



**ENVIRONMENTAL IMPACT
ASSESSMENT (EIA) FOR THE
PROPOSED CONTINUOUS DISPOSAL
OF ASH AT THE TUTUKA POWER
STATION, MPUMALANGA PROVINCE**

Public Meeting

Ulwazi Primary School

2 September 2014

Purpose of the Meeting

- Provide I&AP's with information regarding:
 - The proposed project
 - The EIA process to date
 - How to get involved in the project
 - Findings of the EIA and the proposed mitigation measures to reduce negative environmental Impacts and enhance positive Impacts
- Provide I&AP's with the opportunity to raise issues regarding impacts, significance and proposed mitigation
- Provide an opportunity for I&AP's to interact with the project team

Conduct of the Meeting

- Focus on issues at hand
- Equal opportunity
- Cell phones on silent
- Work through the facilitator
- Speak in language of choice

Role Players



Lidwala Consulting Engineers (SA) (Pty) Ltd

- Independent Environmental Assessment Practitioner



Imaginative Africa

- Public Participation Consultant



Eskom Holdings SOC Ltd – Generation Division Tutuka Power Station

- Applicant



Department of Environmental Affairs

- Lead Decision-maker for the Environmental Authorization Application (Competent Authority)



Interested and Affected Parties

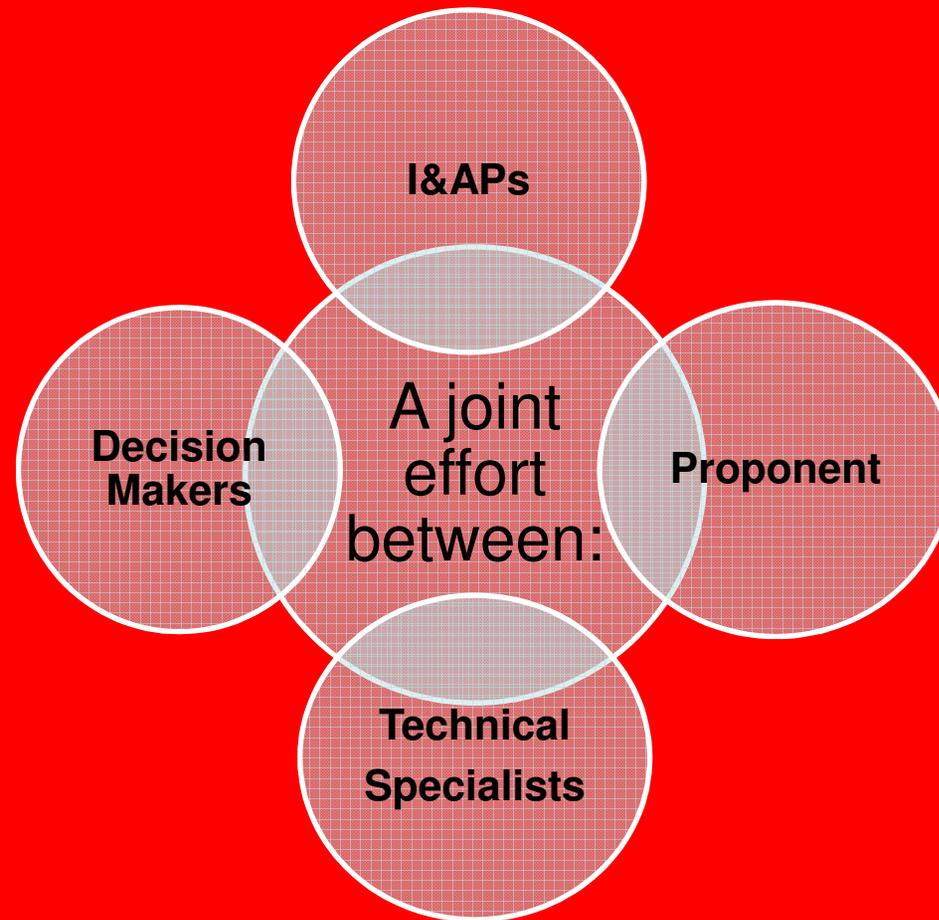
- Raise comments and issues regarding the proposed project for inclusion in the relevant documentation
- Review addressing of their comments



Commenting Authorities

- MDEDET,
- DWS
- SAHRA
- DAFF
- DMR, etc..

What is Public Participation?



To produce better decisions

Aim of Public Participation

To inform a wide range of I&APs



Tool of Public Participation

Allows the public to exchange information and express their views and concerns



Public Participation in Scoping – Impact Phase

Scoping

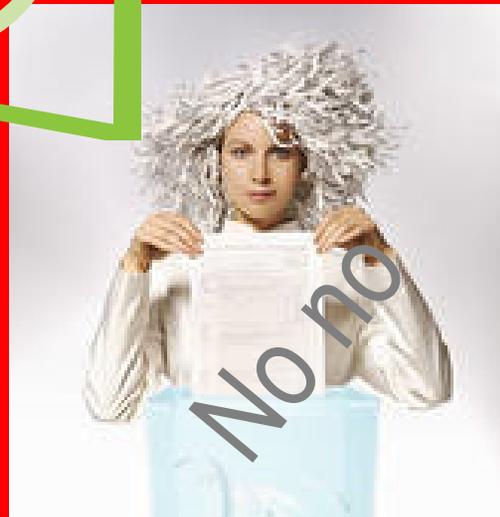
Facilitates the identification of issues & concerns **early** in EIA process

Impact

Ensure that issues raised have been assessed

My Contributions?

All contributions are fully documented, evaluated and responded to in the EIA



Public Participation Process (Scoping Phase)

Identification & Consultation - Ongoing

Site Notices

September 2012

Advert – EIA Process

Cosmos News & Highveld Tribune

September 2012

Background Information Document

October 2012

E-mail/posted/public places

Advertisement

Draft Scoping Report & Public Meeting

November 2012

Meetings

FGM/KSW/PM

21 & 22 November 2012

Final Scoping Report

Submitted to DEA

12 December 2012

Public Participation Process (Impact Phase)

Identification & Consultation - Ongoing

Advert DEIR & PM

Highveld Tribune & Cosmos News: 15 & 16 July 2014: PM 31 July 2014



DEIR Review Period

Monday 21 July 2014 – Friday 19 September 2014



Advert & notification of PM Cancellation

Highveld Tribune & Cosmos News: 15 & 16 July 2014: PM 31 July 2014



Advert new PM Date & Invitations

Highveld Tribune & Cosmos News: 15 & 16 July 2014: PM 31 July 2014



Meetings: Tuesday 02 September 2014

Focus Group Meeting / Key Stakeholder Workshop / Public Meeting



Responsibilities

Lidwala Consulting Engineers (SA) (Pty) Ltd (EAP):

- Be independent with no vested interest
- Have the necessary qualifications & experience
- Responsible for EIA process, information & reports
- Provide relevant & objective information to the Authorities, the I&APs & the Applicant
- Ensure Public Participation Process (PPP) is undertaken
- Ensure all issues raised are addressed or responded to

Responsibilities

Eskom Holdings SOC Limited (Applicant):

