

TRAFFIC OPINION

NEW CAMDEN ASH DISPOSAL FACILITY

8 October 2013



Report prepared by:



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ANNEXURE

FIGURE 1-1: SITE LOCATION : ZITHOLELE CONSULTING at the back of the report

FIGURE 1: 2 ROUTES

FIGURE 6-1 LAYOUT MAP



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DECLARATION

I certify that this TRAFFIC OPINION: NEW CAMDEN ASH DISPOSAL FACILITY was prepared by me and I have experience and training in the field of traffic and transportation engineering.

Signed:

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ECSA Registration Number: 970277

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TRAFFIC OPINION

NEW CAMDEN ASH DISPOSAL FACILITY

1. BACKGROUND

This traffic opinion was done as part of the environmental impact assessment for Zitholele Consulting on the expansion of the Camden Ash Disposal Facility at the Camden Power Station. This opinion will deal with the potential traffic impact during the construction and rehabilitation phases of the project.

The traffic impact during the operational phase will simply move from the existing ash disposal facility to the new ash disposal facility.

2. METHODOLOGY

The Environmental Impact Assessment identified four alternative sites for the new ash disposal facility. Through the processes, two sites were found to be fatally flawed, namely Alternatives 2 and 4. Alternatives 1 and 3 were then investigated further, and Alternative 1 was found to be the preferred site. This opinion will therefore be based on the preferred site, Alternative 1.

This opinion will be based on information obtained from the available document on the environmental process, a site visit and discussion on-site with the Camden Power Station Environmental Officer, and our past experience with similar projects.

3. SITE LOCATION AND ACCESSIBILITY

The location of the Camden Power Station and the existing ash disposal facility with the four alternative sites identified, is depicted in Figure 1-1, Location of the Camden Ash Disposal Facility Project, from Zitholele Consulting (see the annexure).

Access to the existing ash disposal facility can be obtained from the N2 via Eike Avenue to the power station. At the four-way stop where this road crosses the haul road (Road A for the purposes of this report), the haul road can be followed to the ash disposal facility. There is also an alternative road from the main access road through the Camden Village that will link up with the haul road. The two routes are depicted in Figure 1 presented in the annexure.

4. ACCESS ROADS TO THE EXISTING ASH DISPOSAL FACILITY

The roads used to provide access to the existing ash disposal facility are briefly discussed below.

The access to the Camden Power Station on the N2 was recently upgraded as part of the N2 upgrade. The existing access on the N2 is depicted in the photos below.



Camden Access Road (Eike Avenue)



N2 towards Ermelo



N2 towards Piet Retief

From the N2 intersection the existing access road, Eike Avenue, is depicted in the photos below.



Typical section along Eike Avenue



Typical section along Eike Avenue



Four-way stop at intersection of Eike Avenue and the haul road



Four-way stop: Eike Avenue and haul road at the Power Station

From this intersection the haul road (Road A) can be followed to the existing ash disposal facility. Photos depicting the existing Road A to the four-way intersection at the existing ash disposal facility are depicted below.



Typical section along Road A



Typical section along Road A



Typical section along Road A



Intersection Road A and Road B near ash disposal facility camp site

Road B is, for the purposes of this opinion, the link road between Road A and the Camden Village.

Alternative route via the Camden Village

From Eike Avenue the Camden Village access road can also be used to the existing ash disposal facility. This road is a surfaced road and sections of it are in a bad condition. Typical sections along this road are depicted in the photos below.



Camden Village access road from Eike Avenue



Camden Village road past the school



Camden Village road past the school



Road B from the Camden Village to the ash disposal facility



Intersection Road A and Road B near ash disposal facility camp site

5. PROPOSED ACCESS ROAD TO THE NEW ASH DISPOSAL FACILITY

In terms of access to the Alternative 1 site, the same roads can be used for access purposes. The access point to the new facility will be along Road B, following the return water pipeline as depicted in Figure 6-1 from Zitholele Consulting (see the annexure).

We assume this will be a gravel road that will serve the construction camp and ash disposal facility with all the facilities around it for the duration of the life of the facility.

6. TRAFFIC IMPACT

In terms of the potential traffic impact we will distinguish between three phases:

Construction phase
Operational phase
Closing down phase

6.1 CONSTRUCTION PHASE

Based on the available information the following major construction activities need to take place during this phase:

- Construction of access road and the road around the ash disposal facility
- Stripping of topsoil and cover material
- Construction of clean water cut-off drain
- Construction of return water dam
- Construction of starter wall
- Concrete work on the cut-off drain and return water dam
- Relocation of the transmission line
- Laying of return water pipeline
- Laying of slurry line

No construction plan and quantities are available at this stage and we will assume a possible implementation plan based on past experience.

