environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
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Date Received:	

Application for integrated environmental authorisation and waste management licence in terms of the-

(1) National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010; and

(2) National Environmental Management Act: Waste Act, 2008 (Act No. 59 of 2008) and Government Notice 718, 2009

PROJECT TITLE

Proposed 30-year Ash Disposal Facility at Kendal Power Station, Mpumalanga

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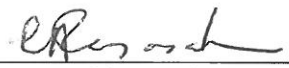
4.2 The specialist appointed in terms of the Regulations_

I, Rochelle Rajasakran , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Hatch

Name of company (if applicable):

25.02.2015

Date:

HATCH GOBA
Member of the Hatch Group

Zitholele Consulting Engineers

Kendal 30 Year Ash Disposal Facilities

Project No. H344245

Traffic Impact Assessment

27 February 2015

Zitholele Consulting Engineers

Kendal 30 Year Ash Disposal Facilities

Traffic Impact Assessment

Prepared by:	Bradley Whitehead	27 February 2015 Date

Approvals

Hatch Goba

Approved by:	Rochelle Rajasakran	27 February 2015 Date

Zitholele Consulting Engineers

Approved by:	Tania Oosthuizen	Date

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1. Introduction

1.1 Background

Hatch Goba (Pty) Ltd. was appointed by Zitholele Consulting on behalf of Eskom to undertake a traffic/transportation impact study as part of the Environmental Impact Assessment for the proposed Ash Disposal Facility development at Kendal Power Station. Kendal Power Station is located near Emalahleni in Mpumalanga Province. A regional map is shown in Figure 1 in Annexure A.

Kendal Power Station is a coal fired power station located south west of Ogies. It has an indirect dry-cooling system that uses a cooling tower and water. The power station has a life span of 60 years beginning in 1993 when the first coal was fired. Kendal has six 686 megawatt (MW) units that generate 4116MW of power.

1.2 Problem statement

The current ash disposal facility of the Kendal Power Station is running out of space due to the poor quality coal accessible for combustion, which produces more ash than was planned. In addition, the life span of Kendal has also been extended from 2025 to 2053, which would render the available ash disposal space inadequate to accommodate continuation of disposal. Eskom has two options in solving this problem:

- Continue disposing ash onto the existing facility but extend the footprint of the Facility[1] or
- Seek an alternative disposal facility site with a lifespan of 30 years.

This report will investigate the latter and determine the impact of traffic on the immediate road network surrounding the proposed site.

1.3 Project Scope

A number of sites were initially identified for the location of the new Ash Dam Facility. The traffic impact analysis was therefore undertaken in two phases, with the first phase consisting of an initial screening of the sites and the second phase being a detailed traffic impact evaluation of the selected site on the road network.

The activities that were undertaken during each of the phases is described below:

Phase 1: Traffic Review of Shortlisted Sites

- Conduct a site visit to assess the road network to/from the short listed sites, including the access(es) onto the external road network and key intersections onto the national / public road network.
- Confirm transport methods of the waste from the power station to the disposal site.
- Obtain and process existing traffic counts in the area, and where necessary arrange to undertake additional traffic count surveys (for the shortlisted sites) and prepare a summary thereof.

[1] This option has been addressed in a report submitted to the Department of Environmental Affairs

- Compile a list of technical information to be obtained from the engineering team that may include:
    - Details of the traffic/truck volumes expected to operate to/from the site as well as the arrival/departure profiles during both phases - construction and operation.
    - Origin / Destination of the traffic / truck volumes during construction and operation.
    - Staff movements and transport during construction and operation.
    - Details regarding abnormally dimensioned machine components required during the construction and operation of the mine.
- Provide an opinion on the expected traffic impact during and after construction as well as access arrangements for each of the shortlisted sites.
- Prepare and present a presentation at the conclusion of fieldwork phase.
- Prepare and submit a Traffic Opinion Report
- Attend a Site Selection Workshop with all other sub-consultants to review shortlisted sites.

Phase 2: Traffic Impact Assessment of final selected site

- Once the final site selection has been made, taking cognisance of all the possible environmental impacts, Hatch Goba will carry out a full and detailed Traffic Impact Assessment for the selected site.
- During the construction and the operation of the ash disposal site the impact of construction vehicles, employee movements and truck traffic on the external road network and any disruption to the normal traffic flow as a result, will need to be quantified.
- Mitigation measures will have to be proposed to accommodate vehicle movements generated during the construction time and the operational time on the public road network.
- The impact of the general construction traffic and operational truck traffic on the pavement structure will need to be assessed.
- Present findings at one stakeholder meeting and respond to comments raised by stakeholders.
- Compile Final Traffic Impact Assessment report post stakeholder consultation.
- Detailed internal layout designs and internal circulation or parking planning is not included in the scope of works.

2. Phase 1 : Traffic Opinion on Shortlisted Sites

Phase 1 of the traffic study commenced in February 2013. A report entitled *Traffic Opinion Report (Baseline Report), Hatch Goba* was submitted in October 2013. The study is presented in detail in this report to provide a comprehensive outline of the procedure followed in arriving at the final site.

2.1 Review Shortlisted Sites

The study area is located within a radius of 7 km from the existing Kendal Power station and as per the initial scope was to be limited to 3 site alternatives. However at a site selection workshop Hatch Goba was presented with 8 sites, as shown in Figure 2-1 below. No conceptual plans were made available for any of the 8 sites.

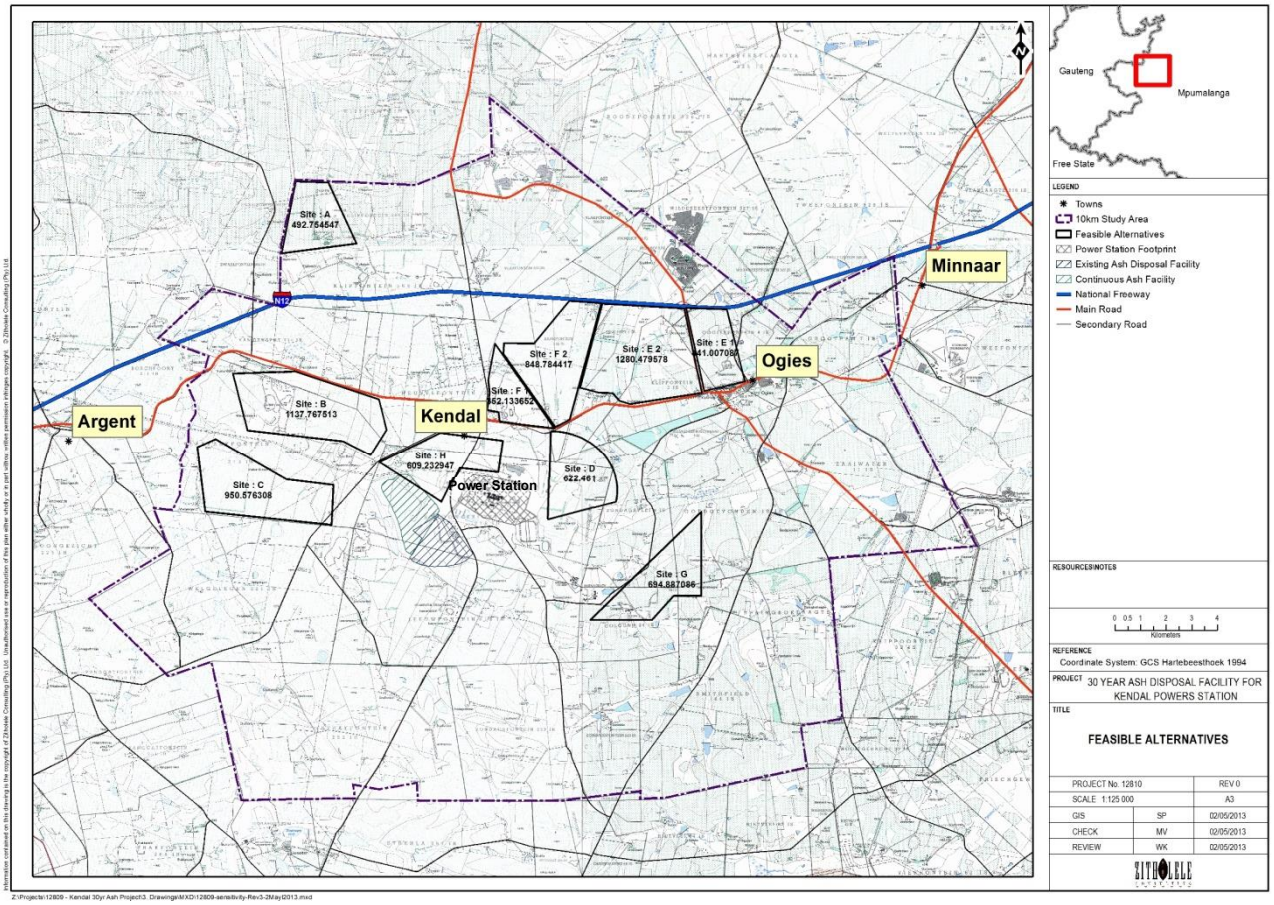


Figure 2-1 Potential 8 Sites for the Ash Disposal Facility

These 8 sites were initially ranked from a traffic point of view by taking the following into consideration:

- Number of major roads / rivers to cross with conveyor
- Conveyor distance

- Number of junctions most likely to require upgrading as a result of truck movement
- Road diversions required in order to avoid crossing the road with a conveyor

The outcome of this exercise showed that Site H was the best site from a traffic point of view, followed by Site D and then Site C.

2.2 Site Visit

The initial scope of works included for the assessment of the road network to/from 3 shortlisted sites, including the access(es) onto the external road network and key intersections onto the national and/or public road network. However the client requested that the following 4 sites be evaluated during the Fieldwork phase / Screening phase:

- Site B
- Site C
- Site F1 & F2
- Site H

The Hatch Goba site visit took place on 17 September 2013, during which the road conditions and potential accesses to the alternative sites were evaluated.

2.3 Confirmation of Transportation Methods

It was confirmed that ash will be transported via conveyor from the power station to the new Ash Disposal Site. The power station does not use trucks to move ash to the existing Ash Disposal Site under normal circumstances. The trucking of ash is only an emergency method implemented on occasion when the conveyor fails.

Traffic Impact Assessments are not normally carried out for emergency situations ï only for normal circumstances. However, a number of vehicles including heavy vehicles were observed entering and exiting the existing Ash Disposal Site. It was observed that these heavy vehicles travel mostly between the existing Ash Disposal Site and a site located on the D683 sign posted ñEnslin Boerderyò(see Figure 3). This movement to/from ñEnslin Boerderyòwill have to be accommodated to/from the new Ash Disposal Site and therefore the requirement for a Traffic Impact Assessment needs to be considered.