- Appoint suitable, independent consultants
- Ensure adequate resources are available to conduct an effective, efficient & equitable EIA
- Ensure that the Consultants are provided with all relevant information to undertake the EIA effectively
- Ensure that the Consultant provides all relevant information to the Authorities

Responsibilities

Relevant Environmental Authority (National DEA):

- Efficient & expedient in evaluating proposals
- Compliance with regulatory requirements
- Inter-departmental co-operation & consultation
- Consultation with the Applicant & the Consultant
- Evaluation/review & decision-making
- Requiring sufficient detail to make informed decisions

Responsibilities

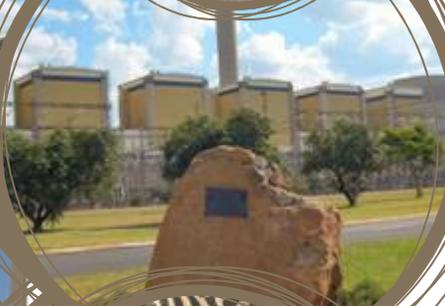
Interested & Affected Parties (I&APs)

- Provide input & comment during various stages of the EIA process
 - Identify issues & alternatives
 - Review of reports
 - Draft Scoping Report (DSR)
 - Draft Environmental Impact Report (DEIR)
 - Waste License Report
- Provide input & comment within specific timeframes



What does the Project Entail?

**Presented by:
Mr R Lacock (PS Manager)**



Tutuka Ash Dump Project Background

Date: 02 September 2014

**Presented By: E van Rensburg
on behalf of the Power Station Manager**

- 1. Overview and Site layout**
- 2. Background**
- 3. Problem statement**
- 4. Project Need**
- 5. Conclusion**
- 6. Concession**

TUTUKA OVERVIEW

Construction started in 1980. The first unit became operational in March 1985. All six units were operational in June 1990.

All six units are conventional wet-cooled units.

Each unit can generate 609 MW.

The power station coal consumption per 24 hour day is approximately 39 600 tons.



The daily ash production is about 12 870 tons.

The current precipitator plant will be replaced with Fabric Filter Plant from the year 2017 which removes the dust particles from the smoke stacks. This new plant will improve the air quality from smoke stacks and hence more ash will be stacked on the ash dump.

The New Denmark Colliery supply about 40% of the coal demand to the power station. The remaining 60% of the coal is imported via rail and road transport.



- South Africa needs reliable electricity supply with enough capacity to support economic growth and social development.
- Tutuka Power station is one the largest power stations in terms of electricity generation and plays a major role in generating continuous and reliable electricity.
- Tutuka Power Station's dry ash dump was originally designed and constructed in the early 1980's for a 35 year station life, plus 5-year contingency.
- The expected station operating life has since been increased to 60 years, plus 5-year contingency, which will result in an increased amount of ash that would need to be deposited.
 - This renders the originally designed ash dump to be under capacity.
 - 530Ha (capacity of 178mil m³) is required for ash disposal for the remaining life of the power station.
- An ash disposal facility is unavoidable in a coal fired power station, since large amounts of ash are generated from burning coal.
- Ash needs to be disposed in a manner that does not severely impact the environment.

- The current emergency ashing area (TT02) in the power station terrace area is used for temporary ash storage when the ash dump conveyor plant is out of operation.
- Currently, the amount of ash that is off loaded during emergency offloading far exceeds the capacity of the existing footprint.
- The exceedance is because the ash quantity used to determine the size of the emergency dump got worse than originally planned.

Problem Statement

Tutuka Power Station is aligning its proposed ashing activities with the National Environmental Management Waste Act. Tutuka standby ash dump will reach capacity at the existing ash disposal footprint by 2018 and the main ash dump will reach capacity by 2025, resulting in major production risks if space is not available for ashing.

Figure 1: Current ash dump



The current emergency ash off loading area is too small for the ash quantities.

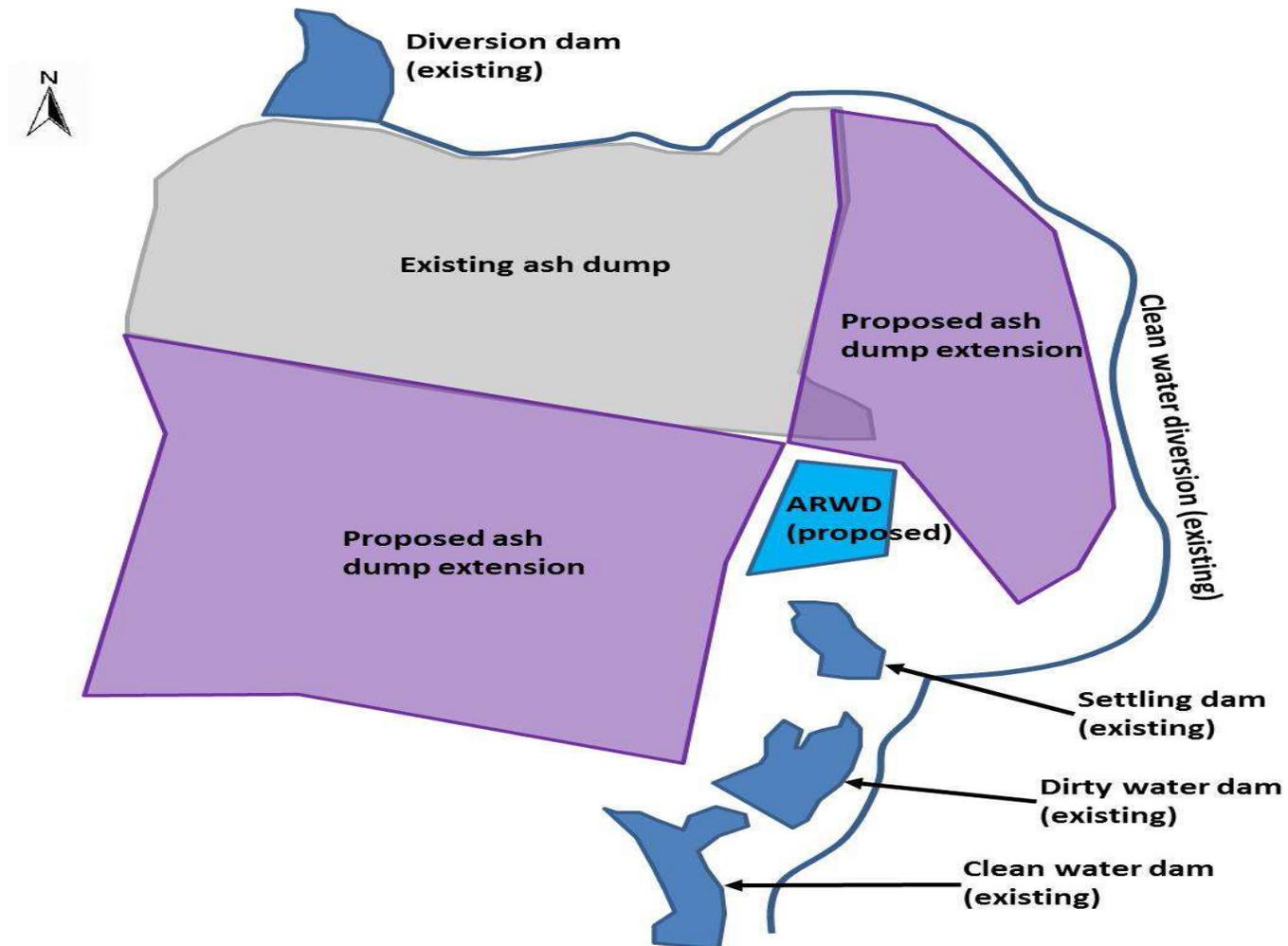
The current size of emergency ash off loading area is 1880 m² and the proposed size is 20 785 m².

