R1182 to R1184 of 5 September 1997, in terms of the Environment Conservation Act (No 73 of 1989), as well as the National Environmental Management Act (NEMA; No 107 of 1998).

The essence of any EIA process is aimed at ensuring informed decision-making and environmental accountability, and to assist in achieving environmentally sound and sustainable development. In terms of NEMA (No 107 of 1998), the commitment to sustainable development is evident in the provision that "*development must be socially, environmentally and economically sustainable…and requires the consideration of all relevant factors…*". NEMA also imposes a duty of care, which places a positive obligation on any person who has caused, is causing, or is likely to cause damage to the environment to take *reasonable steps* to prevent such damage. In terms of NEMA's preventative principle, potentially negative impacts on the environment and on people's environmental rights (in terms of the Constitution of the Republic of South Africa, Act 108 of 1996) should be anticipated and prevented, and where they cannot be altogether prevented, they must be minimised and remedied in terms of "*reasonable measures*".

In assessing the environmental feasibility of the proposed project, the requirements of all relevant legislation has been considered, including *inter alia*, those of:

- Environment Conservation Act (No 73 of 1989);
- National Environmental Management Act (No 107 of 1998);
- National Water Act (No 36 of 1998);
- National Heritage Resources Act (No 25 of 1999);
- Occupational Health and Safety Act (No 85 of 93);
- Atmospheric Pollution Prevention Act (No 45 of 1965);
- National Environmental Management: Air Quality Act 39 of 2004;
- White Paper on Energy Policy, GN 3007, 17/12/1998;
- White Paper on Integrated Pollution and Waste Management for South Africa (January 2000); and
- National Waste Management Strategy documents (October 1999).

This relevant legislation has informed the identification and development of appropriate management and mitigation measures that should be implemented in order to minimise potentially significant impacts associated with the project.

The conclusions of this EIA are the result of comprehensive studies and specialist assessments. These studies were based on issues identified through the EIA process and the parallel process of public participation. The public consultation process has been rigorous and extensive, and every effort has been made to include representatives of all stakeholders within the process.

16.1. Evaluation of the Proposed Project

The preceding chapters of this report provide a detailed assessment of the predicted environmental impacts on specific components of the social and biophysical environment as a result of the proposed project. This chapter concludes the EIA report by providing a holistic evaluation of the most important environmental impacts identified through the process. In so doing, it draws on the information gathered as part of the EIA process and the knowledge gained by the environmental consultants during the course of the EIA and presents an informed opinion about the proposed project.

In order to meet the objectives as set out in the South African Energy Policy as well as to meet developmental and socio-economic objectives in South Africa, the country needs to optimally use the available energy resources. Eskom is required to respond to the growing electricity demand of approximately 3% per annum. This growing demand is placing increasing pressure on Eskom's existing power generation capacity. In order to ensure that potential future electricity demands are met, Eskom is investigating a variety of options including conventional pulverised fuel power plants, pumped storage schemes, gas-fired power plants, nuclear plants (PBMR), greenfield fluidised bed combustion technologies, renewable energy technologies (mainly wind and solar projects), and import options within the Southern African region.

For base load capacity, the selection of the preferred alternative from those being investigated is required as a matter of urgency to enable the first unit of the chosen plant to be commissioned in 2010. The construction of the proposed new coal-fired power station in the Lephalale area is part of the above process.

The need to construct a new coal-fired power station in order to assist Eskom in adequately providing for the growing electricity demand was identified through Eskom's ISEP process. Through screening and feasibility studies undertaken by Eskom for various Eskom facilities, the construction of a new coal-fired power station in the Lephalale (previously Ellisras) area was identified one of three feasible options.

The power station located in the Lephalale area is proposed to operate at an installed capacity of approximately 4 800 MW (2 100 MW initially, with potential expansion to 4 800 MW in the long-term). The exact output will depend on the

generating technology utilised, the specification of the equipment installed, and the ambient operating conditions. The ancillary infrastructure includes facilities such as ash dumps, coal stock yards, as well as the re-alignment of the Steenbokpan road, the construction of a coal conveyor belt and water pipelines to supply water during the construction period, as well the potential establishment of a temporary construction camp.