The Klipfontien Colliery located further east along the R555 has a conveyor crossing the R555. It is therefore envisioned that obtaining permission to cross the D686, D1390 (Sites B, C and H) or R555 (Site F) with a conveyor would not be problematic.

2.4 Opinion on Expected Traffic Impact

The following paragraphs provide an indication of the expected impact to the road network based on the trip generation of the facility. . During Phase 2 a detailed traffic analysis of each impacted intersection for the selected site will be produced.

2.4.1 Warrants and Extent of Study

According to the Department of Transportôs (DoT) Manual for Traffic Impact Studies (RR93/635, 1995), the threshold values for conducting traffic studies are as follows:

- If a proposed development generates more than 150 peak hour trips a Traffic Impact Study should be prepared.
- If a proposed development generates between 50 and 150 peak hour trips a Traffic Impact Statement should be prepared.
- If a proposed development generates less that 50 peak hour trips no study is required, except if the surrounding road network is operating at or above capacity.
- A traffic study may be required at the discretion of the responsible authority if the development is located in a sensitive area.

2.4.2 Trip Generation of Proposed Development

According to the report ñKendal Power Station Ash Disposal Site Project, Traffic and Transportation Assessment. 25 July 2013ò prepared by Goba on behalf of Eskom the proposed development will generate traffic during the following 2 phases:

- Construction Phase
- Operational Phase

2.4.2.1 Construction Phase Trip Generation

As per the above report the construction phase trip generation was determined to be 38 heavy vehicle trips per peak hour in bound and 38 heavy vehicle trips per peak hour out bound ï i.e. 76 trips in total per peak hour would be generated during the construction of the Ash Disposal Site. As per the DoTôs guidelines, a Traffic Impact Statement is therefore required for the Construction Phase.

2.4.2.2 Operational Phase Trip Generation

As per the above report it was determined that when the construction of the Ash Disposal Site is complete, the operational traffic at the Ash Disposal Site will be of the same magnitude as the existing situation at the existing Ash Disposal Site. In this regard a traffic count survey at the access of the existing Ash Disposal Site was carried out on 5 February 2013 in order to determine the traffic entering and exiting the existing site during then AM and PM peak hours. This traffic information was used to estimate the operational phase trip generation that can be expected by the proposed Ash Disposal Site.

Based on the traffic surveys (see figure below) a total of 21 trips are expected during the AM peak hour to and from the Ash Disposal Site and 27 trips are expected during the PM peak hour to and from the Ash Disposal Site. As per the DoTôs guidelines no study is therefore required, especially considering that the surrounding network is not operating at or above capacity (concluded as part of the previous study, refer to report ñKendal Power Station Ash Disposal Site Project, Traffic and Transportation Assessment. 25 July 2013ò prepared by Goba on behalf of Eskom).

However during the AM peak hour it was found that 20 heavy vehicles enter and exit the existing Ash Disposal Site and during the peak hour at the site up to 32 heavy vehicles enter and exit the existing Ash Disposal Site. These numbers are equivalent to 60 ï 96 passenger car units (pcus) (assuming one heavy vehicle to be equal to 3 pcus). The existing Ash Disposal Site therefore generates 81 passenger car units during the AM peak hour and 140 passenger car units during

the peak our at the site. For this reason it was felt that the safety aspects of the access to the new Ash Disposal Site needs to be considered and it was therefore concluded that a Traffic Impact Statement for the operational phase is required as well.

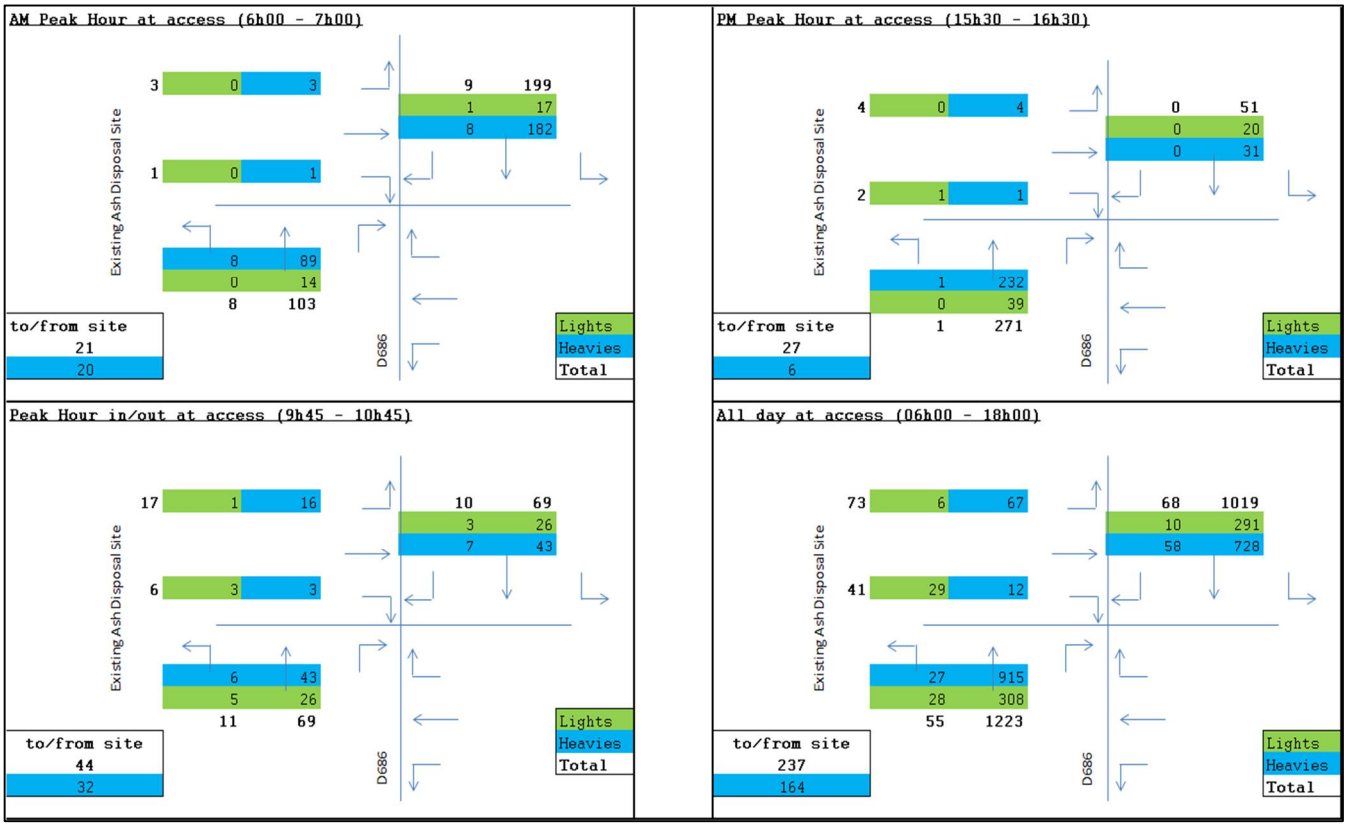


Figure 2-2: Existing Ash Disposal Site Trip Generation

2.5 Opinion on Access Arrangements for each Site Alternative

In this section the potential accesses to each of the shortlisted Ash Disposal Sites is evaluated in terms of location, sight distance and other safety aspects. These accesses would be used for the emergency trucking of ash on occasion where the conveyor belt fails, and would be accessed by around 237 vehicle trips daily.

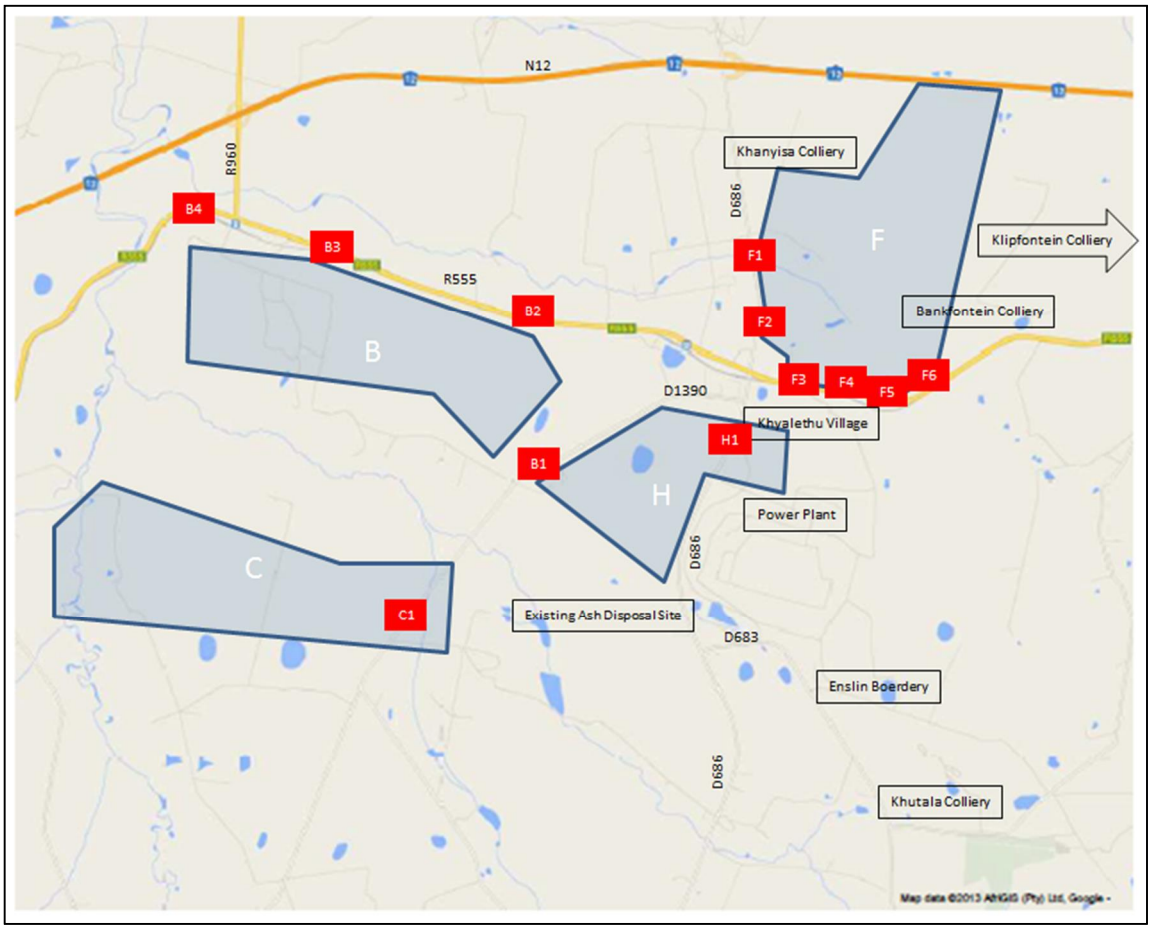


Figure 2-3: Possible Site Accesses[2]

2.5.1 Site B

Site B has four potential accesses as shown in Figure 3 ï B1 from D1390 and B2, B3, B4 from R555.