Figure 2: Emergency ashing area. (TT02)



- Obtain appropriate permission from the Competent Authority to continue with ash disposal for the remaining life of the station. This will ensure that Tutuka will be able to provide sustainable electricity production to meet the needs of all South Africans.
- Project front end planning lead times within Eskom as well as external approvals will result in lining only being provided in the first quarter of 2020.
- Tutuka will therefore request permission from the Authorities to continue the ash disposal activity on the EIA recommended alternative until 2020 without a liner, up to the point where the liner can be provided.
- As mitigation in the transition period, the ground will be compacted after stripping the topsoil in order to reduce the permeability of leachate to groundwater. Dirty and clean water drainage systems will be constructed. The dirty/seepage water will flow to the dirty water dam and the storm water will flow to the clean water dams.
- The emergency ash off loading area (TT02) needs to be increased to handle the higher ash capacities from the station, incase if the ash dump conveyors are not available. This current area is 1880 m² and this area needs to be increased to 20 785 m².

Proposed ash dump lay out



CONCLUSION

- **No additional land would be required. The new ash dump foot print will still fits onto Eskom's property.**
- **The ash disposal facility will be progressively rehabilitated using top soil covering and vegetation.**
- **Dust suppression system will be upgraded to cater for the bigger ash dump. The ash dump working/open ash surfaces will be bigger and hence more water sprayers will be required.**
- **Eskom values your input and suggestions during this EIA process regarding the proposed continuous ash disposal facility.**

- The new ash dump concept design is based on plastic liners.
- Eskom need to use the Engineering Change Management system to complete this ash dump design for all the disciplines. The project funding process also needs to be followed for the construction phase.
- The contract award completion would be in July 2017.
- The detail design completion should be the May 2018.
- The construction should start in January 2020, based on plastic liners.
- Eskom needs concession to use the existing ash dump operation from now up to January 2020.

THANK YOU

Problem Statement

- The current main dump operation will run out of space by September 2028
- The position three standby ash dump will run out of space by December 2016.
- If standby dump positions 4,5 and 6 are used, then it will run out of space by 2020.
- The main spreader requires outages for major repairs.
- The existing emergency ash handling area at the Power Station is too small.

What does the Project Entail?

- Tutuka Power Station envisages the continuation of dry ash disposal over Eskom owned land, purchased before the commencement of environmental laws, such as the Environment Conservation Act
- Eskom would like to align its continued ashing activities, with the requirements of the NEMWA waste licensing processes
- The proposed continuous development is an ash disposal facility with the following specifications:
 - Capacity of airspace of 353,1 million m³ (Existing and remaining); and
 - Ground footprint of 759 Ha (Proposed Continuous Ashing & pollution control canals)
- The project also includes the expansion of the emergency ashing area at the power station from approximately 1900m² to 21 000m²

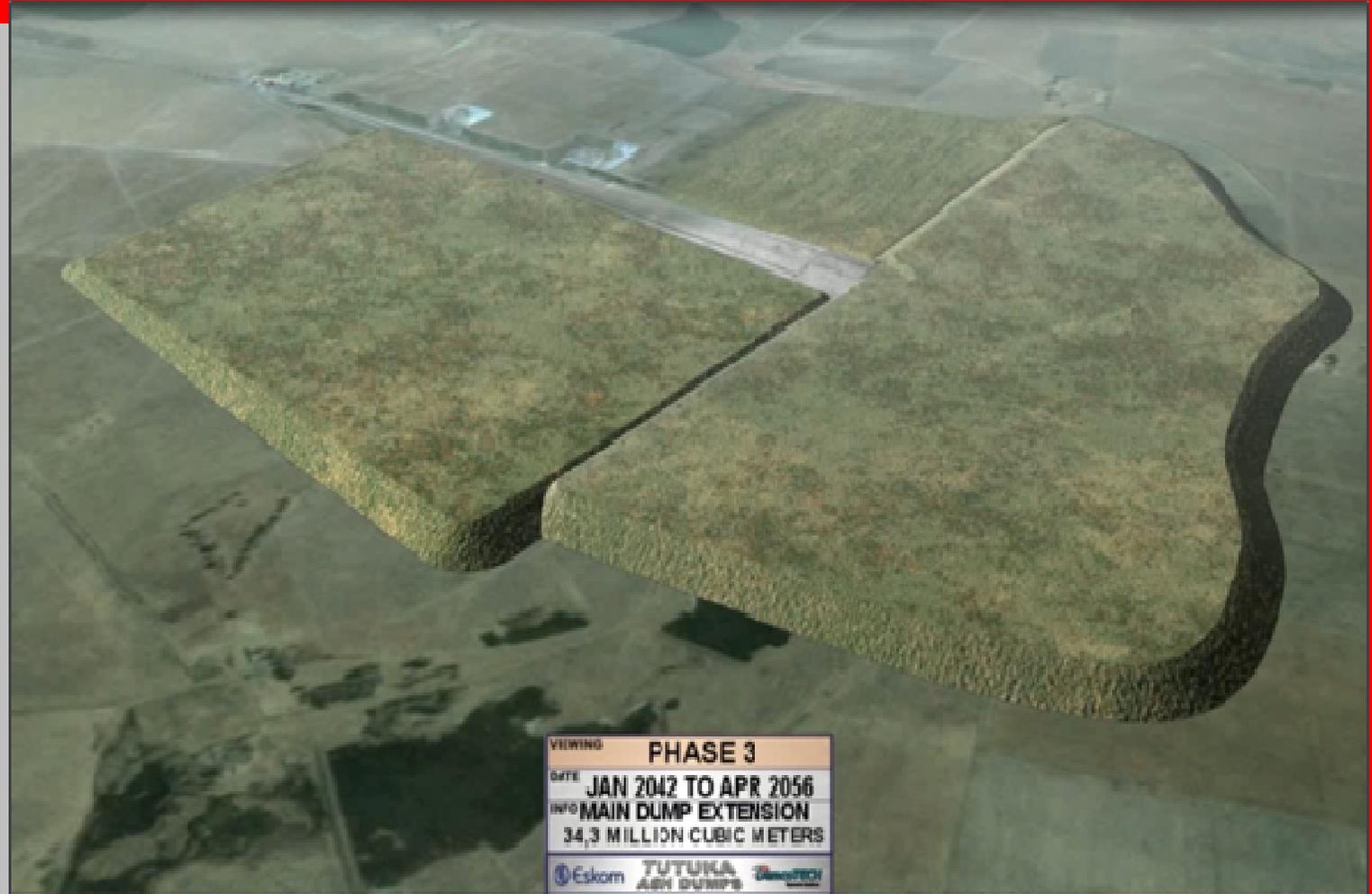
Proposal

- Convert the existing main dump operation to radial operation.
- Expand the ash dump to the south side which becomes the new standby ash dump.
- Construction of new channels, pipes, fences and roads.
- Construct new spreader system.
- Construct concrete slabs and channels at the emergency off loading area.