The Environmental Scoping Study investigated 8 sites identified as potentially feasible sites for the establishment of the proposed power station and ancillary infrastructure. Through numerous specialist environmental studies (both social and biophysical) the following sites where nominated for further investigation within the EIA phase of the project:

- the Farm Naauwontkomen 509 LQ (power station)
- the Farm Eenzaamheid 687 LQ (ancillary infrastructure)

The major environmental impacts associated with the proposed project as discussed in the EIA include:

- Overall benefits associated with the establishment of the proposed power station and ancillary infrastructure, in terms of assisting in meeting the electricity demand in the short- and long-term, with a short lead time to operation.
- Potential impacts on air quality and human health as a result of emissions from the facility.
- Potential impacts on surface and groundwater resources as a result of the proposed project.
- Potential visual impacts associated with the proposed project and associated impacts on tourism potential.
- Potential noise impacts.
- Potential impacts on heritage sites.
- Potential impacts associated with the transportation of components during construction and fuel during operation.
- Potential impacts on flora, fauna and ecology.
- Potential impacts on soils and agricultural potential
- Potential social impacts.

No fatal flaws were identified since the impacts can be mitigated to acceptable levels.

16.2. Recommendations for Appropriate Mitigation Measures

From the findings of the specialist studies undertaken, the following mitigation measures are proposed to be implemented in order to minimise any potentially significant impacts:

16.2.1. Groundwater Quality

A monitoring programme should be established on the site selected for development. The requirements of this monitoring programme should be agreed with the relevant authorities and the surrounding landowners informed, where appropriate. A suite of management measures have been proposed for discussion with the authorities, these include:

- The quality of water entering the groundwater. This could be managed by:
  - Monitoring groundwater quality and water levels; and
  - Monitoring neighbouring boreholes.
- Artificial recharge to groundwater. This could be managed by:
  - Ensuring sufficient capacity of the ashing facility and prevent overflow / spillage;
  - Constructing a clay base to minimise seepage from the ashing facility; and
  - Installing a down gradient monitoring borehole to monitor quality and water levels.
- Seepage below ash dump. This could be managed by:
  - Backfilling at Grootegeluk;
  - Design and construction of a drainage system;
  - Constructing a drainage system below ash;
  - Optimisation of toe dam;
  - Back filling existing holes and install monitoring holes; and
  - Surface water controls to be installed and maintained.
- Quality of surface water on site. This could be managed by:
  - Separating clean and dirty runoff;
  - Minimising disturbed areas;
  - Installing and maintaining controls, including berms and furrows;
  - Sloping topography to prevent ponding; and
  - Monitoring the water quality used for irrigation.
- Sewage facility. This could be managed by:
  - Correctly sizing, designing and constructing the facility; and
  - Groundwater monitoring.
- Fuel (bunker) oil in water migrating off site. This could be managed by:
  - Containing oil in bunded area;
  - Ensuring clean up protocols in place and followed;
  - Installing oil traps and separators; and
  - Keeping accurate oil records (purchased, disposal, and recycled).

- Insufficient water supply. This could be managed by:
  - Augmentation of water from the Crocodile Catchment;
  - Implementing water use or water wastage minimisation;
  - Reducing water demand; and
  - Investigating recycling, new technology, conjunctive use with Kumba.
- Coal stockyard (i.e. storage of coal on site). This could be managed by:
  - Constructing clay base;
  - Separating clean and dirty runoff;
  - Minimising coal stock piles and size of yard;
  - Installing and maintain surface water controls;
  - Sloping topography to prevent ponding; and
  - Monitoring groundwater levels and quality.
- Downstream users. This could be managed by:
  - Implementation of findings of the DWAF reserve determination studies by all water users in the catchment
  - Implementing a water use or water wastage minimization plan.

16.2.2. Fauna and Flora

Since the entire area will be developed there are few mitigation measures that can be recommended that will ameliorate potential impacts associated with the footprint of the facility. Faunal species generally move away from areas of high activity by themselves and repopulate surrounding areas of suitable habitat.