The three accesses off the R555 would require level rail crossings as the rail line is running parallel to the R555 at these points. During the site visit, four trains per hour were observed on the railway line. Considering the requirement for 44 vehicle crossings per hour during the operational peak hour at the Ash Disposal Site, this means that on average a train will occur every 15 minutes with 11 vehicles crossing the rail line during those 15 minutes (the majority of which would be heavy vehicles). Eskom would require Transnetôs permission to cross the railway line. Transnet would require a traffic study to prove that rail crossings can occur safely without disruption of the rail service.

[2] During Phase 1 of the Study, the Traffic Opinion was based on this map and shape of Site H. The shape was subsequently changed and is documented under Phase 2. For chronological purposes, the old map is included in this section of the report.

The other alternative access (B1) would be off the gravel road (D1390) and would mean that trucks would have to travel around 3.2km on gravel to reach the access.

From a traffic impact point of view, this access (B1) would be recommended, due to the potential limitation of crossing the rail line safely and the complications in gaining Transnetôs permission associated with the other 3 possible accesses.

2.5.2 Site C

Site C can only be reached via the gravel road (D1390) and accessed at point C1. The distance from the tarred road (D686) to this access is approximately 7km. The maximum average speed along this road is around 40kph. The road is in bad condition and there is a very narrow low water bridge that has to be crossed along the gravel road in order to reach the access to Site C.

2.5.3 Site F1 and Site F2

The sites have 6 potential accesses as follows:

F1: This access would be located across from a small retail shop located on the western side of the D686. The road and terrain at this point is fairly level, so sight distance would not be a problem. An access at this point is recommended.

F2: This access is very close to the bridge crossing the R555 and provides access to an existing informal settlement located east of the D686. Therefore, sight distance and conflicting movements may be a problem and this access is not recommended.

F3: This access provides access to the informal settlement located north of the R555. In order to avoid truck and light vehicle conflict this access is not recommended.

F4: There is an existing 2-track road to/from the site at this point. The road and terrain at this point is fairly level, so sight distance would not be a problem. An access at this point is recommended.

F5: This is an existing boom controlled access. The road and terrain at this point is fairly level, so sight distance would not be a problem. An access at this point is recommended.

F6: This is an existing access into the Bankfontein Colliery. The road and terrain at this point is fairly level, so sight distance would not be a problem. An access at this point would therefore be recommended.

In summary an access at F1, F4, F5 and F6 is recommended.

2.5.4 Site H

Site H can be accessed at the existing access off the D686 to the Khyalethu Village. At this point access to the site east of the D686 and west of the D686 would be possible. The road and terrain at this point is fairly level, so sight distance would not be a problem.

2.6 Indication of Mitigation Measures required for each Site Alternative

2.6.1 Likely Recommendations

The recommendations of the previous study, which assessed the continuous development of the existing Ash Disposal Site (refer to ñKendal Power Station Ash Disposal Site Project, Traffic and Transportation Assessment. 25 July 2013ò, prepared by Goba on behalf of Eskom), was to

construct a short right turn lane on the northern approach of the D686 & the existing Ash Disposal Site access to accommodate construction traffic.

Given that the trip generation characteristics of the new proposed Ash Disposal Site are exactly the same as those assumed for the previous study, it is highly likely that this recommendation would also be the minimum recommendation from the Traffic Impact Statement to be carried out during Phase 2 at the access to the selected site (discussed under Section 3 of this report).

2.6.2 Number of Junctions Potentially Affected

At the start of Phase 2, traffic surveys would be carried out at the junctions that will be affected by the construction and operational phase of the proposed Ash Disposal Site (discussed under Section 3 of this report). A number of traffic surveys have already been carried out in the area for the purposes of the previous study. Depending on the existing traffic numbers at the junctions surveyed it may be that some of the existing junctions may require upgrading because of the impact of the proposed development.

At this stage the number of junctions that could be potentially affected by the construction trips and the diverted operational trips can be noted for comparative purposes. The junctions affected and the junctions requiring upgrades will be confirmed during Phase 2 of the study.

Site	Access	Number of Junctions potentially affected
B	B1	5
B	B2	7
B	B3	7
B	B4	7
C	C1	5
F	F2	5
F	F1	6
F	F3	7
F	F4	7
F	F5	7
F	F6	7
H	H1	4

Based on this estimate Site H, which will be accessed at point H1, would be best from a traffic point of view.

2.7 Ranking of Each Site & Recommendation

The only two factors that were taken into account in the ranking of the sites from a traffic point of view were the distance of the conveyor and the distance between the access of the proposed site and the ñEnslin Boerderyò Site. In addition the recommendations for each siteôs access as discussed in Section 3 were also taken into consideration in order to eliminate certain accesses (highlighted in red in the table, where the access is not recommended).

From this analysis it can be seen that Site H with the access located at position H1 would be the best option from a traffic point of view.

Table 2-1: Ranking of Each Site

Site	Distance / Time from "Enslin Boerdery"Site				Recommended	Conveyor Distance		Overall Ranking
	Access	kms	mins	Ranking		kms	Ranking	
H	H1	5.6	7	1	Yes	2.5	1	1.0
F	F2	7.2	9	2	No	4.0	2	2.0
F	F1	8.4	10	3	Yes	4.0	2	2.5
F	F3	8.8	12	4	No	4.0	2	3.0
F	F4	9.1	12	5	Yes	4.0	2	3.5
B	B1	9.6	12	6	Yes	7.5	3	4.5
F	F5	10.4	13	7	Yes	4.0	2	4.5
B	B2	11.3	13	8	No	7.5	3	5.5
F	F6	11.3	14	9	Yes	4.0	2	5.5
C	C1	13.3	16	10	Yes	8.5	4	7.0
B	B3	15.0	16	11	No	7.5	3	7.0
B	B4	16.2	17	12	No	7.5	3	7.5

3. Phase 2: Detailed Traffic Impact Assessment for Site H

3.1 Study area – Site H

The locality and roads surrounding the power station and the ash disposal facility are shown in Figure 3-1 below. The site is traversed by Road D1390 and bound by D686. D1390 is a gravel road running north south linking local mines onto the D686 which subsequently intersects with the N12 National Road which is to the north.

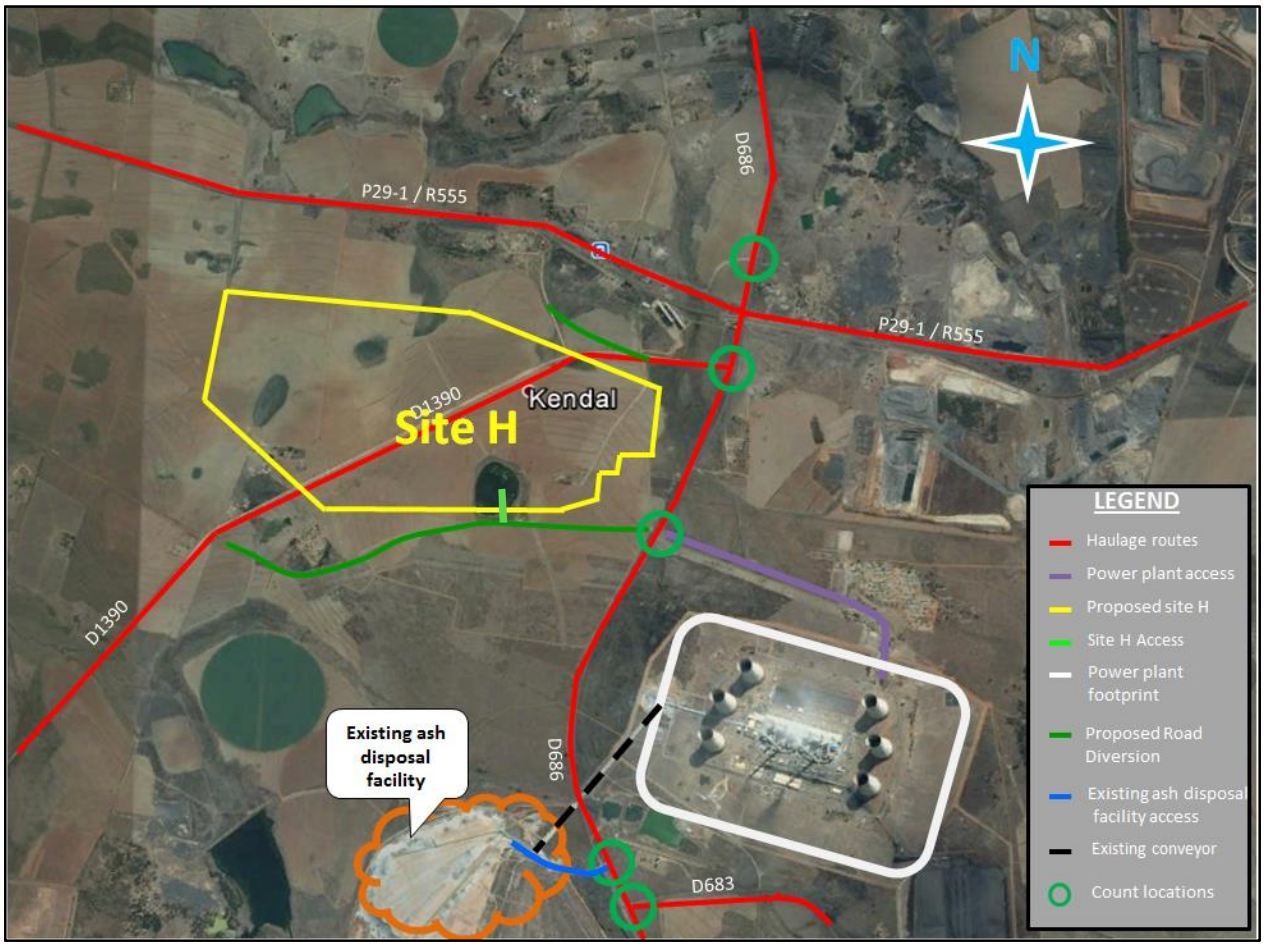


Figure 3-1: Local map layout for Preferred Site H

3.2 Methodology

The following methodology is proposed:

- Desktop Study
  - Project Inception and Planning
  - Review of information provided by client (Zitholele (Pty) Ltd)

- Verify relevance of traffic count locations undertaken during Phase 1 for Site H

- Data Collection
  - Visual Site Inspections
  - Traffic Observations
- Status Quo Assessment
  - Analysis of collected data
  - Assessment and description of the current traffic/transportation operations or conditions
- Traffic Impact
  - Identify traffic impacts
  - Quantify traffic impacts for selected site
  - Identify mitigation measures

Evaluate environmental ratings of traffic inputs with and without mitigation measures

3.3 Status quo conditions

The following section summarises the present conditions related to traffic and transportation conditions around Site H.