Existing Ash Dump



Total Ash Dump



New spreader system





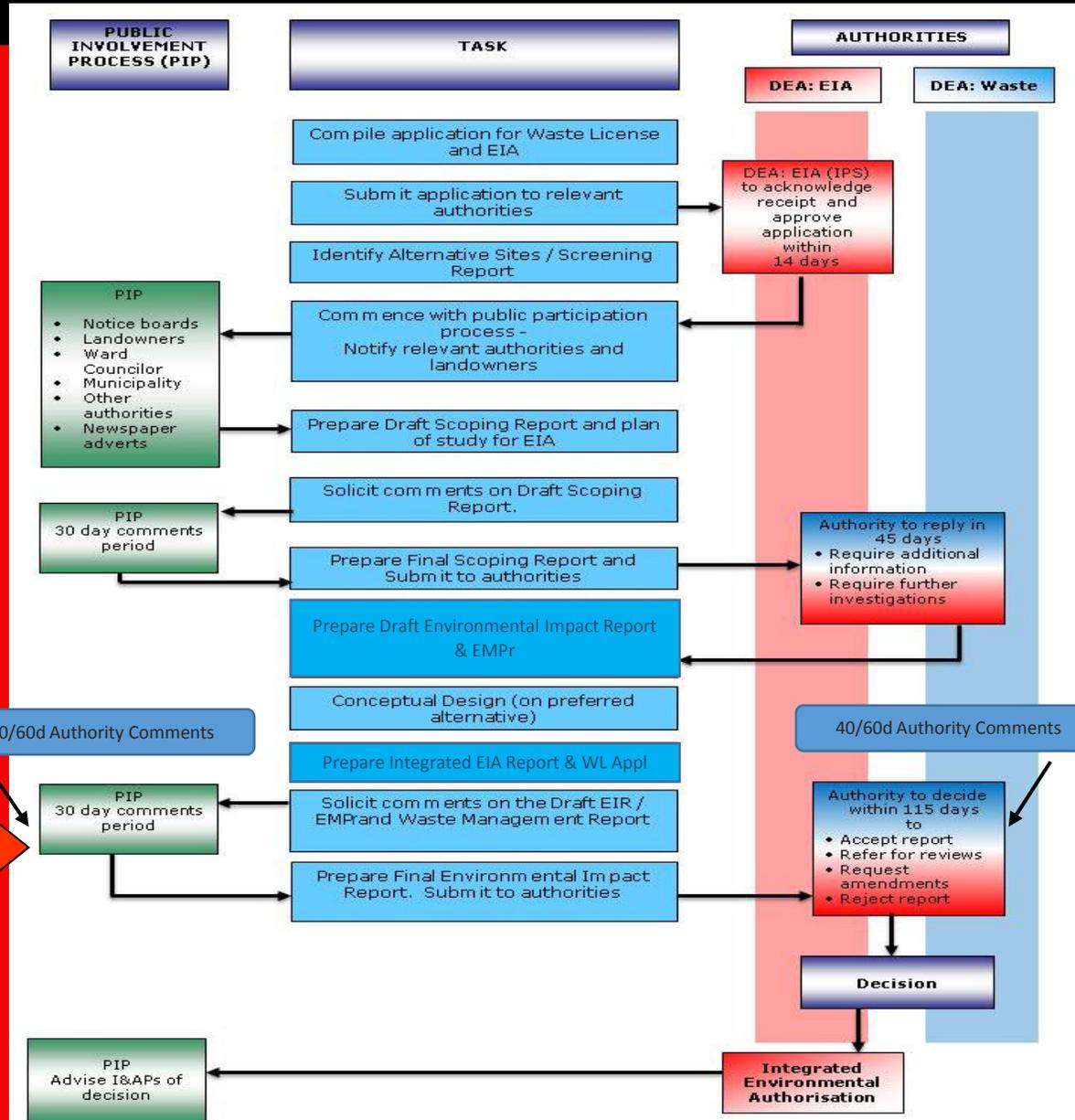
Environmental Studies

**Presented by:
Danie Brummer**

Why Environmental Studies?

- Legislative tool used to ensure that potential impacts are identified, assessed and mitigated as required
- Integrated Application:
 - National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010;
 - National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 921 of 2013