General recommendations include:

- remove and relocate the single *Adansonia digitata* individual present on Naawontkomen (S23.70484° and E27.56224°) (could be utilised in landscaping);
- remove, relocate, protect and utilize as many of the other protected tree species on site as possible, preserving existing integrity of surrounding natural vegetation;
- contain all construction and operational activities within the boundaries of the specified areas;
- utilise trees that normally grow to extensive heights for screening effects;
- implement a collection and re-establishment programme of bulbs and geophytes for rehabilitation purposes;
- contain human movement and activities within the construction camp, prevent peripheral impacts on surrounding natural habitat;
- an alien control and monitoring programme must be developed starting during the construction phase and to be carried over into the operational phase; and
- risk of fire: The risk of accidental fires to occur during the construction phase are considered to be high, especially during the dry summer months.

- Accidental fires should be prevented through proper sensitisation of the contractors and their workers towards the associated risks, dangers and damage of property.
- An emergency preparedness plan should be in place to fight accidental veld fires, should they occur. The adjacent land owners/users/managers should also be informed and/or involved.
- The use of open fires for cooking of food etc. by construction personnel should be strictly prohibited. Enclosed areas for food preparation must be provided.
- Use of branches of trees and shrubs for fire making purposes must be strictly prohibited.

16.2.3. Ambient Air Quality Impacts

Given the uncertainties around South African Air Quality Standards a conservative (worst case) approach was adopted by the air quality specialist in assessing compliance with SA air quality standards, with single exceedances of thresholds beyond the "fenceline" of the power station being taken as constituting "non compliance".

Compliance with ambient air quality standards given for sulphur dioxide cannot be achieved even with the implementation of SO_2 abatement measures for the proposed power station given that non-compliance already occurs due to existing operations. Sulphur dioxide concentrations have been measured to infrequently (3-4 times a year) exceed short term (hourly) air quality standards at maximum point of impact away from residential areas. With infrequent (less than for maximum point of impact) exceedances at residential areas of Marapong and Onverwacht.

The need for and required control efficiency of abatement measures was assessed on the basis of avoiding any significant increment in non-compliance or health risks. The aim being to identify SO_2 control efficiencies at which there will be:

- no substantial changes in the magnitude, frequency or spatial extent of non-compliance; and
- no significant increment in the health risk within dense neighbouring settlement areas.

Based on the above criteria alone it was concluded that a >60%+ control efficiency would be required for the first phase of the proposed 2400 MW PF power station to ensure that it could operate coincident with the existing Matimba Power Station without substantial changes in the magnitude, frequency or spatial extent of non-compliance, nor significant increment in health risks. This is however assuming that no further units are installed at a later date. It also

assumes that more stringent air quality limits are not introduced prior to the decommissioning of the existing Matimba Power Station.

With the addition of six new units (whether commissioned together or phased in) operating coincident with the existing Matimba Power Station, at least a 90% control efficiency would be required to ensure that the magnitude, frequency and spatial extent of non-compliance was within levels comparable to those projected for the baseline. Even given 90% control efficiencies on all six units, the maximum predicted hourly concentrations, the spatial extent of non-compliance with the 10-minute limit and the frequencies of exceedance at Marapong would still be *marginally* higher than for current operations.

16.2.4. Emission Control technologies

Various abatement technologies may be implemented to achieve the required control efficiencies. Flue Gas Desulphurisation (FGD), which includes wet, spray dry and dry scrubbing options, are capable of sulphur dioxide reduction efficiencies in the range of 50% to 98%. Historically, the highest removal efficiencies are achieved by wet scrubbers (greater than 90%), and the lowest by dry scrubbers. New dry scrubber designs are however capable of control efficiencies, in the order of 90%.

Although the implementation of technologies such as wet or dry FGD would be required to reduce the potential for sulphur dioxide emissions, care should be taken in assessing the environmental implications of the use of such control technologies.