3.3.1 Roads and traffic volumes in the surrounding area

Detailed 12 hour classified traffic counts were undertaken on the 15th February 2013 at the following locations relevant to Site H:

- D686 and P29-1 / R555
- D686 and D1390
- D686 and Eskom Kendal Power Station Access
- D686 and existing Ash Disposal Facility Access
- D686 and D683

The count locations are depicted in green in Figure 3-1. The major road in the vicinity of the study area is D686 and intersects with the current Ash Disposal Facility access, south of the Power Station. The heavy vehicle traffic mainly comprises of coal trucks. The traffic count volumes are shown in Appendix B, Figures 1-6.

3.3.2 Description of road infrastructure

The roads in the immediate vicinity of the site are shown in Figure 3-1 and are discussed below:

D686: Paved Class 3

District main road traversing north south of the development with one lane in each direction carrying low volumes of traffic during critical peak hours. The road is in a fair condition due to a moderate volume of heavy vehicles currently utilising the road.

R555 (P29-1): Paved Class 3

Provincial Class 3 main road traversing east west of the development with one lane in each direction and narrow shoulders carrying moderate volumes of traffic during critical peak hours. The road is in a fair condition due to a high proportion of heavy vehicles throughout the day.

D1390 : Gravel Class 4

District road traversing north south with one lane in each direction and carries low volumes of traffic during peak hours but a high proportion of heavy vehicles throughout the day. The road condition is poor.

The proposed Site H encroaches on a significant section of this road.

D683 : Paved Class 4

District road traversing north south with one lane in each direction and carries low volumes of traffic during peak hours but a high proportion of heavy vehicles throughout the day. The road condition is fair.

3.3.3 Location of employee residences

The travel patterns established from the traffic counts indicate clearly that the major source of employees or their residential areas are located in Delmas, Phola, Ogies, Emalahleni, Balmoral, Kwa-Guqa and Bronkhorstspruit as shown in the regional map, Figure 1, in Appendix A.

3.3.4 Other transport infrastructure

The ash is transported from the power station to the existing ash disposal facility by means of overland belt conveyors. The dry ash is conditioned by the addition of water at the power station to ensure dust generation is minimised. The conveyor currently passes under Road D686 located west of the power station as shown in Figure 3-1.

In case of emergencies when the conveyors are not operational, ash is temporarily stored at the Emergency dump (E-dump) where 30-ton trucks are used to transport ash from the power station to the ash disposal facility. The trucks are covered to minimise pollution.

3.4 Impact rating methodology

3.4.1 Rating criteria

The impacts investigated and the associated rankings are shown in Table 3-1, Appendix C. The impact assessment methodology makes provision for the assessment of impacts against the following criteria:

3.4.2 Significance

The significance rating of the associated impacts embraces the notion of extent and magnitude. A more detailed description of impacts is shown in Table 3-1 below:

Table 3-1: Description of Significance rating scale

Rating		Description
7	Severe	Impact most substantive, no mitigation possible
6	Very High	Impact substantive, mitigation difficult/expensive
5	High	Impact substantive, mitigation possible and easier to implement
4	Moderate-High	Impact real, mitigation difficult/expensive
3	Moderate-low	Impact real, mitigation easy, cost-effective and/or quick to implement
2	Low	Impact negligible, with mitigation
1	Very Low	Impact negligible, no mitigation required
0	No Impact	There is no impact at all - not even a very low impact on a party or system.

3.4.3 Spatial Scale

Spatial scale refers to the extent of the impact i.e. will the impact be felt on a local, regional or global scale. The spatial assessment scale is described in more detail in Table 3-2 below:

Table 3-2: Description of Spatial rating scale

Rating		Description
7	National	The maximum extent of any impact
6	Provincial	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a provincial scale
5	District	The spatial scale is moderate within the bounds of impacts possible, and will be felt at a district scale
4	Local	The impact will affect an area up to 5 km from the proposed route corridor.
3	Adjacent	The impact will affect the development footprint and 5oom buffer around development footprint
2	Development footprint	Impact occurring within the development footprint
1	Isolated Sites	The impact will affect an area no bigger than the servitude

3.4.4 Temporal Scale (Duration)

In order to accurately describe the impact it is necessary to understand the duration and persistence of an impact in the environment. The temporal scale is rated according to criteria set out in Table 3-3 below:

Table 3-3: Description of Temporal rating scale

Rating		Description
1	Incidental	The impact will be limited to isolated incidences that are expected to occur very sporadically.
2	Short-term	The environmental impact identified will operate for the duration of the construction phase or a period of less than 5 years, whichever is the greater.
3	Medium term	The environmental impact identified will operate for the duration of life of the line.
4	Long term	The environmental impact identified will operate beyond the life of operation.
5	Permanent	The environmental impact will be permanent.

3.4.5 Degree of Probability

Table 3-4: Description of Degree of probability rating scale

3	Description
1	Practically impossible
2	Unlikely
3	Likely
4	Very Likely
5	It's going to happen / has occurred

3.4.6 Degree of Certainty

Table 3-5: Description of Degree of certainty rating scale

Rating	Description
Definite	More than 90% sure of a particular fact.
Probable	Between 70 and 90% sure of a particular fact, or of the likelihood of that impact occurring.
Possible	Between 40 and 70% sure of a particular fact or of the likelihood of an impact occurring.
Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring.
Can't know	The consultant believes an assessment is not possible even with additional research.

3.4.7 Quantitative description of impacts

To allow for impacts to be described in a quantitative manner in addition to the qualitative description given above, a rating scale of between 1 and 7 is used for each of the assessment criteria. Thus the total value of impact is described by the equation below as a function of significance, spatial, temporal scales and probability:

$$\text{Impact Risk} = \frac{(\text{Significance} + \text{Spatial} + \text{Temporal})}{2.714} \times \frac{(\text{Probability})}{5}$$

The impact is classified according to seven classes as described in Table 3-6 below.

Table 3-6: Impact risk classes

Rating	Impact class	Description
6.1 - 7.0	7	SEVERE
5.1 - 6.0	6	VERY HIGH
4.1 - 5.0	5	HIGH
3.1 - 4.0	4	MODERATE-HIGH
2.1 - 3.0	3	MODERATE-LOW
1.1 - 2.0	2	LOW
0.1 - 1.0	1	VERY LOW

3.4.8 Cumulative impact

It is a requirement that the impact assessment takes cognisance of the cumulative impacts. In fulfilment of this requirement, the impact assessment will take cognisance of any existing impact sustained by the operations, any mitigation measures already in place, any additional impacts to the environment through continued and proposed future activities and the residual impact after mitigation measures.

It is important to note that cumulative impacts at the national or regional level will not be considered in this assessment, as the total quantification of external companies on resources is not possible at project level due to lack of information and research documenting the effects of existing activities. Such cumulative impacts may occur across industry boundaries and can also only be effectively addressed at Provincial and National Government level.

3.5 Ash handling

The transport of ash from the power station to the ash disposal facility is by means of ground level conveyor systems. The dry ash is conditioned by the addition of water at the power station to ensure dust generation is minimised.

At the ash disposal facility, the conveyor discharges onto a loading cone on a concrete lined platform and then delivered onto the active cell or alternatively into a truck loading silo, from where it is loaded into a truck and driven to the nearest active cell. 30 ton trucks are used as an alternative in the case of a conveyor breakdown, to haul ash from the E-dump and the power plant to the ash disposal facility using district road D683.

For the purpose of this TIA it is understood that the same method of ash transportation will be utilised for the new proposed disposal facility. Also, it is assumed that on any normal day, all ash will be moved via conveyor and the only road based impact would be staff movements via private vehicles to and from the ash stack component.

3.6 Access

The D1390 runs through the middle of Site H and the road will have to be rerouted. It is proposed that access to the facility be provided off the re-aligned D1390, at its intersection with the existing entrance to the Eskom Power Station (refer to Figure 3-1). The ADF will have three driveway accesses off the D1390, with the main access point being at the south eastern corner as indicated in Figure 3-1. **No** additional access or road either for construction or operational purposes, other than the D1390, is proposed. The operational traffic generated by the new proposed disposal facility will therefore only affect the surrounding road network through the intersection of the D686 and Re-aligned D1390/Entrance to Eskom roads.

3.7 Relevant peak hours

The critical peak hour from a road capacity point of view, occurs when the traffic generated by the development is at a maximum or when the highest combination of existing road traffic and traffic generated by the development occurs.

Based on a consideration of the relevant land use, it was decided to consider the following peak hours for analyses:

- Weekday AM peak hour (06:30 ï 07:30)
- Weekday PM peak hour (15:30 ï 16:30).

3.8 Traffic and transport impacts

The additional traffic is expected to impact on the environment in two aspects or phases. There will be traffic generated due to construction of the liner or foundation of the ash disposal facility and the impact of this traffic is generally short term. The second aspect refers to the traffic generated post construction and this traffic is referred to as operational traffic.

3.8.1 Construction phase traffic

This traffic relates directly to the traffic expected during the construction of the liner or foundation of the ash disposal facility which is expected to take place over a period of 36 months (3 years). This traffic is expected to dissipate shortly after completion of construction of the liner or foundation.

The foundation is made up of mostly clay material that may be found on site or can be borrowed from a source outside the site. The worst case scenario is when the required material is not found on site and therefore has to be hauled from external sources using some of the public roads in the vicinity of the site. Generally, for bulk earth/material transportation $10m^3$ trucks are used to haul materials from borrow pits to site. It is assumed that excavated top soil will be stockpiled on site. Trip generation rates for this type of development are not available from the standard trip generation sources, however based on information provided by Zitholele Consulting Engineers, construction truck traffic for the liner (of clay component 300mm thick) of **26 trips/hour** can be expected.

In the absolute worst case, all the material has to be excavated and trucked to an external spoil site and new material has to be hauled in to construct the Ash Disposal Site lining. In this case however, there is enough space available in the greater site area to spoil the excavated material adjacent to the actual Ash Disposal Facility. Therefore only new material needs to be hauled by

truck from external borrow pit sources. This therefore limits the construction traffic impact to 26 truck trips per hour per direction. The top soil spoilt on site will be later used as cover material during the rehabilitation phase. The construction trips were further distributed onto the road network as shown in Figure7 in Appendix B.

The magnitude and exact nature of heavy vehicle construction traffic is very difficult to determine. The sources of construction materials, supply of material components and the construction programme all influence the nature and frequency of road-based vehicle transport to/from the site. The source of construction material is assumed to be mainly Gauteng.