The EIA Process

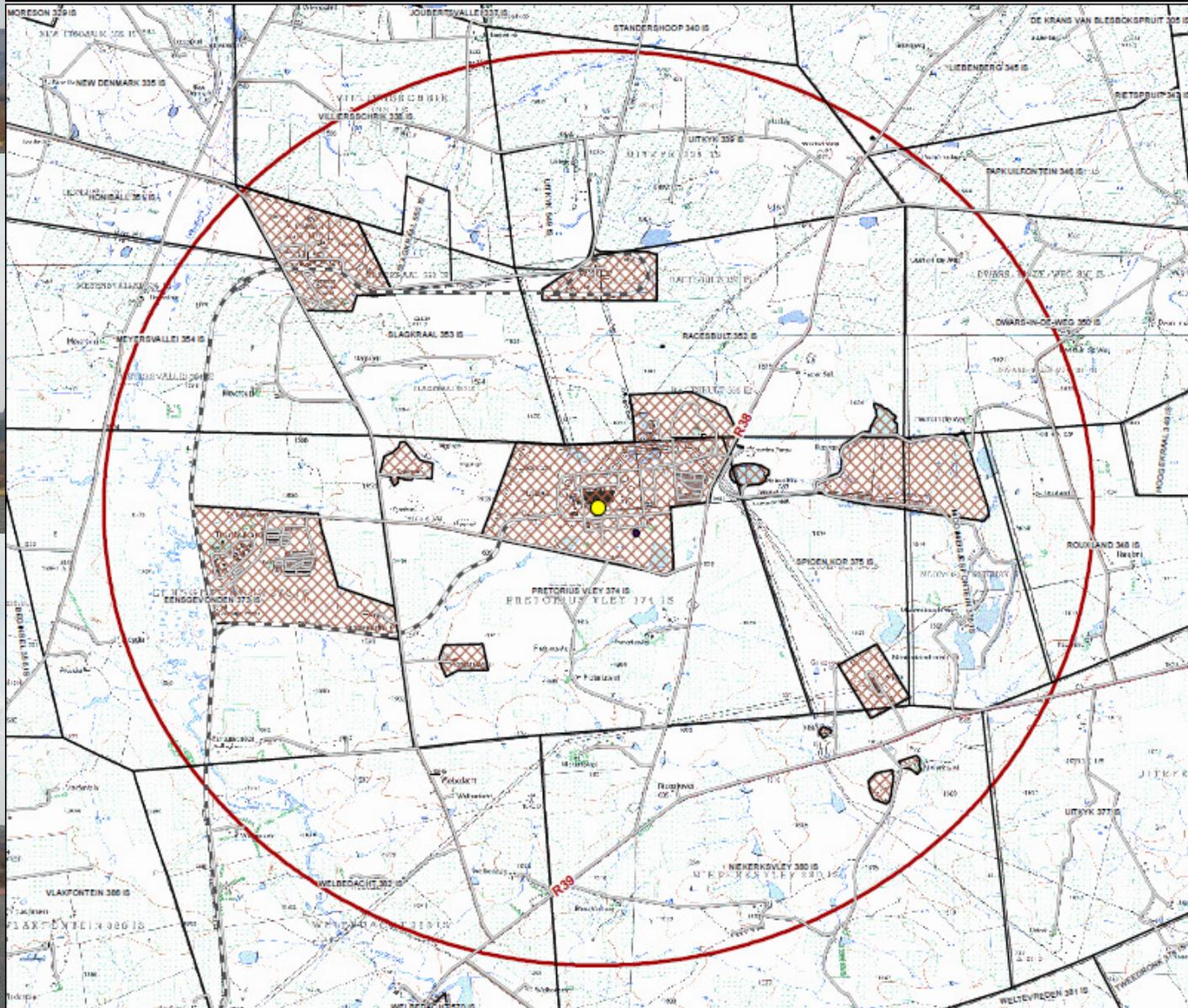


We Are Here

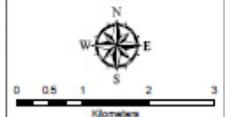
Sensitivity Mapping

- To allow for a robust environmental process all land within a radius of 8 km (secondary study area) was assessed in order to:
 - Identify potential alternatives sites
 - Identify no-go areas
 - Identify sensitive environmental aspects that may limit the suitability of all identified alternative sites

Sensitivity Mapping: No-Go Areas



Tutuka Continuous
Ashing Project
NO GO AREAS



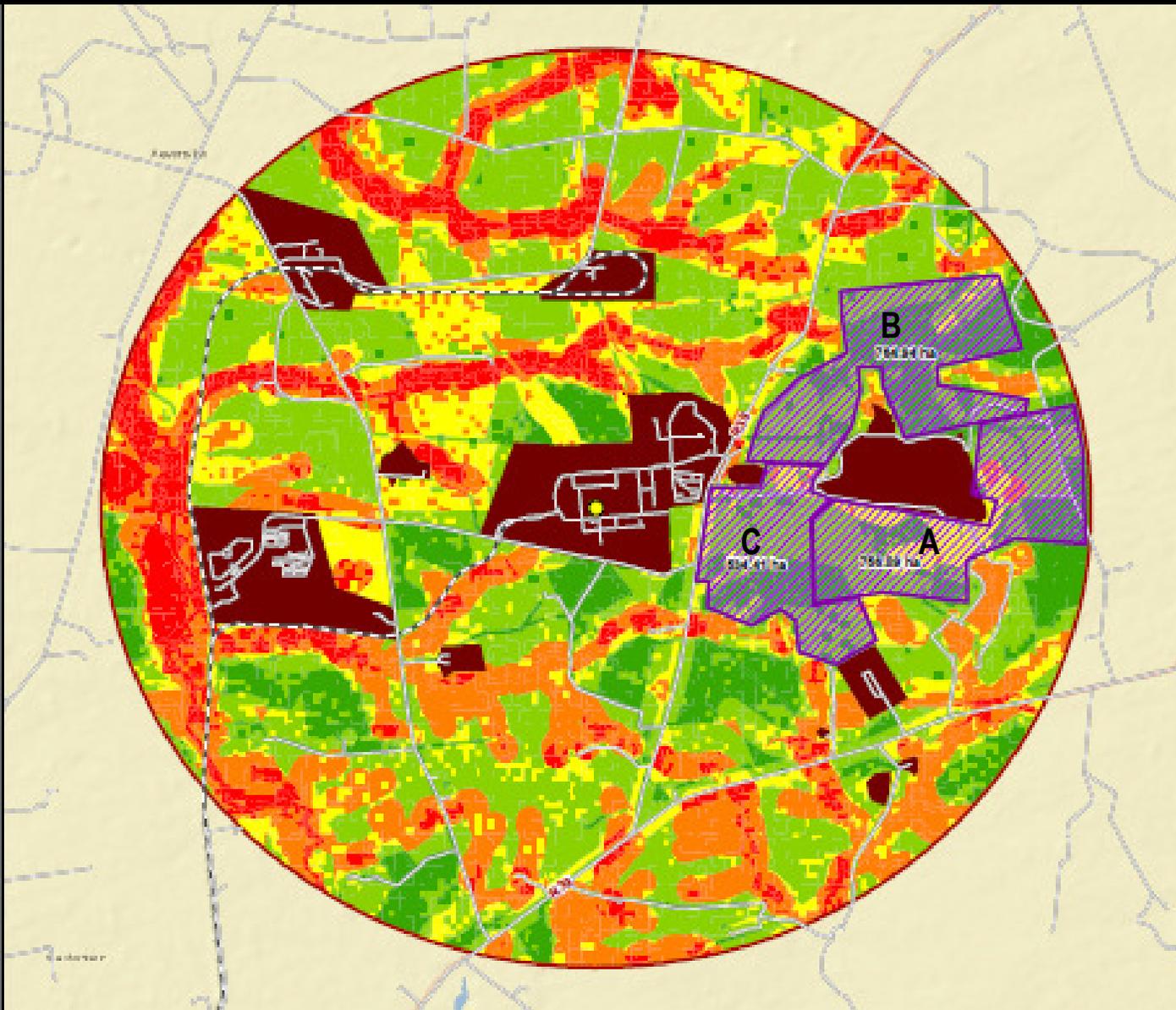
- Legend**
- Power Station
 - Study Area (8km radius)
 - No Go Areas
 - Roads
 - Farm Boundaries
 - Railway

Lidwala Consulting Engineers
MAP PREPARED BY: Lido Seemling
DATE: 10/05/2018
DATA MAP PRODUCED: 2013/10/08

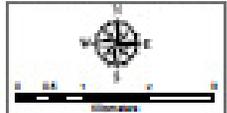
Geographic Coordinate System:
GCS_1998_1984
Datum: D_1998_1984
Prime Meridian: Greenwich
Angular Unit: Degree

The logo for Lidwala Consulting Engineers, featuring a stylized red and white circular emblem.

Sensitivity Mapping: Placement of sites within acceptable areas



Tutuka Continuous
Aching Project
POTENTIAL
ALTERNATIVE
SITES



- Power Station
- Study Area (Main outline)
- No-Go Areas
- Roads
- Railway
- Potential Alternative Sites
- All Additions with Factors
 - Low
 - Low-Medium
 - Medium
 - Medium-High
 - High

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Environmental & Infrastructure
Solutions
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Environmental & Infrastructure
Solutions

Significant Impacts: (Construction)

- **Biodiversity (A&C/H>M)**

- Impacts on fauna & flora species of conservation importance (including suitable habitat) A&C:

The presence of plants of conservation importance was established during the survey period.