FGD is associated with the production, transportation and handling of the reagents used in the process (e.g. limestone, lime). Approximately 250 000 – 350 000 tons of limestone per anum for a 60% removal efficiency would be required. The limestone would need to be transported over 200km from source via rail or road. Further additional waste will be produced. FGD may also be associated with a visible plume which could impact on aesthetics. Furthermore, the use of FGD will lower stack gas temperatures and hence reduce plume rise, resulting in potential increases in ground level concentrations of other pollutants not removed by the abatement measures. The use of FGD or any other abatement technology is also likely to impact on the combustion efficiency which would result in increased coal consumption to meet the required energy output requirements. This in turn would lead to higher Carbon dioxide emissions per unit of electricity.

The installation of FGD will result in additional capital expenditure of approximately 20% and additional operational costs of approximately 10%

(associated with sorbent, water, waste management, plant operation and maintenance).

On a typical dry-cooled power station, water consumption would increase from approximately 1.55 Mm^3/annum without wet FGD, to approximately 4.76Mm^3/annum with wet FGD, i.e a three-fold increase in water consumption, in an area that is already water-stressed.

There are specific environmental impacts associated with FGD implementation, some of which are increased water use, increased carbon dioxide emissions, increased transport impacts, increased visual impact and increased resource use. The additional environmental aspects related to the mining of limestone and the transport of limestone would be considered by the owners of the mining operation should FGD be required.

16.2.5. Visual/Aesthetic Impacts

The vegetation cover of this region is possibly the single most sensitive element associated with the construction and operation of the Matimba B coal-fired power station, and should be seen as a critical component in the mitigation of the visual impact. The professional services of a landscape architect should be acquired in order to create a master plan for the detailed design and placement of, firstly the power station, and secondly the ancillary infrastructure. Green buffer zones should be reserved or created and maintained at critical areas surrounding the facilities.

The removal of natural vegetation should be limited to the bare minimum and should not be undertaken without proper planning and delineation. Individual vegetation communities should be identified and earmarked as visual absorption buffer zones. The activities and movement of construction vehicles and personnel during the construction phase should be restricted to help prevent the unnecessary destruction of natural vegetation that could play an important role in the long term mitigation of visual impacts.

The clearing of vegetation for servitudes should be restricted to the bare minimum required for the servicing and maintenance of infrastructure.

Other potential mitigation measures for the proposed power station include the maintenance and general appearance of the facility. These measures focus on the fact that if/when the facility is seen by members of the public, the general impression should be favourable. Timely maintenance of the station, ancillary infrastructure and the general surrounds of the property (gardens, access roads, etc.) can prevent the visual impact of degradation and perceived poor management. The most notable aspect of maintenance on this type of structure

is the painting of the cladding of the power station. In this regard and as a further mitigation to the visual impact, overtly contrasting and bright colours should be avoided. Natural hues that compliment the natural environment (i.e. light sky blue where the facility is seen against the skyline or pale green where it is seen against vegetation cover) can soften the general appearance of the power plant. The removal of the cladding of the power station has been mentioned as a possible cost reduction measure, but this is likely to worsen the appearance of the facility considerably and ultimately create a greater visual impact as soon as the novelty of seeing the station's "insides" wears off.

Every care should be taken to not attract further unwanted attention to the power station through the construction of unnecessarily large support structures (i.e. office buildings, perimeter fences, parking garages, etc.). These structures should not impose any further on the observer, or in the case of perimeter fencing, create an air of secrecy that might be construed as wrong doing or hiding something from the public. The perimeter fence should fulfil the function of a security barrier only and should not be used to try and hide the facility. Less prominent alternatives to very tall concrete fences should be investigated. These might include palisade fencing, electrified fencing, or a combination of both. The same principles regarding the painting of the core power station apply to the support infrastructure, buildings and security fences.

16.2.6. Tourism

It is our opinion that the proposed power station development will not adversely affect the existing overall tourism industry in the area. In contrast, we have found that it could potentially increase tourism numbers to the area (albeit in the form of business tourism) as well as broadening the profile of the area as a unique ecotourism area. Our recommendations specific to the tourism industry are as follows:

- It is recommended that the discussions are initiated between Eskom and Kumba Resources with regards to the loss of land that will be experienced by the Ferroland reserve.
- Visual impact of power station to be reduced as advised by the Visual Impact Specialist and in this report
- Noise impact of power station to be reduced as advised by the Noise Impact Specialist and in this report
- The existing ecotourism venues in Lephalale should be marketed and that a variety of local tourism accommodation venues are marketed and promoted to business tourists visiting the existing and new power station. It is recommended that a committee could be set up and that the Local municipality and Eskom participate in this committee.