The 26 truck/hour trips calculated above is assumed to be the worst case where construction clay material has to be trucked in from an external source using public roads. If indeed this is the case, then the impact on pavement loading to the surrounding roads may, however, be more significant and therefore the developer has to contribute towards the maintenance and rehabilitation of the affected roads.

E80 is an 80KN equivalent axle load used to determine the strength of road pavement. Using 208 truckloads per day which are fully loaded inbound (3.5 E80s per truck) translates to 728 E80s per day along D686 Road which presently carries an estimated 1995 E80s (based on an average of 570 trucks over a 24 hour day). This represents a proportionate increase of 36%. The D686 can be classed as a pavement Class 4 Major Rural Road, typically designed to carry a maximum of 3 000 000 E80ôs over a design life of 20 years (Department of Roads and Transport Mpumalanga Province Pavement Design Catalogue for Average Moisture Condition) . The accumulative additional axle loading over a sustained 36 month period is 502 320 E80s. The overall impact of the construction traffic during the construction period translates to advancing the need for pavement rehabilitation by 3 years.

The loading impact of the construction truck traffic is minimal compared to the E80ôs on the road, however this would shorten the rehabilitation programme by at least 3 years. It is estimated that at least one shuttle bus will be used to transport the construction staff to and from site and the associated impact loading will be negligible.

The construction traffic impact will be moderate, the scale will be local, the duration will be short term, and could occur if there is a shortage of material on site. With regard to the latter, the falling head permeability tests indicate that suitable soils (clay material) are available on site, therefore the impact risk is low.

3.8.2 Post-construction traffic

A traffic count at the access of the existing facility was conducted on the 5th of February 2013 in order to determine the traffic accessing and exiting the facility during the AM and PM Peak hours. This traffic was used as a base in estimating the trips generated by the new proposed ash disposal facility post construction.

Eskom further provided information on daily traffic to and from the disposal facility and the traffic that is permanently based on site. The existing facility is operated by Roshcon SOC Ltd. Roshcon is responsible for the daily operation including site personnel. The site staff is transported to and from site by means of minibus taxis operated by Roshcon SOC Ltd. The summary of the Roshcon Ltd daily traffic provided by Eskom is as follows:

- 3 ADTõs
- 1 tipper truck
- 4 Front-end loaders
- 2 Dozers
- 2 Mini buses
- 3 Bakkies (Pick-up truck)
- 1 TLB
- 1 Bob cat
- 1 Water Tanker

Of this traffic only the 2 minibuses and 3 bakkies leave the site on a daily basis. The summary of the Eskom traffic from the Power Station to the Ash Disposal Facility is as follows:

- 10 Bakkies
- 5 Tipper trucks
- 5 x 30-ton trucks

Only the 10 bakkies and the 5 tipper trucks leave the site on a daily basis.

Conveyor failure event:

The 5x 30-ton trucks are only used in emergency situations when the conveyor that transports the ash from the power plant to the ash dump fails. This means that the road network between the Ash Disposal Facility and the Power Station will carry an additional number of trucks for the duration of the conveyor failure.

The traffic count conducted shows that 7 vehicles accessed the site during the peak hour from the south along D686 Road in the morning and 5 vehicles in the afternoon as shown in Figure 1 in Appendix B. A total of 9 vehicles accessed from the north along D686 Road in the morning and zero in the afternoon.

When the construction of the first 5 year phase of the new disposal facility is complete, it is assumed that all operations will be moved from the existing disposal facility to the new disposal facility thereby dictating that the operations on the new ash dump will be of the **same magnitude as the existing situation.** The only difference being the location of the disposal facility access ï off the realigned D1390 on the southern side of the proposed site. In other words there will **not** be additional traffic generated for the operation of the continuous ash dump. The only additional traffic that will be generated will be that during the construction phase.

The operation and maintenance traffic impact will be low, the scale will be limited to the study area, the duration is medium term, and the probability of the impact occurring is very unlikely. The risk of this impact is very low.

3.9 Trip distribution

The only new trips expected to be generated by the development will be during the construction phase and these trips were distributed and assigned to the adjacent road network based on the existing proportions of origins and destinations observed on the network. Refer to Figures 8, 9

and 10 in Appendix B for the trip generation onto the road network. All the trips were assigned 100% to the north along D686 Road.

3.10 Latent demand

The Mpumalanga Traffic Department was unable to provide any information on surrounding developments in the area and instead provided the report "Future Traffic Projection, Mpumalanga Province, November 2010 by ITS Pty (Ltd)". This report states that (Table 3.1A and Table 3.1B on page 4) light vehicles will grow between 0.02% and 0.03% per year. Heavy vehicle growth rates are more varied but range from -0.65% to 2.7% per year. Subsequent to this, a conservative growth rate of 2% per annum was assumed to best represent the growth in traffic in this area. This report is provided in Appendix D.

3.11 Assessment scenarios

The assessment year(s) and different scenarios that were considered relevant for the type of development and the area within which it is located are shown in Table 3-7 below. All traffic data used in these assessments are based on counts from 2013 and escalated at 2.00% per annum in order to generate traffic growth patterns.

Table 3-7: Assessment scenarios

Scenario	Assessment year and traffic demand	Road Network
1	2014 Background traffic volumes	Existing 2014 road layout
2	2025 forecast traffic demand PLUS Construction Traffic Demand (New 30 Year ADF) + Existing operational traffic (Continuous ADF)	Existing 2014 road layout + Re-aligned D1390
3	2030 forecast traffic demand PLUS Operational Phase Traffic Demand (New 30 Year ADF)	Existing 2014 road layout + Realigned D1390

The trip distribution for Scenario 3 is shown in Appendix B, Figures 11, 12 and 13.

3.12 Intersection capacity evaluation

The intersections were evaluated using SIDRA Intersections V6 traffic software. The Highway Capacity Manual Criteria for Level of Service (LOS) based on control or delay were applied in the analysis. The measured peak hour factors for each intersection approach were used to reflect the peak hour traffic demand for the intersection. The results of the traffic evaluations are given in Tables 1 through 6 in Appendix E.

The performance of intersections is defined by the level of service (LOS) for each approach to the intersection. These levels of service have been defined in the Highway Capacity Manual (HCM) as shown in Table 3-8 below. During the peak hours, the road infrastructure capacity provided should ensure that the intersection approach level of service should ideally not exceed LOS E; for example the average delay for a signalised intersection should not exceed 78 seconds as predicted by the model.

Table 3-8: Level of Service Criteria (HCM)

Level of Service	Average Approach Delay for Signalised Intersections (seconds)	Rounded	Average Approach Delay for Priority Intersections (seconds)	Rounded
A	< 6.5	6	< 5.0	4
B	6.6 to 19.5	7 ï 19	5.0 to 10.0	5 ï 10
C	19.6 to 32.5	20 ï 32	10.1 to 20.0	11 ï 20
D	32.6 to 52.0	33 ï 52	20.1 to 30.0	21 ï 30
E	52.1 to 78	53 ï 78	30.1 to 45.0	31 ï 45
F	> 78.0	79 +	> 45	46 +

3.12.1 Scenario 1 – 2014 Background traffic demand

The following conclusions can be drawn from the capacity analysis results:

- **Intersection 1:** D686 & R555 or P29-1

The intersection is operating at an acceptable LOS A in the AM Peak hour and an acceptable LOS A in the PM Peak hour.

- **Intersection 2:** D686 & D1390

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

- **Intersection 3:** D686 & Eskom Access Road

All approaches are currently operating at an acceptable LOS C and D in the AM and PM Peak hours respectively.

- **Intersection 4:** D686 & Ash Disposal Facility Access

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

- **Intersection 5:** D686 & D683

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

3.12.2 Scenario 2 – 2025 Forecasted traffic demand + "30 Year" Construction phase traffic + "Continuous" Operational phase traffic

Intersection 1: D686 & R555 or P29-1

The intersection is operating at an acceptable LOS B in the AM Peak hour and an LOS A in the PM Peak hour.

Intersection 2: D686 & D1390 (D1390 providing access to silos only)

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

Intersection 3: D686 & Eskom Access Road/D1390 Realignment

The intersection currently operates as a three way stop controlled T-junction. It is proposed to add a fourth leg to the junction i.e. the realigned D1390 (and access to the ADF) and convert the junction to a Two Way Stop Controlled (TWSC) intersection. The main road will have right of way, and the side roads (access to Kendal Power Station and the Realigned D1390) will be under stop control. Under this configuration, the intersection operates at an acceptable LOS A in both the AM and PM Peak hours (under All Way Stop Control the intersection drops to a LOS E in the PM Peak hour). Due to the relatively low volume of traffic on the main road, there will be sufficient gaps for the Kendal Power Station traffic and the D1390 traffic to enter the main stream of traffic.

Intersection 4: D686 & Ash Disposal Facility Access

The intersection is operating at acceptable LOS A in both the AM and PM Peak hours.

Intersection 5: D686 & D683

The intersection is operating at acceptable LOS A in both the AM and PM Peak hours.

3.12.3 Scenario 3 – 2030 Forecasted traffic demand + "30 Year" Operational phase traffic

Intersection 1: D686 & R555 or P29-1

The intersection is operating at an acceptable LOS C in the AM Peak hour and an LOS A in the PM Peak hour.

Intersection 2: D686 & D1390 (D1390 providing access to silos only)

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

Intersection 3: D686 & Eskom Access Road/D1390 Realignment

With the proposed configuration in 3.12.2 above, the intersection operates at an acceptable LOS A in both the AM and PM Peak hours.

Intersection 4: D686 & Ash Disposal Facility Access

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

Intersection 5: D686 & D683

The intersection is operating at an acceptable LOS A in both the AM and PM Peak hours.

3.13 Realignment of Road D1390

The D1390, from its intersection with the D686, runs through the middle of Site H in a south easterly direction. It is necessary to re-route the gravel road either north or south of the Site. The

route currently carries in the order of 110 vehicles in both directions during a 12-hour period. The shortest route to reconnect the D1390 to the D686 is via an alignment to the south of the site, at the existing Eskom access junction, refer to Figure 3-2. The current route from the D686 to the tie-in point is 4km, the realigned route will be 4.5km. All properties that are currently served by this portion of the D1390 will become part of Site H. The only development whose access will be affected is the grain silos located to the north of Site H. It is therefore proposed to retain the northern portion of the D1390 and its intersection with the D686 as an access road to the silos only.

The realigned route will tie in to the existing D1390 via a T-junction at the current access road to the Schoongezicht Agricultural Holding (AH). This portion of land is owned by Eskom and leased to the farmer.. He is however more widely impacted as his property also falls within the footprint for Site H. The remainder of the alignment is mostly along agricultural land and could require additional land appropriation if the land is privately owned. Once again, these properties from part of the wider Site H footprint and will in any event become the property of Eskom.