Mitigation - Exclusion of red data habitat, possible relocation programme, minimise the impacted footprint.

- Impacts on sensitive or protected flora & fauna habitat types (including loss and degradation)

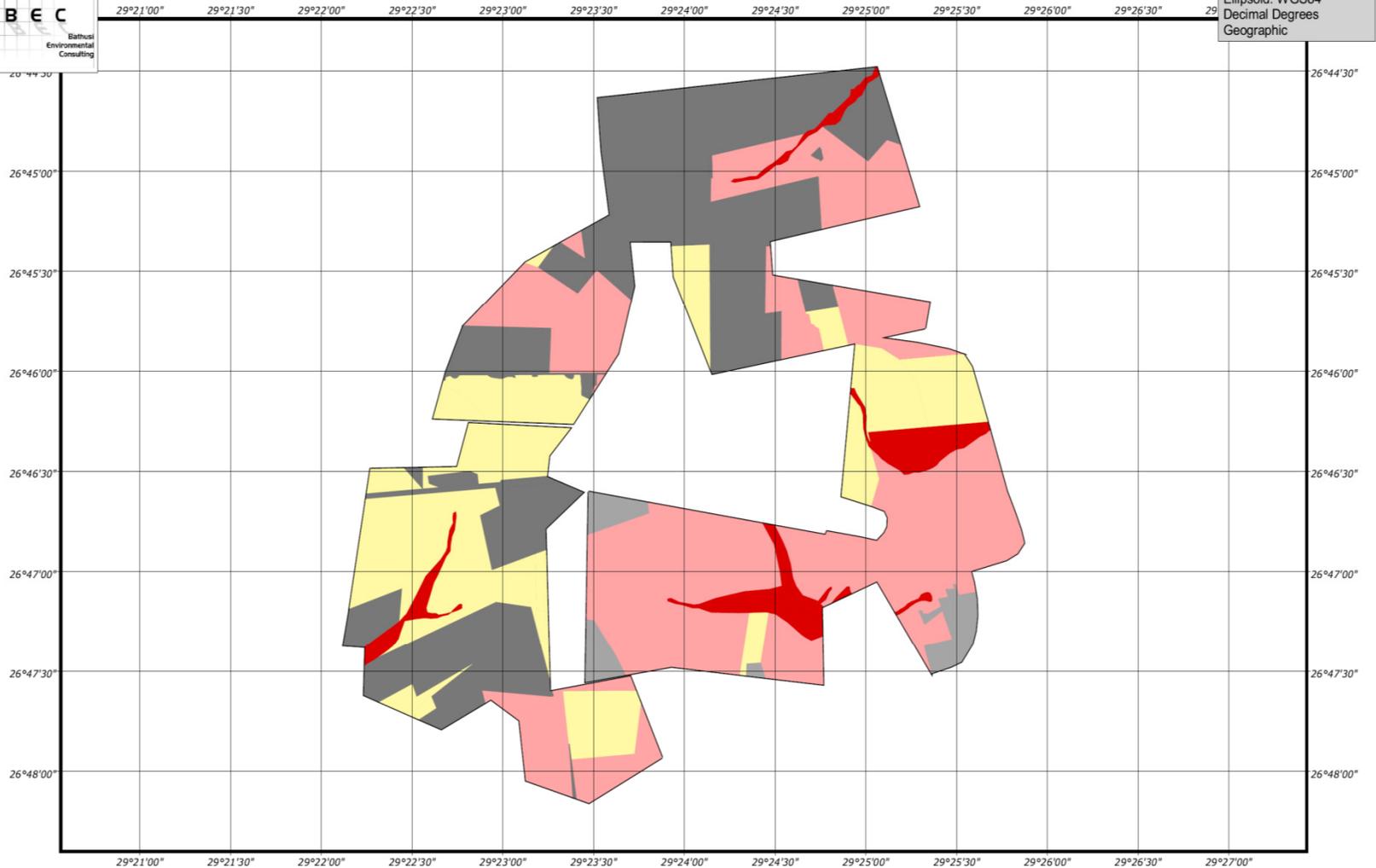
- restricted presence in the larger region
- loss of habitat and biodiversity on a local and regional scale

Mitigation - Prevent impact on sensitive species, minimise footprint.

Significant Impacts: (Construction)



Spatial Reference System:
Ellipsoid: WGS84
Decimal Degrees
Geographic



Floristic Sensitivity

- High
- Medium-high
- Medium-low
- Low



Significant Impacts: (Construction)

- **Biodiversity (A&C/H>M)**

- Displacement of fauna species, human-animal conflicts & interactions:

poaching, snaring, killing by accidental contact, capturing, effects of domestic cats and dogs, escalation in numbers of exotic and non-endemic species, road kills, etc.

Mitigation – Training of personnel, Relocation.

- Impacts on ecological connectivity & ecosystem functioning:

- transformed and fragmented grassland habitat
- animals migrate extensively across the region for various reasons

Mitigation – More pronounced on smaller slow moving species, monitoring & re-location, minimum area exposed, reduce edge.

Significant Impacts: (Construction)

- **Biodiversity (A&C/H>M)**

- Indirect impacts on surrounding habitat

- Disruption of nutrient-flow dynamics;
- Introduction of chemicals into the ground- and surface water through leaching;
- Impedance of movement of material or water;
- Habitat fragmentation;
- Changes to abiotic environmental conditions;
- Changes to disturbance regimes, e.g. increased or decreased incidence of fire;
- Changes to successional processes;
- Effects on pollinators; and
- Increased invasion by plants and animals not endemic to the area.

Mitigation – Training of personnel, Relocation, Monitoring & Corrective action, installation of a barrier system, implementation of ZLED

Significant Impacts: (Operations)

- **Biodiversity**

- Impacts during operations are expected to be the same as for the construction phase. Impact on surrounding habitat A/H>H.

- **Surface Water**

- Impacts on surface water quality & hydrology;

Mitigation – Liner or barrier system, pollution control infrastructure, compliance to ZLED, monitoring programme.

- **Agriculture (Construction/Operations)**

- Loss of agricultural potential (All alternatives)

- **Social**

- Continued generation of electricity to the national grid (positive)

Significant Impacts: (De-commisioning)

- **Biodiversity (A&C/H>M)**

- Displacement of fauna species, human-animal conflicts & interactions;

- **Visual (All Phases)**

- Permanent transformation of the landscape.

Mitigation – Rehabilitation of the disturbed areas, sloping & re-vegetation.

- **Surface Water (B/H>M)**

- Continued impact on the water quality in the area

Mitigation – Liner, pollution control infrastructure, compliance with standards, Monitoring and corrective action.

Cumulative Impacts

- **Biodiversity**

- Cumulative impacts on conservation obligations & targets (including national and regional).

This vegetation type (Soweto Highveld Grassland) is included in the 'Endangered' category. The current estimation of conservation level is likely to be an underrepresentation of the conservation requirements that need to be applied to these vegetation types.

- Cumulative increase in local and regional fragmentation/isolation of habitat;

Uninterrupted habitat is a precious commodity for biological attributes in modern times, particularly in areas that are characterised by moderate and high levels of transformation.