- Close liaison between Eskom, the contractors and the South African Police Service to control potential crime increases during construction.

16.2.7. Heritage sites

Based on what was found and its evaluation, it is recommended that the proposed development can continue, on condition of acceptance of the following recommendations:

- The cemeteries should be avoided. Alternatively, if that is not possible, mitigation measures can be implemented by relocating the graves.
- If archaeological sites are exposed during construction work, it should immediately be reported to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made.

16.2.8. Traffic Impacts

It is recommended that the Abnormal Load Permit for the Transport of the component parts of the proposed Power Station be scheduled for three months prior to the ordering of the components so that the best port of destination can be specified.

It is recommended that the effect on pavement loading and subsequent advance of any road rehabilitation programme should be mitigated after completion of construction. Such mitigation and associated costs would need to be discussed between Eskom and the provincial roads authority. Agreement would need to be reached regarding mandates and responsibility for the roads rehabilitation programme for 20km of Road D1675 (Lephalale to Matimba B) and Road D2001 from D1675 to the Marapong turnoff.

In the event that Flue Gas Desulphurisation is accepted as an appropriate abatement technology, it is recommended that a detailed evaluation be undertaken for the transport of Flue Gas Desulphurisation raw material supply to optimise the placement of infrastructure and minimise operations costs.

16.2.9. Noise Impacts

Potential noise mitigating measures for the project were assessed.

- *Pre-construction Phase*
  Local residents are to be notified of any potentially noisy field survey works or other works during the planning and design phase and these activities are to be undertaken at reasonable times of the day.

During this phase, consideration must be given to the noise mitigating measures required during the construction phase and which should be included in the tender document specifications and the design.

- *Construction Phase*
  The noise mitigating measures to be considered during the construction phase are as follows:
  - Construction site yards, concrete batching plants, asphalt batching plants, construction worker camps (accommodation) and other noisy fixed facilities should be located well away from noise sensitive areas adjacent to the development site.
  - All construction vehicles and equipment are to be kept in good repair.
  - Construction activities, and particularly the noisy ones, are to be contained to reasonable hours during the day and early evening.
  - With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the contractor should liaise with local residents on how best to minimise impact.
  - In general operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).
  - Construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA should wear ear protection equipment.

- *Operational Phase*
  The following noise mitigating measures, which will need to be considered where appropriate, are preliminary indicators that may assist further in the selection of the best alternative site:
  - The design of the new power station is to incorporate all the necessary acoustic design aspects required in order that the overall generated noise level from the new installation does not exceed a maximum equivalent continuous day/night rating level (L_{Rdn}), namely a noise level of 70dBA (just inside the *property projection plane*, namely the property boundary) as specified for industrial districts in SANS 10103. Refer to Appendix A. Notwithstanding this provision, the design is also to take into account the maximum allowable equivalent continuous day/night rating level of the potentially impacted sites outside the new power station property. Where the L_{Rdn} for the external site is presently lower than the maximum allowed, the maximum shall not be exceeded. Where the L_{Rdn} for the external site is presently at or exceeds the maximum, the existing L_{Rdn} shall not be increased.
  - Feasible, practical technology incorporating maximum noise mitigating measures for the power station components should be designed into the system.
  - The design process is to consider, *inter alia*, the following aspects:

- The position and orientation of buildings on the site.
- The design of the buildings to minimise the transmission of noise from the inside to the outdoors.
- The insulation of particularly noisy new plant and equipment.

* Some of the farm labourer houses affected should be relocated unless these are no longer required or uninhabited.

It should be noted that any measures taken at the development site will limit the impacts in the specific areas designed for, and will not necessarily contribute to improving the degraded noise climates in adjacent areas where there is already a problem.