The access roads and the road around the ash disposal facility are expected to be constructed first. The construction of the cut-off drain and return water dam which is expected to generate surplus material, will follow. This material, subject to the quality, is then normally used to construct the starter wall. The balance of the material for the starter wall is normally stripped from the area within the ash disposal facility. The stripping of all the suitable topsoil and cover material from the area that will be covered by the ash disposal facility normally takes place before the commencement of any construction activities on the

starter wall and other services. The surplus material is normally stockpiled and used to cover the slopes during the operational phase.

The cut-off drain as well as certain parts of the return water dam are normally concrete-lined. This is one activity that can, depending on how the contractor decides to mix concrete, generate some external trips.

The relocation of the transmission line and the construction of the return water pipeline are expected to run in parallel with the above activities.

In terms of construction trips we will generate a typical scenario that can be expected for the purposes of this opinion. There are two types of trips that can be generated as a result of the construction phase:

- On-site trips: Trips associated with earthmoving, construction and relocation of transmission lines
- External trips: All consumables used on-site from external sources, including staff

On-site trips:

This can vary significantly during the construction period. We expect the initial stage to be a major earthmoving operation, then an increase in activity as construction work commences on the cut-off drain, return water dam and ash disposal area. We expect the relocation of the transmission line to be a high priority and part of the initial stages of the construction phase. Earthmoving operations will gradually come to an end and the construction stage will continue up to the completion of the above-mentioned activities.

On-site construction activities can generate a significant number of daily trips. These trips are accommodated within the boundaries of the construction site on the gravel access road and road around the ash disposal facility as well as within the ash disposal facility area. These roads need to be maintained and dust suppression applied for the duration of the construction period.

External trips:

These trips comprise of the following (estimated):

- Staff transport: 2 x 25 seater-buses and 6 to 10 other vehicles
- Material: 5 to 8 truck deliveries on average per day
- Consumables: 2 to 3 trucks per day
- Maintenance and other trips: 20 to 40 trips per day (light vehicles)

We expect between 70 and 122 external trips on a normal construction day when this site is running at its peak. In terms of peak hour traffic on the adjacent road network, we do not expect this to be more than 10 to 15 additional peak hour trips during these periods. In terms of the Manual for Traffic Impact Studies ⁽¹⁾ this is well below the values required to conduct a traffic impact study.

Access road to be used for external trips:

Following our site visit and discussion with the official from Eskom, the Camden Village access road from Eike Avenue to the new ash disposal facility past the school is not a preferred route. The road runs right alongside the school (photo below) and this is a safety concern for the school-children.



School next to Camden Village access road

The existing access road via Road A and Road B and then Road C should be used for the external trips during the construction phase.

This road is to be maintained and dust suppression applied as is currently done during the construction phase.

6.2 OPERATIONAL PHASE

The existing operation will move over to the new facility and we do not expect any change in the traffic flow as a result of the new ash disposal facility.

6.3 CLOSING-DOWN PHASE

Rehabilitation of the ash disposal facility normally takes place during certain stages in the operational phase. The final closing includes the last lift on the ash disposal facility and the

top area. Material for this is normally obtained from stockpiled material, and an earthmoving operation takes place.

This is expected to be predominantly an earthworks operation. Heavy earthmoving equipment will be used on-site with a small number of external trips. Recovery of old pipes will probably also take place and this is expected to generate external trips. The external trips are expected to comprise of the following (estimated):

Staff transport:	1 x 15 seater bus and 2 to 3 other vehicles
Consumables:	1 x truck per day
Pipe/material recovery:	1-2 truck on average per day
Maintenance and other trips:	10 to 15 trips per day (light vehicles)

We expect between 30 and 44 external trips on a normal construction day when this site is running at its peak.

The existing access road via Road A and Road B and then Road C should be used for the external trips during this phase. This road is to be maintained and dust suppression applied as is currently done.

7. TRAFFIC IMPACT ON N2

We conducted a traffic impact study for another development⁽²⁾ in this area in 2012 for which we conducted traffic counts and obtained data from SANRAL. The Historic Annual Average Daily Traffic (AADT) obtained from SANRAL's permanent counting station (PCS No. 1112) on the N2 between Ermelo and Piet Retief is depicted in Table 1.

Year	All Vehicles		
	Towards Piet Retief	Towards Ermelo	Total
2001	2333	2304	4637
2002	2364	2361	4725
2003	2462	2457	4919
2004	2532	2535	5067
2005	2599	2608	5207
2006	2700	2691	5391
2007	2881	2818	5699
2008	2925	2881	5806
2009	2905	2878	5783
2010	2864	2904	5768

TABLE 1: Historic AADT's on N2-34 at SANRAL's PCS 1112

A 2,8% per annum traffic growth was calculated for this period. If we apply this to the 2010 figure, the annual average daily traffic for 2013 should be around 6 260 vehicles per day.