The D1390 falls under the Nkangala District Municipality however it is a Provincial Road and therefore falls under the custodianship of the Mpumalanga Department of Public Works, Roads and Transport. The relevant officials from both levels of government were contacted and informed of the need to deviate the road around Site H and the proposed re-alignment submitted to them. The basic route alignment was agreed with in principle by the Mpumalanga Department of Public Works, Roads and Transport. A copy of the letter from the department is provided in Appendix F. The environmental impact at this stage of the evaluation appears to be low since there are no apparent wetlands or other environmental triggers along the proposed deviation. The EIA for the area affected by the realignment is covered within the scope of the EIA for Site H, since the area is common to both projects.

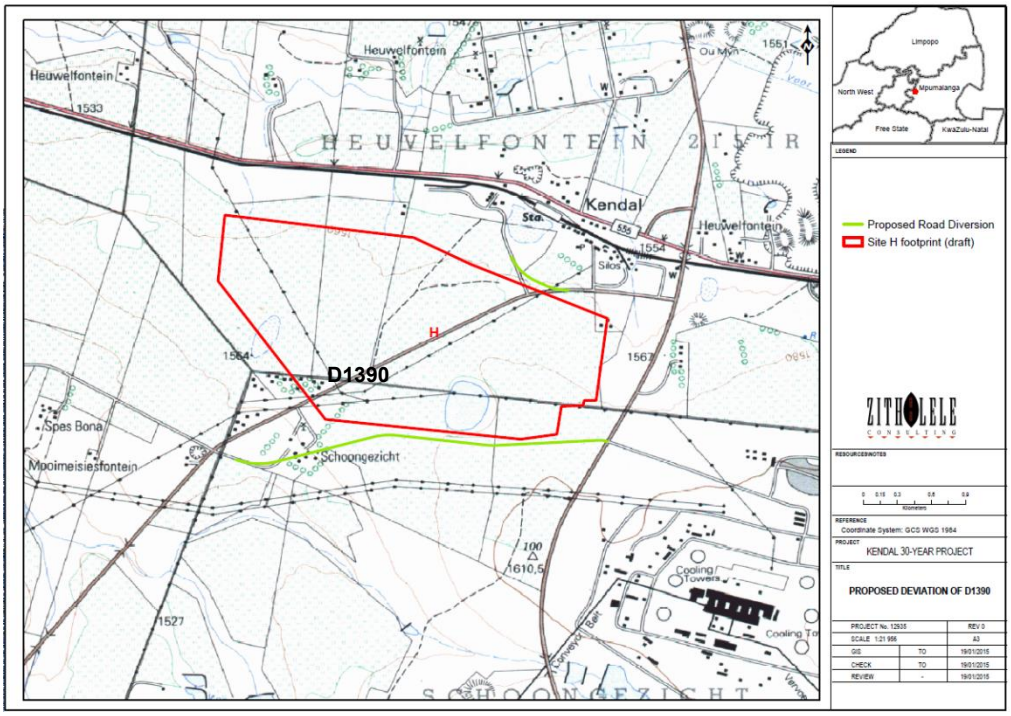


Figure 3-2 Proposed Re-alignment of Provincial Route D1390

Figure 3-3 Access to the grain silos off the D1390 (facing westwards)

3.14 Recommended upgrades

The footprint of Site H will result in the realignment of a portion of Provincial Route D1390. The reconnection of the route to the D686 is proposed at the existing D686/Kendal Power Station access road intersection. Based on a background growth in traffic of 2% pa, the access to Kendal Power Station will drop to a LOS F in the PM peak hour by 2030. It is therefore recommended that the junction which currently operates as an All Way Stop Controlled junction, be converted to a priority or Two Way Stop Controlled junction in 2025, when the D1390 leg of the junction (which includes access to the ADF) is constructed. Due to the relatively low volume of traffic on the D686, there will be sufficient gaps for the Kendal Power Station/D1390 traffic to enter the main stream of traffic.

There are no upgrades required to accommodate the additional traffic that might be generated during the construction phase of the development, however due to the envisaged increase in volume of truck movement entering and exiting the development site in the case that clay material has to be hauled from a source outside the site, a temporal short right turn lane is recommended at the abovementioned access on the north approach along D686 Road to improve safety for both the turning vehicles and the through traffic on D686 Road.

4. Conclusions

The development is located on the south-western corner of the intersection of the D686 and D1390 roads. The ADF is located on the western side of Kendal Power Station in Mpumalanga, South Africa. The impact assessment and mitigation measures to manage the impacts is summarised below and an Impact Rating Table is provided in Appendix C.

1. The roads in the vicinity of the development are in a fair condition.
2. The ash will be transported by an overland conveyor from the Power Station to the Ash disposal facility.
3. The footprint of Site H necessitates the realignment of the D1390, with a reconnection to the D686 at the existing Kendal Power Station Access. This will impact approximately 110 trips in total that currently use the road during a 12-hour period. The existing route from the D686 to the tie-in point is 4km and the deviated route is 4.5km in length. The properties affected by the realignment of the D1390, also fall within the footprint of Site H therefore land appropriation is already a necessity. The only other development whose access will be affected is the grain silos located just after the D1390/D686 intersection. It is proposed to keep this section of the D1390 as an access road to the silos only.
4. The deviation is only 500m longer than the original route, a minimal 110 vehicles will be affected and access to the only real development i.e. the grain silos is maintained. The impact of the realignment of the D1390 is therefore low, the scale will be local, the duration is permanent and the probability of the impact occurring is certain. LOW Permanent *Its going to happen* **Definite** *Local*
5. The main access to the proposed development will be off the realigned D1390 road. The site itself will have 3 driveway access points off the D1390.

6. A temporal short right turn lane is recommended on the northern approach of D686 Road & Kendal Power Station Access Road/Realigned D1390 to accommodate the construction traffic. The effect on pavement loading and subsequent advance of any road rehabilitation programme should be mitigated after completion of construction by the possible contribution to the roads rehabilitation programme by the developer. The extent and programme of the rehabilitation will have to be discussed and agreed upon by the custodian of the roads and the developer. This mitigation is required only if the required materials for the construction of the ash liner are to be hauled from an external site.

7. The construction traffic impact will be moderate, the scale will be local, the duration will be short term, and could occur if there is a shortage of material on site. MODERATE Short Term *Unlikely* **Probable** *Local*

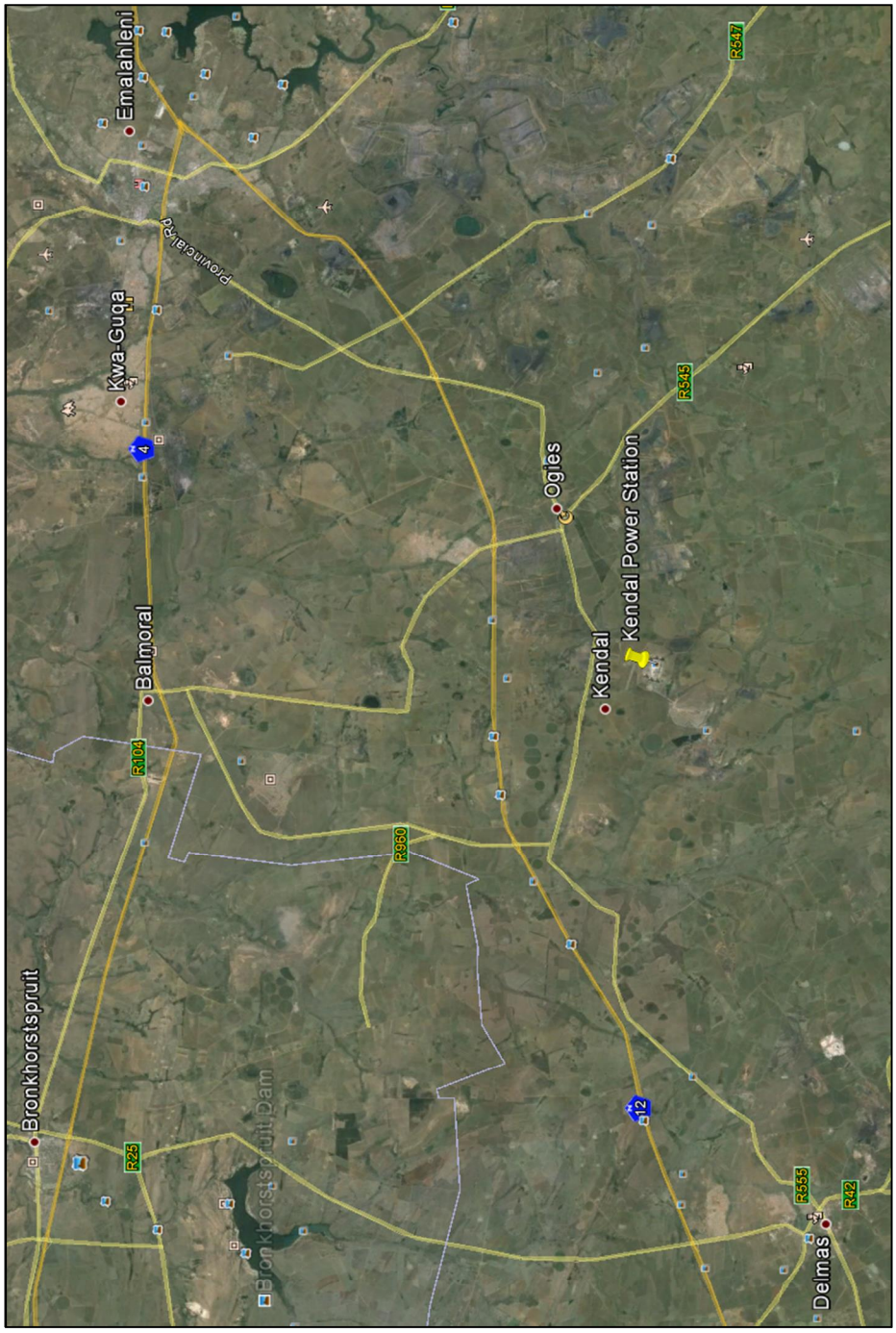
8. The 30 Year ADF will be in operation once the Kendal Continuous ADF has reached its capacity. It is therefore assumed that the traffic movements to the Continuous ADF will move to the new ADF with a net effect of zero new trips on the network.

9. The operation and maintenance traffic impact will therefore be minimal, the scale will be limited to the study area, the duration is medium term, and the probability of the impact occurring is very unlikely. LOW Medium Term *Unlikely* **Probable** *Local*

10. In the event of a conveyor belt failure, an additional 5x30 ton trucks will be used to transport ash from the emergency dump to the ADF.