16.2.10. Soils and Agricultural Potential

Due to the fact the establishment of an ash dump and power station will involve permanent loss of the soil resource, it is recommended that the topsoil (approximately 300-400 mm) be removed and stored prior to construction. In this way, the soil will be available elsewhere at a later date for rehabilitation purposes. There is not a significant difference between the topsoil and subsoil, so if some mixing occurs, it should not be significant.

Erodibility is not a problem in flat areas, such as the existing terrain, but if the stored topsoil were to be used for rehabilitation in sloping areas (for example on the sides of the ash dump), great care should be taken to ensure that erosion does not occur.

Such mitigation measures would include:

- Immediate re-vegetation of any exposed areas;
- Seeding of indigenous grass species;
- Water supply for irrigation to aid the re-vegetation process;
- Placement of along-slope measures (berms, logs, geotextiles, etc) to aid the process; and
- Regular monitoring to ensure the continued success of the process.

16.2.11. Social Impacts

Table 16.1 below represents the potential social impacts associated with the proposed Power Station and ancillary infrastructure together with the associated recommended mitigation measures.

Table 16.1: Summary of potential social impacts and recommended mitigation measures

Impact	Significance	Mitigation potential	Mitigation
Employment creation during construction	+	0	Make use of local labour where possible. Liase with local community structures to identify local labour pool.
Employment creation during operation	+	0	Make use of local labour where possible. Liase with local community structures to identify local labour pool.
Influx of job seekers	0	0	Use local labour. Liase with local community structures to identify means of controlling the influx of job seekers or mitigating negative effects of influx.
Social problems arising from population influx	0	0	Coordinate efforts to address social problems with those of BRAVO initiative. Meet with residents' associations and local CPF to identify strategy for combating crime. Implement HIV/AIDS awareness campaign for workers and/or local communities.
Change in local infrastructure requirements	+	0	Timely negotiation with Local Municipality, the LSDSC and the LDC to identify resources required to meet increased demand for services and infrastructure, and to discuss possible support by Eskom to the municipality.
Social investment initiatives	0	0	Consultation with communities regarding their needs. Careful coordination with other, existing initiatives to avoid fragmentation and overlap of efforts.
Effects on local farm owners and residents	+	-	Negotiate with affected landowners regarding mutually acceptable means of mitigating or compensating for impacts experienced by them.
Relocation of households	++	-	Negotiate with most-affected landowner(s) regarding mutually acceptable means of mitigating or compensating for impact.

Impact	Significance	Mitigation potential	Mitigation
Safety and daily movement patterns	0	0	Construction activities minimize disruption of traffic flow. Ensure intersections, etc. clearly marked. Traffic safety awareness campaign. Effective enforcement of traffic laws.

As the table shows, many of the negative social impacts are anticipated to respond favourably to mitigation measures, whereas others can be optimised (e.g. maximisation of employment opportunities for members of local communities). These measures should be informed by the suggestions made in the report, formalised in the Environmental Management Plan (EMP) and subjected to a mitigation and monitoring process throughout the construction and operational phases.

16.3. Assessment of Additional Alternatives

16.3.1. Road and Conveyor Belt Alternatives

Due to the outcome of the Environmental Scoping Study, additional alternative investigations were required with regards to ancillary infrastructure. The nomination of the farms Naauwontkomen 509 LQ and Eenzaamheid 687 LQ for the establishment of the proposed power station and ancillary infrastructure resulted in the need to identify and evaluate alternative alignments for a coal supply conveyor as well as the re-alignment of the Steenbok pan road. From the specialist studies undertaken, the following recommendations were made:

- *Road realignment*
  The nomination of the farms Naauwontkomen 509 LQ and Eenzaamheid 687 LQ has resulted in the need to re-align the Steenbokpan road. Two alternatives were identified and evaluated. The northern alternative deviates from the existing Steenbokpan road in a northwesterly direction following the northern boundries of the farms Naauwontkomen 509 LQ and Eenzaamheid 687 LQ, until it intersects the existing Steenbokpan road to the west of the farm Eenzaamheid. The southern alternative deviated from the existing Steenbokpan road, turning off in a southeastern direction following the southern boundary of the Farm Naawontkomen. The alignment turns

northwards to follow the boundary between the farms Eenzaamheid and Naauwontkomen and then turns westward to align with the northern alternative.