The construction phase could contribute an additional 2% to the average annual daily traffic. This is however only for a few months and it will then revert back to the normal traffic flow pattern. The traffic impact during the operational phase is already on the N2.

The impact during the closing down-phase in 18 years' time is expected to be of the order of 0,5%. This again is only for a few months and then it will revert back to the normal traffic flow pattern.

8. CONCLUSION

This opinion dealt with Alternative 1, the preferred site for the new ash disposal facility at Camden Power Station. The three important phases from a traffic point of view will be as follows:

- Construction phase
- Operational phase
- Closing down phase

The construction phase has the potential to generate approximately 122 daily trips on the external road network or approximately 2% of the daily trips on the N2 during the construction phase at its peak. This is however only for a few months and then it will revert back to the normal traffic flow pattern. The traffic impact during the operational phase is already on the N2. The impact during the closing-down phase in 18 years' time is expected to be of the order of 0,5%. This again is only for a few months and then it will revert back to the normal traffic flow pattern.

In terms of access to the new ash disposal facility, the road via the Camden Village past the school is not preferred from a safety point of view.

9. REFERENCES

- (1) Manual for Traffic Impact Studies PR 93/635, Department of Transport, 1995.
- (2) Traffic Impact Assessment Vunene Colliery (Pty) Ltd, Corli Havenga Transportation Engineer, 23 October 2012