11. The impact of the conveyor belt failure and resultant 5 additional trucks on the network will be minimal, the scale will be limited to the study area, the duration is incidental and the probability of the impact occurring is likely. VERY LOW Incidental *Could Happen* **Probable** *Local*

Appendix A:
Figure 1 Regional Map

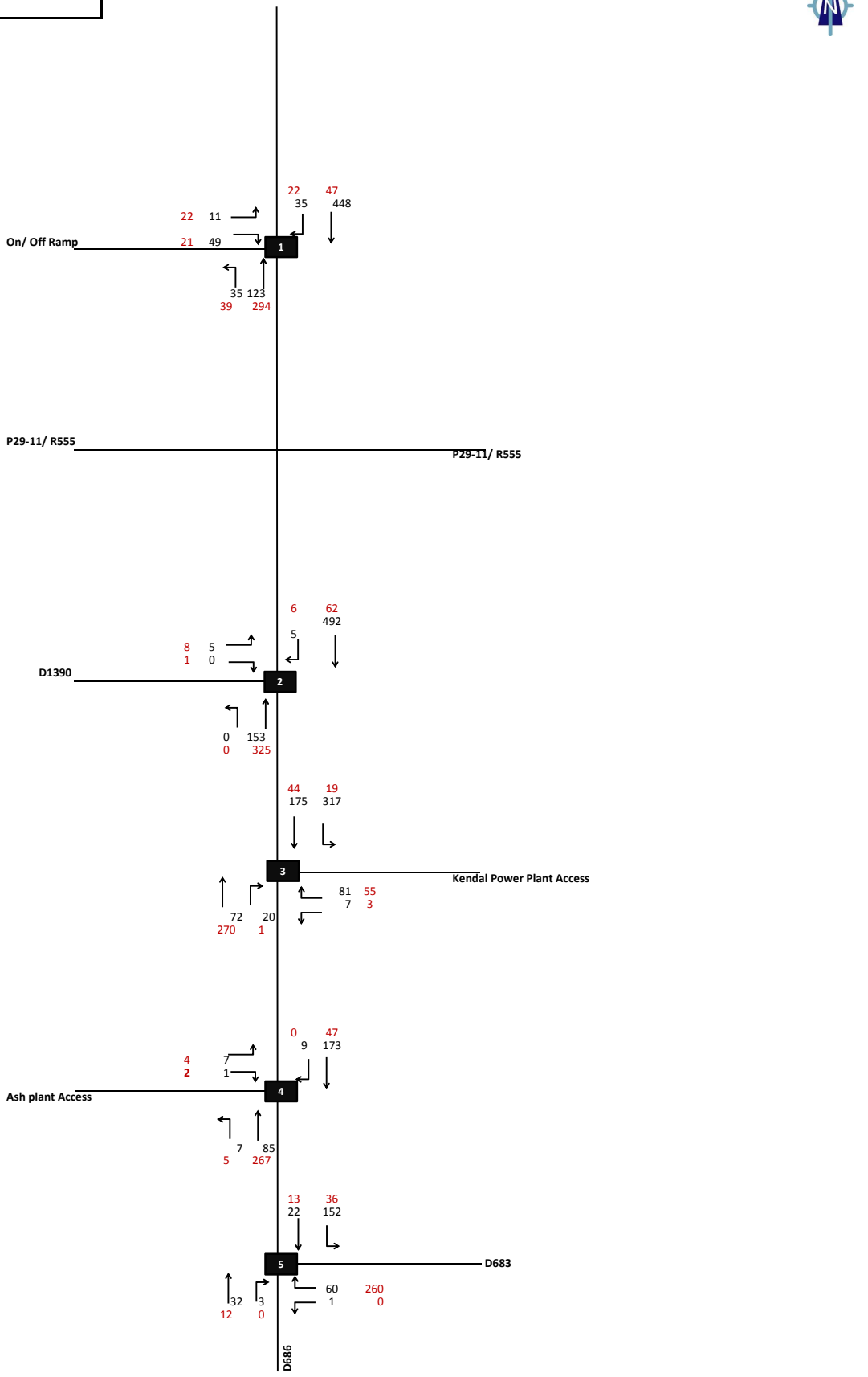


Safety ● Quality ● Sustainability ● Innovation

Appendix B :
Traffic Count Volumes and Trip Distribution

LEGEND

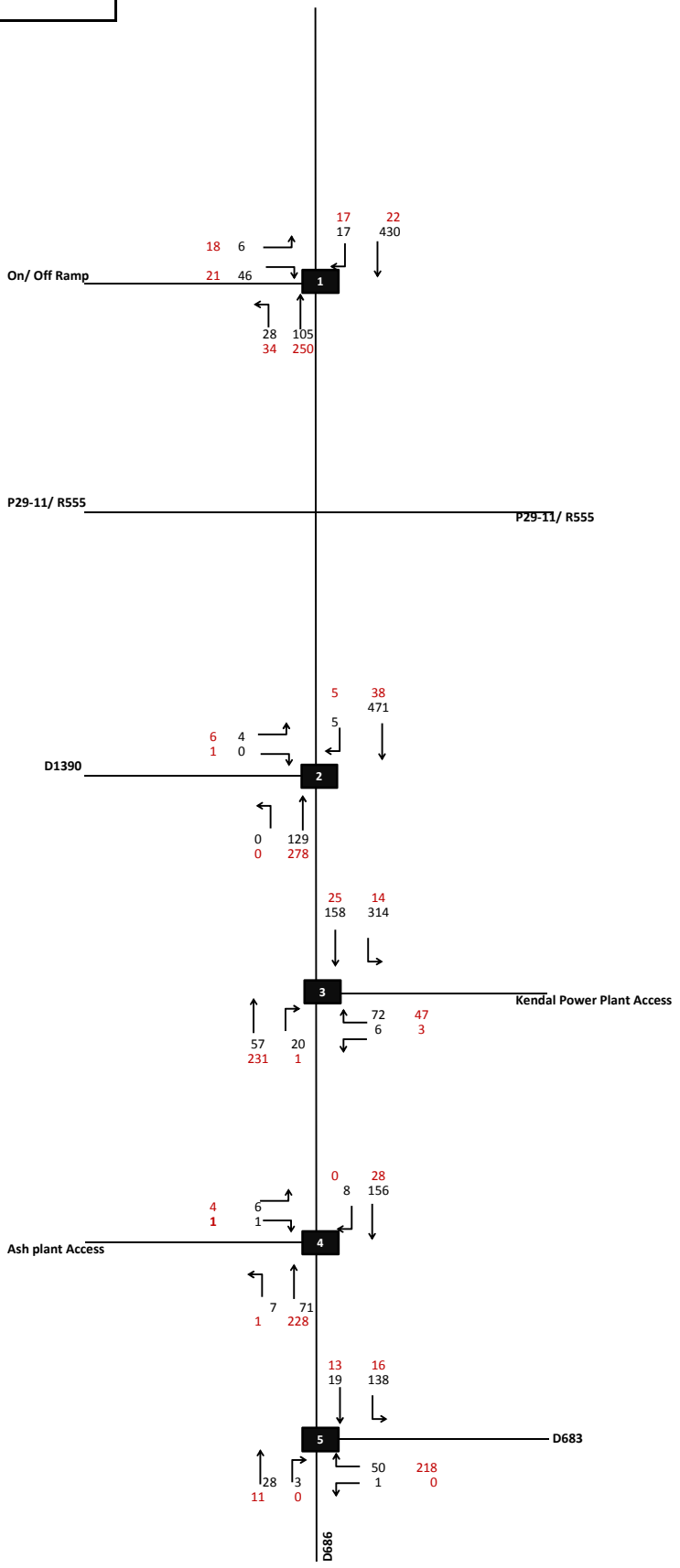
11 AM PEAK HOUR
22 PM PEAK HOUR



HATCH GOBA Member of the Hatch Group	**KENDAL 30 YEAR ASH DISPOSAL SITE**	**Project: H-344245**
	2014 BACKGROUND TRAFFIC	**Figure 1**
	AM - PM PEAK HOUR TOTAL	

LEGEND

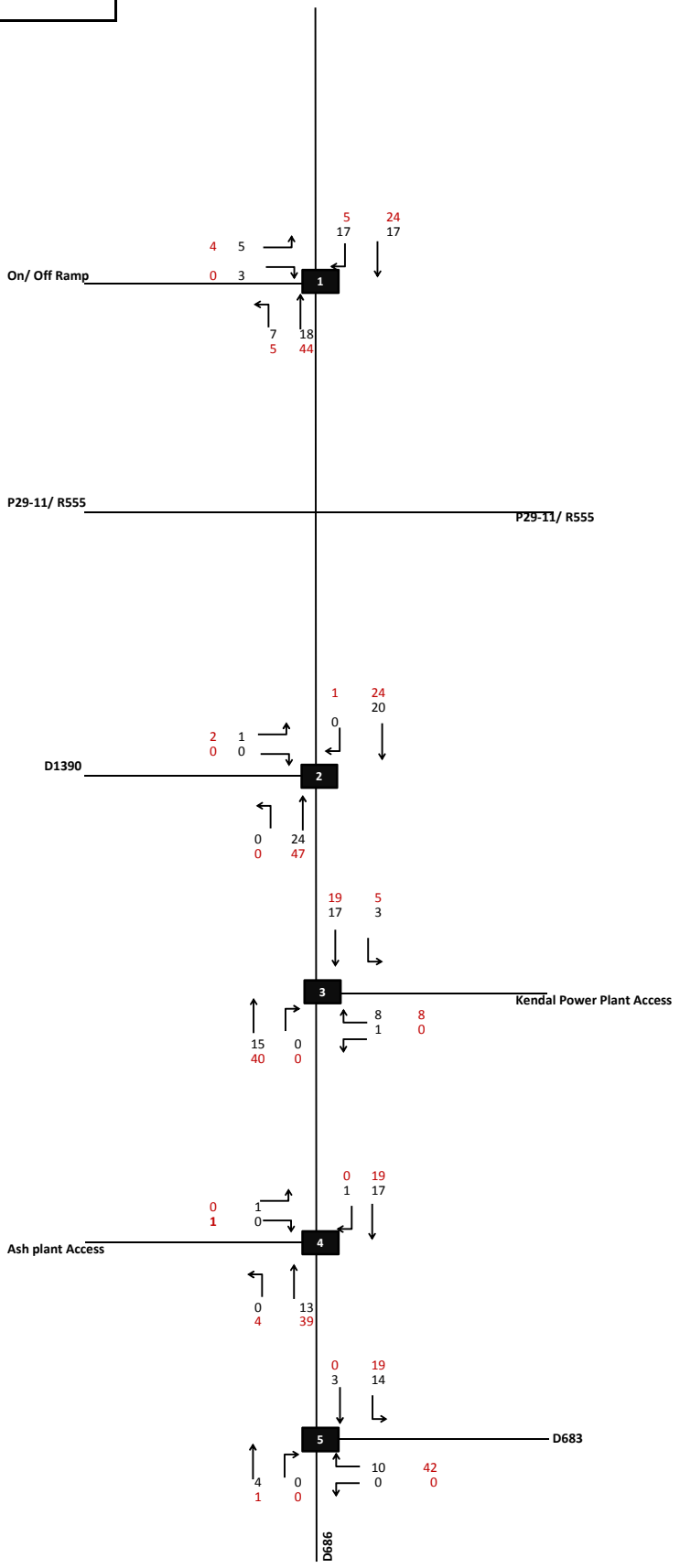
11 AM PEAK HOUR
22 PM PEAK HOUR



HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2014 BACKGROUND TRAFFIC	Figure 2
	AM - PM PEAK HOUR LIGHT	