After consideration in the relevant specialist studies the preferred alignment for the re-alignment of the Steenbokpan Road is the northern alignment.

- *Conveyor Belt Alternatives*
  Two conveyor belt alignments were identified. The eastern alignment runs from the Grootegeluk mine in a south-easterly direction along the existing railway line, turning southwards towards the farm Naauwontkomen 509 LQ. The western alignment follows a shorter route, cutting through the farm Enkelbult and Turfvlakte in a southerly direction towards the farm Naauwontkomen 509 LQ.

  After consideration in the relevant specialist studies, the preferred alignment for the conveyor belt is the eastern alignment due to the fact that it follows existing linear development such as railway lines and roads.

16.3.2. Ash Disposal Alternatives

In the event that the risk assessment for ashing back into the pit concludes that such an activity is environmentally sound and advisable this option should be compared with the risks associated with ashing above ground. A risk assessment in terms of in-pit ashing will most likely be included within the mining authorisation, in this event the study should be provided to DEAT and DWAF for comment. The use of this alternative ash disposal system would lengthen the life of the ashing facility proposed for the new power station. The site layout plan (Appendix A) outlines the 50 year plan for the ashing facility, in the event that the maximum case scenario applies (i.e. the construction of a 6 unit power station and the disposal of ash to land). The 50 year plan clearly shows that if alternative ashing disposal technologies are not utilised, the footprint of the ashing facility would exceed the size of the farm Eenzaamheid and would thus require additional land aquisition.

The additional requirement for land would involve the potential need for the farm Kromdraai. This farm was evaluated during the Environmental Scoping Study but was not nominated as a preferred site. The ecological impacts on this farm were considered of a high significance, however, no fatal flaws were identified. In the event that this additional land is required in the future (i.e. in approximately 30 years time) more detailed environmental studies on this property will be undertaken in order to determine the environmental impacts of the potential expansion of the ashing facility.

16.3.3. Water Supply Pipeline

In order to provide raw and potable water during the construction phase of the proposed project, it was deemed necessary to construct water supply pipelines that will run from the existing Matimba power Station (or existing water supply pipelines located close-by) to the construction site of the proposed power station. This pipeline is approximately 5 km in length with only 1,5 – 2.0 km traversing private land.

Due to the fact that the proposed alignment follows an existing Eskom servitude (that of the ash conveyor, for approximately 3 km) and a road (all linear infrastructure), no significant environmental impact is anticipated. The relevant servitudes are all kept clear of dense vegetation and the pipeline will be underground thus alleviating any possible visual impact that may occur.

Potential environmental impacts may include temporary nuisances such as dust and noise during the construction of the pipeline, however, these impacts will be mitigated and managed through the construction phase Environmental Management Plan that is to be compiled.

The private land owners (namely Mr Pieterse of the farm Hanglip and the Limpopo Provincial Road Agency – Mr Thomas Shivambu) have been consulted regarding the pipeline and their comments have been included in the Issues trail (attached in Appendix Ia). Neither party have any direct objection to the pipeline.

16.4. Overall Conclusion

The findings of the specialist studies undertaken within this EIA provide an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed project. The findings conclude that there are no environmental fatal flaws that should prevent the proposed project from proceeding, provided that the recommended mitigation and management measures are implemented.

16.5. Overall Recommendations

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this EIA must be included within an Environmental Management Plan (EMP). This EMP should form part of the contract with the contractors appointed to construct and maintain the proposed power station and ancillary infrastructure. The EMP would be used to ensure compliance with environmental specifications and management measures. The implementation of this EMP for all life cycle phases (i.e. construction, operation

and de-commissioning) of the proposed project is considered to be key in achieving the appropriate environmental management standards as detailed for this project.

It is also recommended that the process of communication and consultation with the community representatives is maintained after the closure of this EIA process, and, in particular, during the construction phase associated with the proposed project.

The issues raised regarding air quality and water use and potential pollution should be considered by DWAF and DEAT in the respective application for licenses.