

Annexure: Need & Desirability

Table 1 | Need for the proposed expansion

QUESTION: NEED (TIMING) OF PROPOSED PROJECT
1. <i>Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved Spatial Development Framework (SDF) agreed to by the relevant environmental authority i.e. is the proposed development in line with the projects and programmes identified as priorities within the Integrated Development Plan (IDP)?</i>
<p>The area proposed for the ash disposal facility (Site 10) is currently zoned for agriculture, with underground and opencast coalmines surrounding the proposed site. The proposed development is an expansion of existing infrastructure to an area which is essentially limited to the type of use because of the adjacent infrastructure to the north, backfilled mine cuts to the east and south and access road to the facility on the west (the adjacent Matla Ash disposal facility is also situated immediately adjacent the access road to the west). The Emalahleni Spatial Development Framework (SDF) of 2015 recognises that the southern parts of the Emalahleni Municipality form part of the region referred to as the Energy Mecca of South Africa, due to its rich deposits of coal reserves and power stations. It furthermore identifies the rich coal deposits, coal mines and power stations throughout the southern extents of the municipal area as the most dominant structuring elements having a major influence on settlement development and expansion trends.</p> <p>It is important to note the strategic level importance of the ash disposal facility at Kriel Power Station as it forms a pivotal part of the power station's functioning. Unavailability of adequate ash disposal facility means no coal fired power station, which means insufficient energy supply and no employment for the current staff at Kriel. Leading on to this the Emalahleni SDF (2015) recognises that one of its strengths is the rich coal reserves, creating major economic development opportunities in the mining and electricity sectors.</p> <p>Strategic Objective 4 of the Emalahleni SDF (2015) is to build a diverse, efficient and resilient local economy and to optimise the spatial distribution of conflicting economic sectors, specifically highlighting the conflicting demand between mining, energy and agriculture industries.</p> <p>One of the strategic objectives highlighted by the Emalahleni Draft Integrated Development Plan (2015/16) (IDP) is to ensure efficient infrastructure and energy supply that will contribute to the improvement of quality of life for all citizens within Emalahleni. More specifically the Emalahleni IDP (2015) indicates the history of the Kriel, which was established by Eskom in 1973 as a residential area for the workers at the Kriel Power Station, which was constructed in 1975 to 1979. The town experienced rapid growth during 1982 to 1989 and was declared as a municipality in 1990. Accordingly most of the residents in Kriel and Thubelihle are employed at the power stations and the mines in the area underpinning the importance to sustain economic viability of these towns.</p>
2. <i>Should development, or if applicable, expansion of the town/ area concerned in terms of this land use (associated with the activity being applied for) occur at this point in time?</i>
<p>Yes. If the ash disposal facility is not constructed the knock-on effect will be significant, the activity is in line with the Emalahleni Municipality Vision and Mission statement, which is focussed on efficient service delivery, participative planning, and creating a climate conducive to social development and economic growth. The Vision and Mission statement also recognises the need for an economy that will create more jobs. The expansion of the ash disposal facility will ensure that economic growth is continuous, as electricity is the main driver of economic growth (this development will not necessarily create direct jobs but will ensure that current jobs created will be maintained until closure of the facility or end of life for the facility).</p> <p>As pointed out in the answer to Question 1 above, the proposed development is an expansion of existing infrastructure to an area which is essentially limited to the type of use because of the adjacent infrastructure and therefore best practical use of the area.</p>
3. <i>Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g. development is a National priority, but within a specific local context it could be inappropriate).</i>
<p>Yes. The Emalahleni (which means the "place of coal") Municipality has a total population of about 495 000 of which a large</p>

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percentage is either directly or indirectly dependent on the electricity generation industry. Kriel Town was established by Eskom in 1973 as a residential area for the workers at the Kriel Power Station, which was constructed in 1975 to 1979. Still today most of the working residents in Kriel Town and Thubelihle Township (7.2% of the municipality's population) are employed at the power stations and the mines in the area. The local community thus is in direct need of the activity. The ash disposal facility, as key infrastructure for the Kriel Power Station, is of National priority as it forms part of the Department of Energy's Strategic Plan 2015-2020 in that it makes up part of electricity derived from coal.