ANNEXURE A

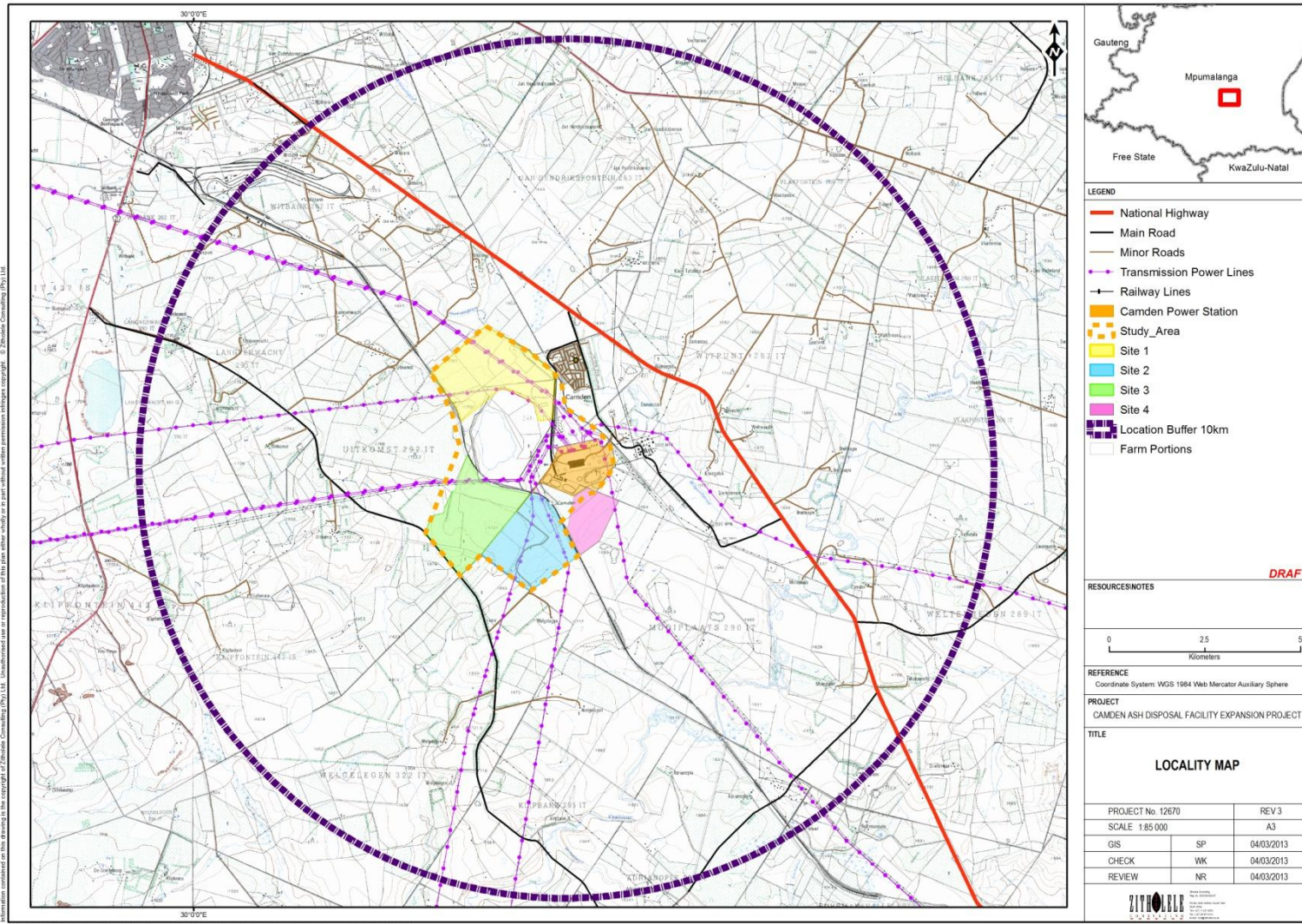


Figure 1-1: Location of the Camden Ash Disposal Facility Project



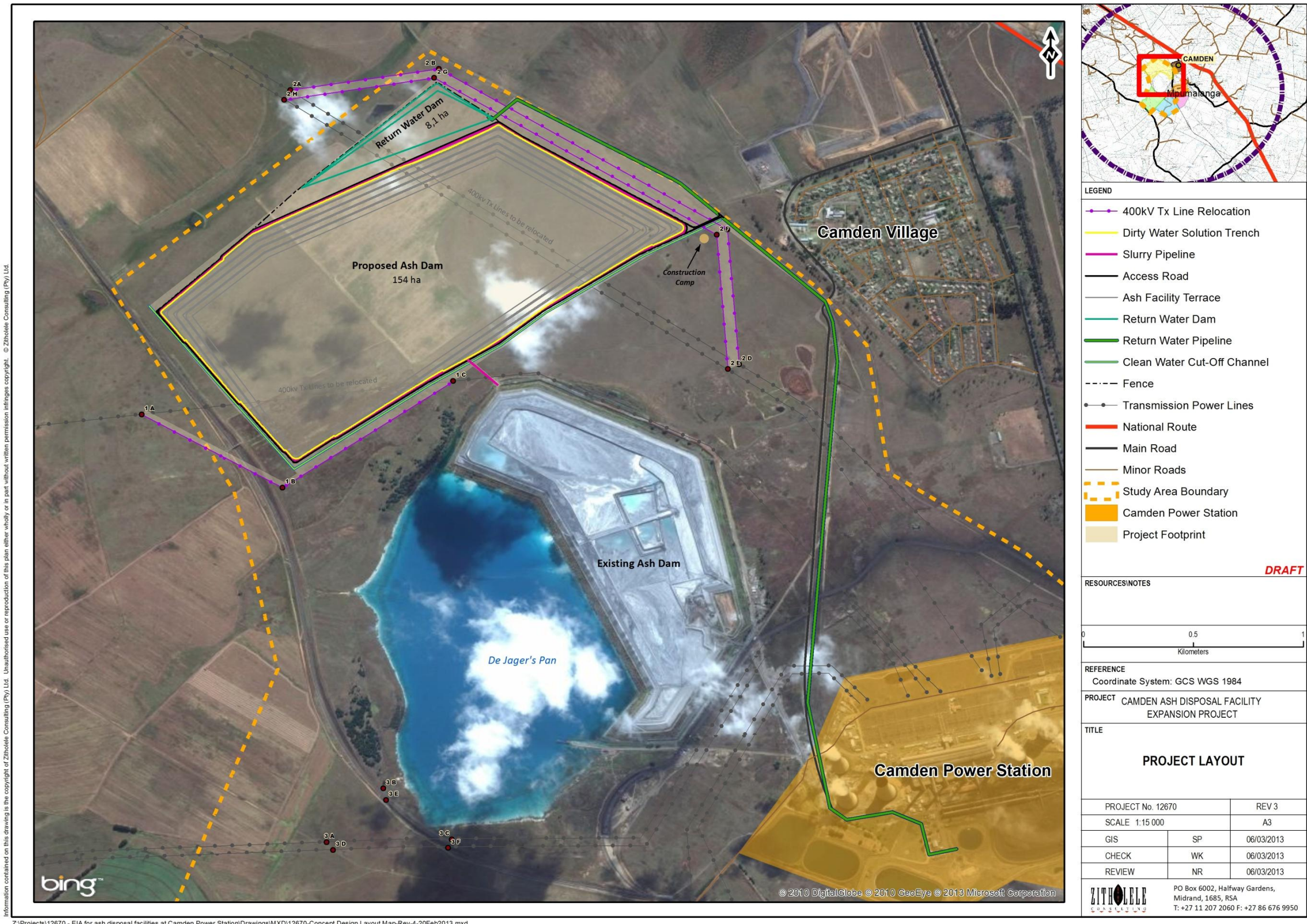


Figure 6-1: Camden Ash Disposal Facility Expansion Project Layout Map for Site 1