Mitigation: Migration corridors, minimized footprint.

No-go Alternative

If the new ash disposal facility is not established it would contribute negatively to the provision of reliable base load power to the national grid. It will result in the need to close down the power station due to the lack of ash disposal facilities, causing a long term reduction in electricity supply. It is important to note that the additional power output from Tutuka Power Station is still required to meet the national demand irrespective of the newly-build infrastructure.

Site Preference

SPECIALIST	WEIGHT	SITE			PREFERENCE	P
		A	B	C		S
Air	2.26	3	2	4		N P
Groundwater	2.35	3	3	3		S
Bats	2	3	3	4		
Birds	2	3	3	4		
Heritage	1.55	3	3	3		
Social	1.61	3	3	3		
Noise	1.32	3	3	4		
Agriculture	1.74	4	3	3		
Surface Water	2.29	4	2	3		
Biodiversity	2.19	2	4	3		
Visual	1.55	3	4	2		
		2.4	2.3	2.5	Average	
		5.95	5.69	6.37	Weighted Average	

Financial/Technical Motivation

Eskom submits that, as much as all sites may be used, there are varying degrees of challenges in using Sites B and C, independently. Eskom submits its preference for Site A, for the following reasons:

- Site A fits in with the current ashing operations, in that it links with the radial movement of the stacker system, the plant would require minimum plant modifications;
- To optimise Site A, if the ash production cannot fit onto the site, then Eskom can use the option to do “piggy-backing” stacker systems. Using “piggy-backing” would allow reduction of ashing footprint as the ash facility would be contained within Site A;
- If “piggy-backing” is not feasible, the ashing operations would encroach into a small area of Site C. This would, however, be done towards the end of the life of the ashing facility;
- Independent use of Sites B and C would require major plant modifications. New overland conveyors would be required to feed the new spreader systems to build the ash dump on site B and C. The existing north dam drainage system also would be covered with ash if Site B is explored.
- Power generation at the station can be under risk when performing this tie-in, as the ashing would have to be stopped. At the end the power station will have the existing stacker and spreader systems as redundant systems. This is because both of these sites are not in sync with current and ongoing operations.

Liner Concession

SLR Groundwater Consultants, were approached on their opinion on the proposed liner concession.

According to the modelling conducted the mitigatory impact of the liner is not that significant that it would noticeably change the results of the model if a 3-4 year concession is granted on the implementation thereof. Existing control systems must remain.

TB21



LEGEND

- DRY WATER PILING DAM
- CLEAN WATER TRENCH
- DRY WATER TRENCH
- CLEAN WATER BERM

ISSUED FOR DISCUSSION PURPOSES ONLY

DRAWING CREATED			
No.	Amendment	Date	By

ECSA 750 693
 ALAN ROBINSON



ESKOM

TUTUKA POWER STATION

KEY PLAN
 ASH DUMP
 EXTENSION

N.T.S.
 667/100

Slide 53

TB21

the facility can take 191 M m3 of ash...is that NOT adequate...this figure does NOT reflect any piggy-backing...should it?

Tobile Bokwe, 8/31/2014

Previous Comments

Should an EA be granted would it have negative impacts on farming activities?

- The area has been identified as an area with Medium – Low Agricultural potential. The pollution of grazing crop and land has been investigated as part of the EIA process. Although the loss of Agricultural land is always a high impact, care has been taken to minimise this through this selection. The existing impact of dust emissions would remain but would be better regulated through a formal EA.

It was asked if heavy metals are present in the ash and if the ash is toxic.

- The Type 3 waste classification was the result of the Leach Concentration (LC) value of boron (B) and chromium VI concentrations exceeding their respective LC0 values, and the Total Concentration (TC) value of barium (Ba) and copper (Cu) exceeding their respective TC0 concentration values. Heavy metals do occur and therefore the classification. Toxicity function of the receptor.

Previous Comments

When Eskom rehabilitate ash disposal facilities, do they look at the land use?

The land would not be directly available to the surrounding communities as per pre-disposal land-uses (grazing etc.)

If all rehabilitation takes place in accordance to the EMPr however, the land could be available for certain low demand land uses (eg. Solar Farm). This could decrease the demand on High potential Agricultural soils in the surrounding area.

Conclusions and Recommendations

- Three Alternative Areas and the No-Go Alternative were investigated in the EIA Phase.
- Detailed specialist studies were conducted to assess all the identified impacts.
- Integrated Environmental Impact Assessment Report with a waste licence section were compiled based on the specialist information.

ALT C HAS BEEN IDENTIFIED WITH MARGINAL PREFERENCE OVER ALT A (ENVIRONMENTAL), ALT A IS RECOMMENDED BASED ON ALL CONSIDERATIONS (ENV, TECH, FINANCIAL, ENGINEERING)



Public Participation

Presented by:
Nicolene Venter

What is Public Participation?

- Public participation is a joint effort between:
 - I&APs
 - The proponent
 - Technical Specialists
 - Decision-makers
- Work together to produce better decisions
- Aim: To inform a wide range of I&APs
- Tool: Allows the public to exchange information and express their views and concerns
- Scoping: Facilitates the identification of issues and concerns early in the EIA process
- EIA: Assessing all of the issues
- All contributions from I&APs will be fully documented, evaluated and responded to in the EIA

Public Participation Process (Scoping Phase)