The proposed ash disposal facility is thus important to society from the most localised level i.e. the staff at Kriel Power Station and their dependents to the most extensive level of community in South Africa as electricity generated at Kriel Power Station feeds in to the national grid.

It should be noted that the merits of coal fired power as energy source is not considered here as the application is for an ash disposal facility.

4. *Are the necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?*

No additional capacity from the municipality will be required.

5. *Is this development provided for in the infrastructure planning of the municipality, and if not, what will the implication be on the infrastructure planning of the municipality (priority and placements of services)?*

The proposed ash disposal facility does not specifically have to be provided for in the infrastructure planning of the municipality. The expansion of the ash disposal facility will have little bearing on the infrastructure planning of the municipality and will be situated on land owned by Eskom.

6. *Is this project part of a national programme to address an issue of national concern or importance?*

Yes. The establishment of the proposed ash disposal facility would maintain Eskom's mandate to ensure sufficient supply of electricity to service the South African economy and society. In 2015 South Africa again (after the power crisis of early 2008) experienced serious energy constraints which are a barrier to economic growth and is a major inconvenience to everyone in the country. According to South Africa's Integrated Resource Plan for Electricity (IRP) 2010-2030 (Update Report 2013) there are several options to potentially extend the economic life of the existing Eskom coal fleet which includes upgrading and expanding of infrastructure.

7. *How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?*

The proposed ash disposal facility is located on land zoned as agricultural and of which a large portion was previously used for mining activities. Because it is a brownfield site and due to the disturbed nature of the areas investigated, the likelihood of impact on the ecological integrity of the area is very low. The ash disposal facility also utilises special liners to ensure that fluids from the facility do not permeate into the groundwater systems which might impact the ecological integrity of the greater area.

8. *How were the following integrity considerations taken into account?*

- 8.1. *Threatened ecosystems*
- 8.2. *Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)*
- 8.3. *Environmental Management Framework*
- 8.4. *Spatial Development Framework (SDF).*

According to the Emalahleni SDF of (2015) generally, Emalahleni has a few threatened fauna and flora species, with only five Red Data species having been recorded in the municipal area. The only conservation area in the Emalahleni Municipality is the Witbank Nature Reserve, which was originally established as a recreation resort around the Witbank Dam. The proposed ash disposal facility is located on land zoned as agricultural the area was also used previously for mining activities. The majority of the area surrounding the power station (including the proposed development Site 10) does not fall within a CBA or ESA (MBSP 2014).

The Environmental Management Framework for the Olifants and Letaba Rivers Catchment Area (EMF) highlights policies and aligns different governmental mandates in a way that will streamline decision-making to improve cooperative governance and guide future developments in an environmentally responsible manner. The specific objectives of the EMF include encouraging sustainable development. The existing environmental management priorities of the EMF will not be compromised. Please refer to Chapter 7 for more information on the significance of potential impacts and their proposed

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mitigation measures.

The Emalahleni SDF of 2015 indicates that the area is used for agriculture and does not specifically earmark the proposed development site for any specific future use.

9. How will this development pollute/ degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?

The alternatives to waste management and incorporation of the waste hierarchy i.e. measures to avoid (prevention) waste and where impacts could not be avoided what measures to minimise (reduce) is discussed. The most feasible alternatives came down to reuse of water and recycling ash through selling it to available markets. Please also refer to Chapter 7 for more detail on the potential impacts and proposed mitigation measures. Kriel power station sells some of its ash to the market.

10. Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life).

This is an existing ash disposal facility thus the need to build new facilities is abated by prolonging the life of the existing facility. Furthermore, Eskom is making efforts to reduce the amount of ash that goes to the facility by selling of ash, but due to the large quantities of ash produced and limited active markets the most feasible solution is to expand the existing ash disposal facility to ensure environmentally responsible management of the produced ash.

11. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?

The proposed development of the ash disposal facility will ensure that current employment is secured which translates into stable household incomes within the local area. Should the Kriel Power Station need to decommission, it would result in significant negative socio-economic impacts for not only the local area in terms of job losses and reduced employment opportunities, but also on businesses in the regional area.

12. Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?

Considering that the Kriel Power Station is responsible for a large percentage of the local employment it suffices to say that it is the largest socio-economic driver in the immediate area, including the town of Kriel and Thubelihle. The Emalahleni LED (2011-2016) strategy aims to create an industrial hub of the Mpumalanga Province by 2016 through sustainable, efficient and effective economic growth, development and empowerment of the community forms part of. The Emalahleni LED strategy also aims to grow the economy of Emalahleni by 4% per annum through targeted sectors and ensure sustainable growth and development within the 2011-2016 period by creating employment opportunities in line with new growth path targets; and halve poverty in line with Millennium Development Goals. Furthermore, it aims to address all economic infrastructure and basic service delivery backlogs and new requirements within five years, for quality living standards for all. The proposed development of the ash disposal facility will sustain job opportunities and contribute to economic growth which is aligned to the LED strategy.

13. What measures were taken to ensure the participation of all interested and affected parties (I&APs)?

Please refer to Chapter 3 of this report for more detail on the public participation process throughout this EIA process.

Table 2 | Summary of desirability

QUESTION: DESIRABILITY (PLACING) OF PROPOSED PROJECT	
1. <i>Is the development the best practicable environmental option (BPEO) for this land/ site?</i>	Yes. The property on which the development is proposed to be situated is currently used for the activity applied for i.e. the existing Ash disposal facility is situated directly adjacent to where the expansion of the facility is proposed. The proposed development is located relatively close to the Kriel Power Station and therefore requires lower capital costs than an alternative further away. Furthermore, it is a brownfields site with limited future land use (due to the nature of the adjacent activities) and located on Eskom-owned land.
2. <i>Would the approval of this application compromise the integrity of the existing approved Municipal IDP and SDF as agreed to by the relevant authorities?</i>	No. The activity is not explicitly planned for in the Emalahleni Municipality SDF or IDP, but it also does not compromise any of the plans described in these strategic documents.
3. <i>Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in Environmental Management Framework (EMF)), and if so, can it be justified in terms of sustainability considerations?</i>	No. The proposed development site falls in the area covered by the 2010 Environmental Management Framework for the Olifants and Letaba Rivers Catchment Area. The existing environmental management priorities will not be compromised since the proposed site is not located on a CBA, ESA, NPEAS or any other priority environmental area. Furthermore, all specialist impact assessments are in support of the proposed development (see Chapter 7 of this EIA Report).
4. <i>Do location factors favour this land use (associated with the activity applied for) at this place?</i>	Yes. As discussed above (answer to Question 1) the land use will be an expansion of an activity that currently takes place on the proposed development property which is already highly disturbed.
5. <i>How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/ natural environment)?</i>	The MBSP (2014) mapped the area surrounding the proposed development site as heavily modified, moderately modified (old lands) and other natural areas. The proposed development site and surrounding area has been disturbed through agriculture, the power industry and mining operations. Furthermore, the proposed expansion will be directly adjacent to the existing ash disposal facility which would further limit potential impacts on the natural, cultural, economic and social environments.
6. <i>How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?</i>	Even though the Kriel Power Station is visible for many kilometres in the surrounding area, the proposed development of the ash disposal facility would not have a notable change on the sense of place of the area, odours, noise, etc. For more information on the specialist findings, please refer to Chapter 7 of this EIA Report.
7. <i>Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?</i>	No. The proposed facility is an expansion of an existing ash disposal facility. Therefore it is not anticipated that it will have an unacceptable opportunity cost.
8. <i>Will the proposed land use result in unacceptable cumulative impacts?</i>	No unacceptable cumulative impacts have been identified by the specialists studies undertaken. Please refer to Chapter 7 for more information on the assessed impacts and proposed mitigation measures.
9. <i>In terms of location, describe how the placement of the proposed development will:</i>	<ol style="list-style-type: none"> 9.1. <i>Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.</i> 9.2. <i>Be in line with the planning for the area</i> 9.3. <i>Encourage environmentally sustainable land development practices and processes.</i>

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It is unlikely that any new job opportunities would be created during the operational phase, as employees working currently at the existing ash disposal facility would only be a continuation of their existing job requirements.