Identification & Consultation - Ongoing

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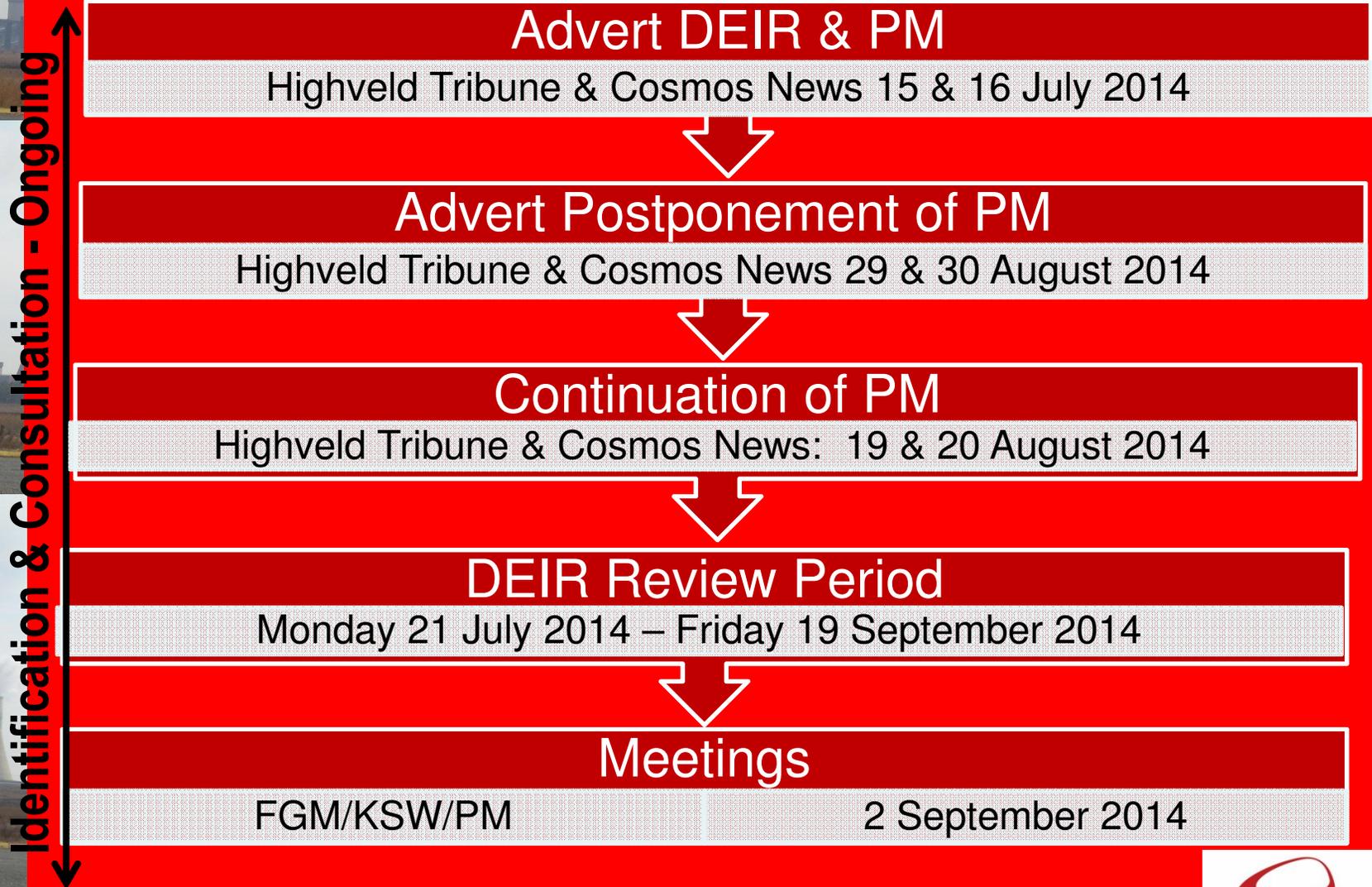
21 & 22 November 2012

FINAL SCOPING REPORT

Submitted to DEA

12 December 2012

Public Participation Process (Impact Phase)



Public Participation Process (Impact Phase - continued)

Identification & Consultation - Ongoing

Final Environmental Impact Assessment Report

Submission to DEA: Public Comment: 26 Sept to 27 Oct 2014

DEA Decision

Envisaged: 15 February 2015

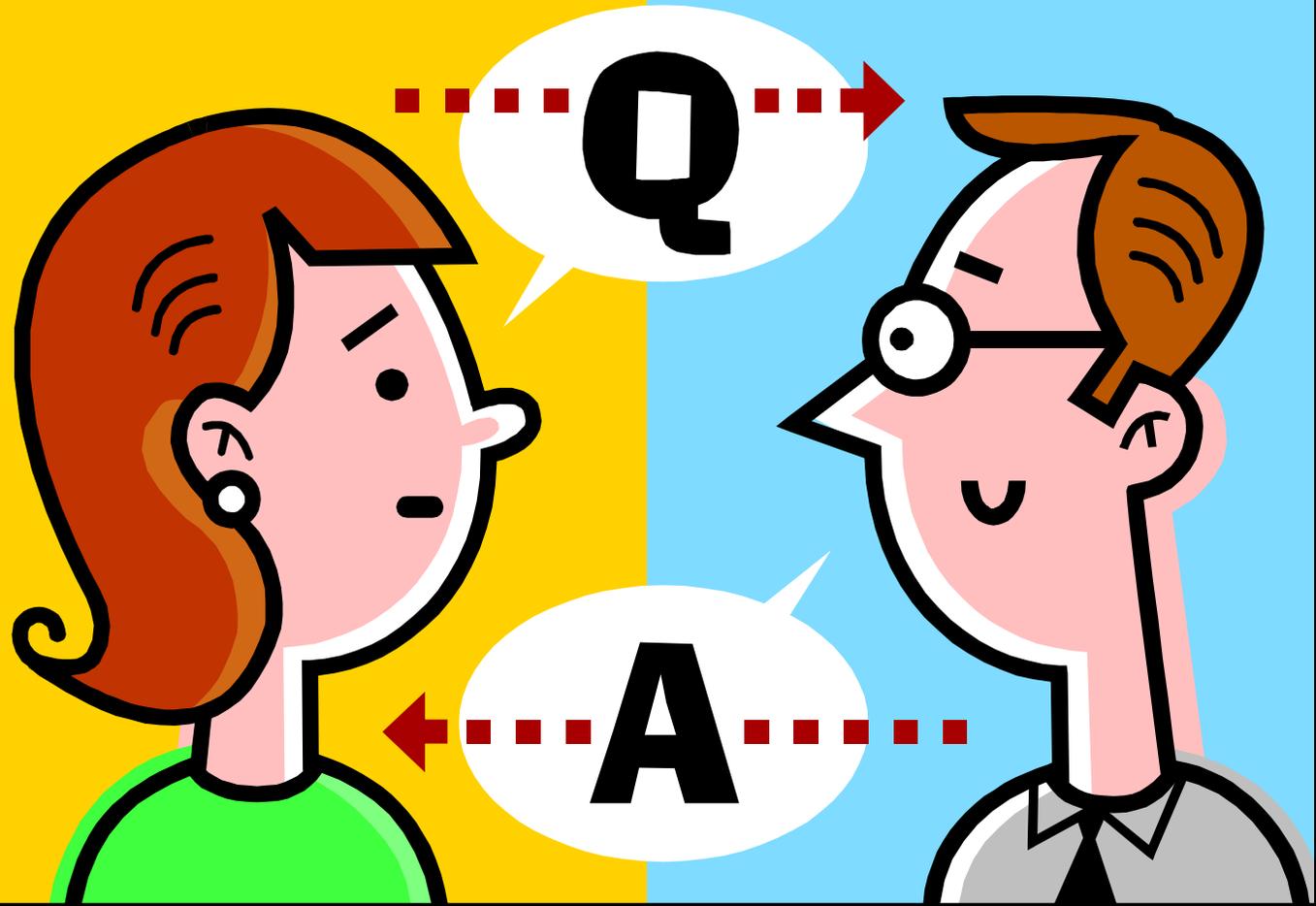
Advertise & Notify I&APs of DEA's decision

Advertise & Notify I&APs within 12 days of EA issued

Appeal

I&AP Notice of Intent: 20 days; Applicant: 10 days

QUESTIONS & ANSWERS



QUESTIONS & ANSWERS



TB28

Slide 63

TB28

please replace the picture...don't show teh scientific work behind...there must be a picture of facilitator elsewhere

Tobile Bokwe, 8/31/2014

Way Forward

	2014		2015		
	August	September	January	February	March
Distribution of Minutes	☀				
Submission of FEIR to DEA		☀			
DEA Decision				☀	
Appeal				☀	☀

Contact Details

PUBLIC PARTICIPATION OFFICE CONTACT DETAILS

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