The area proposed is currently zoned for agriculture, but does not oppose any planning in the Emalahleni SDF and IDP.

Due to the proposed site being situated adjacent the existing ash disposal facility and the transformed nature of the area (specifically the proposed site) it means that the alternatives that could have a greater negative effect on the environment and land development practices and processes do not have to be developed.

10. What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?

The proposed development makes use of old technology and known energy source which has been used since 1979. The strategic level investigations undertaken by Eskom prior to the commencement of the EIA process are accepted to be technologically acceptable and robust.

11. What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?

The potential health and safety impacts have been identified by the Kriel Power Station for the existing ash disposal facility and would incorporate the proposed ash disposal facility. The contract for the construction and operation of the facility would go out on tender following receipt of the requisite regulatory approvals and the selected operator would be required to operate the facility in terms of the Operational plan as well as various conditions of approval and applicable legislation; and safety regulations. Additional potential health and safety mitigation measures identified by the EIA specialists have been included in the construction and operational EMP, which is available as Annexure to this EIA report. The station also has a fully functional Health and Safety Department which oversees and enforces health and safety regulations, policies and practices.

12. How will this development use and/or impact on non-renewable natural resources?

The proposed development of the ash disposal facility would make use of local coal resource for the duration of the development lifecycle until 2045. Once the resource has been depleted the facility would most likely be decommissioned and rehabilitated, but this will need to be confirmed by Eskom at the time.

13. How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?

Electricity is a basic human need. The proposed development of the ash disposal facility will ensure that electricity supply is maintained, which meets the developmental interests of the relevant communities. The social needs of the relevant communities will be addressed through the continued provision of jobs and income.

14. What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?

Given the need to develop additional disposal facilities for ash produced by the coal-fired Kriel Power Station, Eskom initiated an EIA process for the development of an additional ash disposal facility that would have sufficient capacity for the remaining operational life of the power station. During the site selection process, potential candidate areas within the study area were identified by considering a range of technical, financial and environmental criteria. These included inter alia locality of coal resources and undermined areas, existing infrastructure, groundwater/ hydrological features, geotechnical considerations and sensitive biodiversity features. For more detail on the preferred site and layout, please refer to Section 4.3 of this EIA report, as well as Chapter 7 which describes potential impacts and mitigation measures.

15. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?

No heritage resources were identified on site by the heritage specialist study (see Section 7.5 of this EIA report) and through the Public Participation Process (PPP) undertaken. Mitigation measures have however been provided (and included in the EMP) should any resources be identified during the construction phase.

16. Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?

QUESTION: DESIRABILITY (PLACING) OF PROPOSED PROJECT

Due to the proposed project being an expansion of the operations at Kriel Power Station and it being located directly adjacent to the existing ash disposal facility on highly disturbed land, the ecological impacts resulting from socio-economic impacts are limited. Please refer to Chapter 7 for more information on the significance of potential impacts and proposed mitigation measures.

17. Describe how the development will impact on job creation in terms of, amongst other aspects:

The decommissioning of the Kriel Power Station due to insufficient ash disposal capacity would result in the loss of jobs which in turn would have a significant impact the local socio-economic environment. It is unlikely that any significant new job opportunities would be created during the operational phase, as employees working currently at the existing ash disposal facility would continue to work at the expanded facility.

18. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?

The EMPr describes all reasonable and feasible mitigation measures and addresses long-term environmental management. The decommissioning of the facility would need to be addressed once the Kriel Power Station has come to its end of life.

19. Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives / targets / considerations of the area?

Please refer to Chapter 7 of this EIA Report for more information on the significance of all potential impacts that have been identified and assessed for the proposed expansion of the Kriel Power Station's ash disposal facility. Overall, the specialists are in support of the development. Furthermore, the significance of all potential impacts can be reduced to low through the design of the AD4.1 and AD4.2 and implementation of specific mitigation measures which have been incorporated into the EMPr.