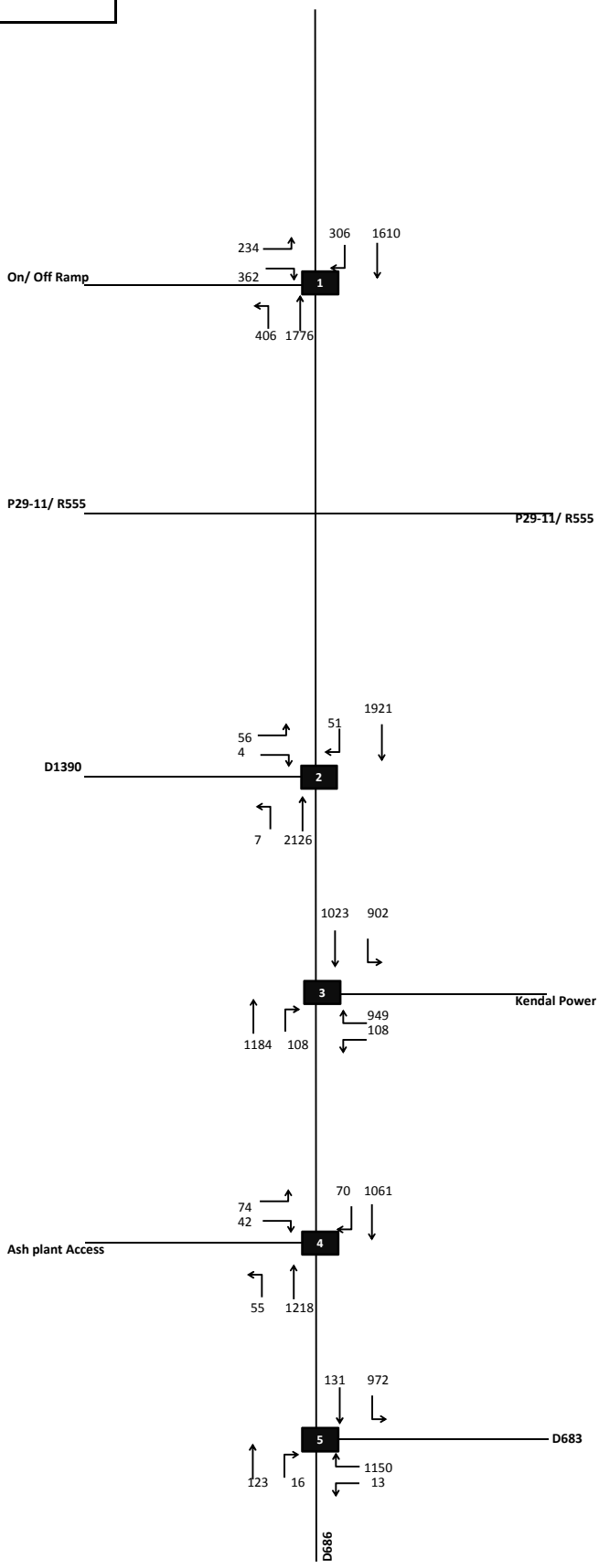
LEGEND

11 AM PEAK HOUR
22 PM PEAK HOUR



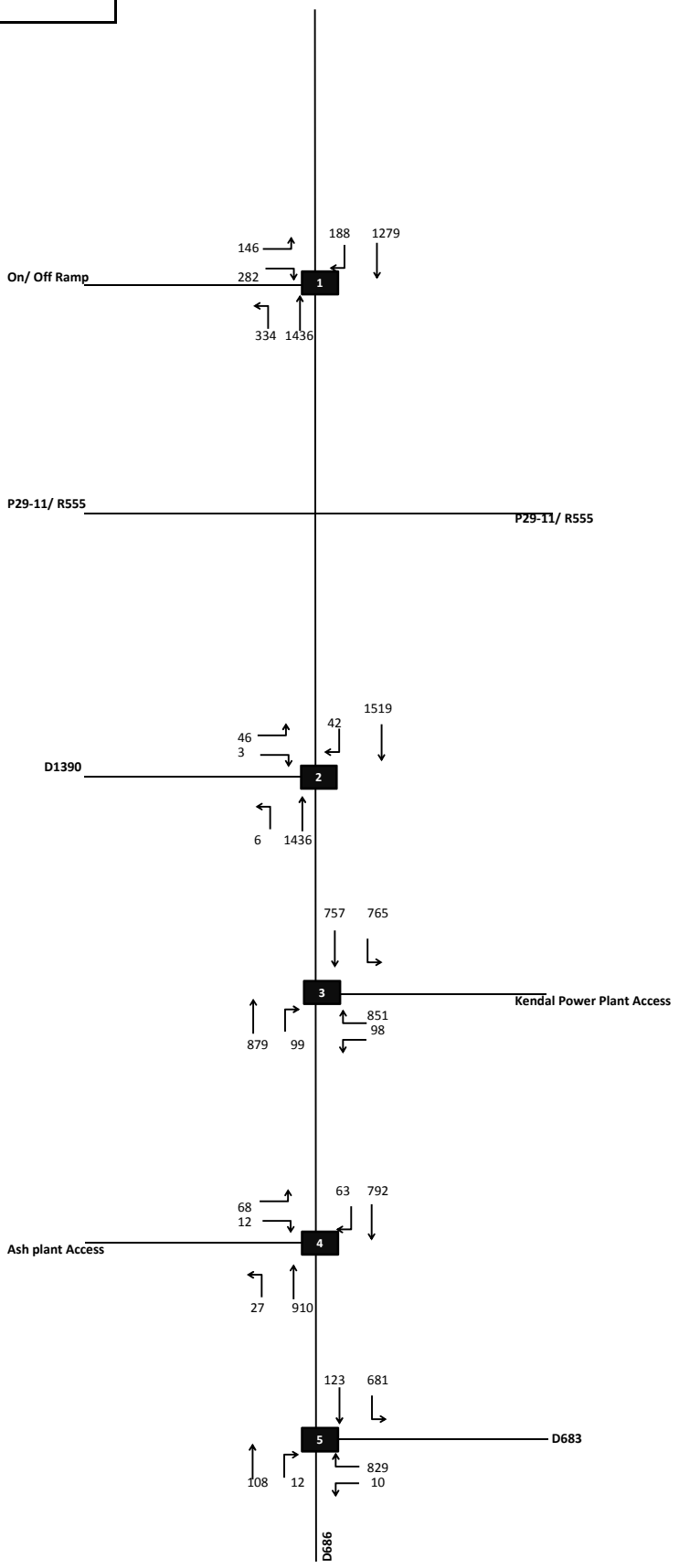
HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2014 BACKGROUND TRAFFIC	Figure 3
	AM - PM PEAK HOUR HEAVY	

LEGEND



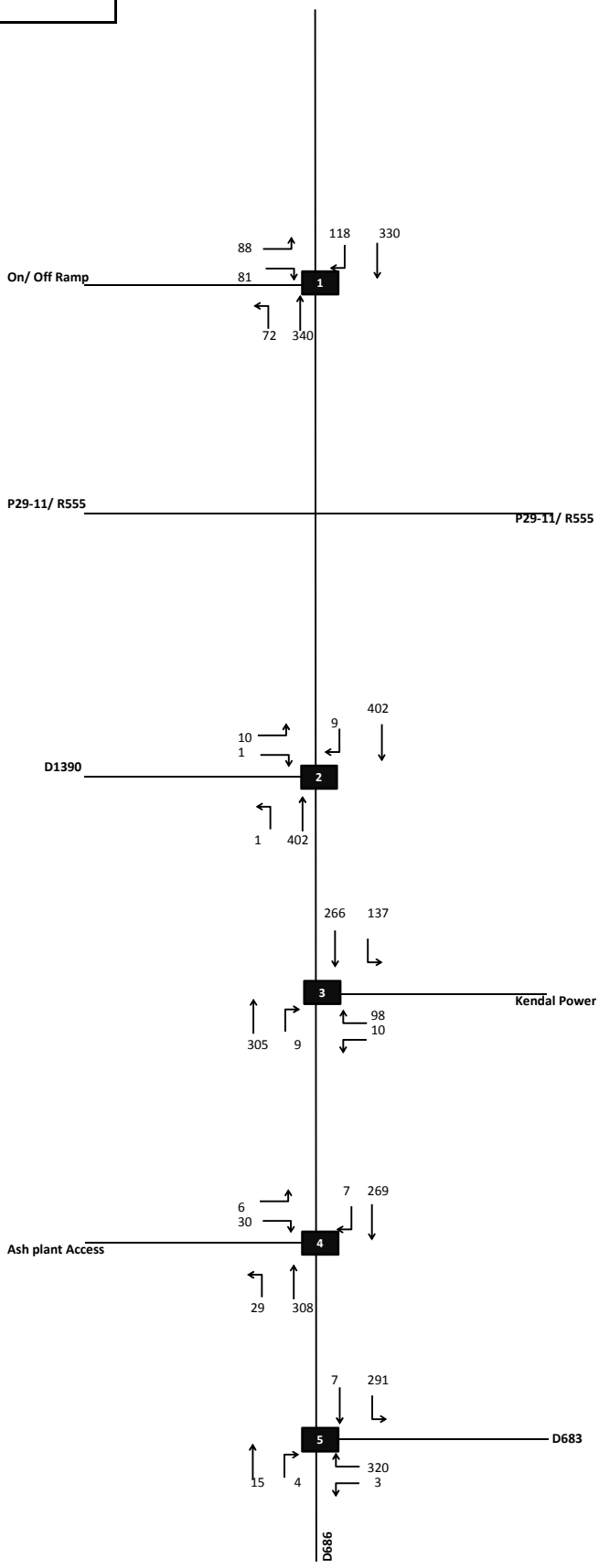
HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2014 BACKGROUND TRAFFIC	Figure 4
	12 HOUR TOTAL	

LEGEND

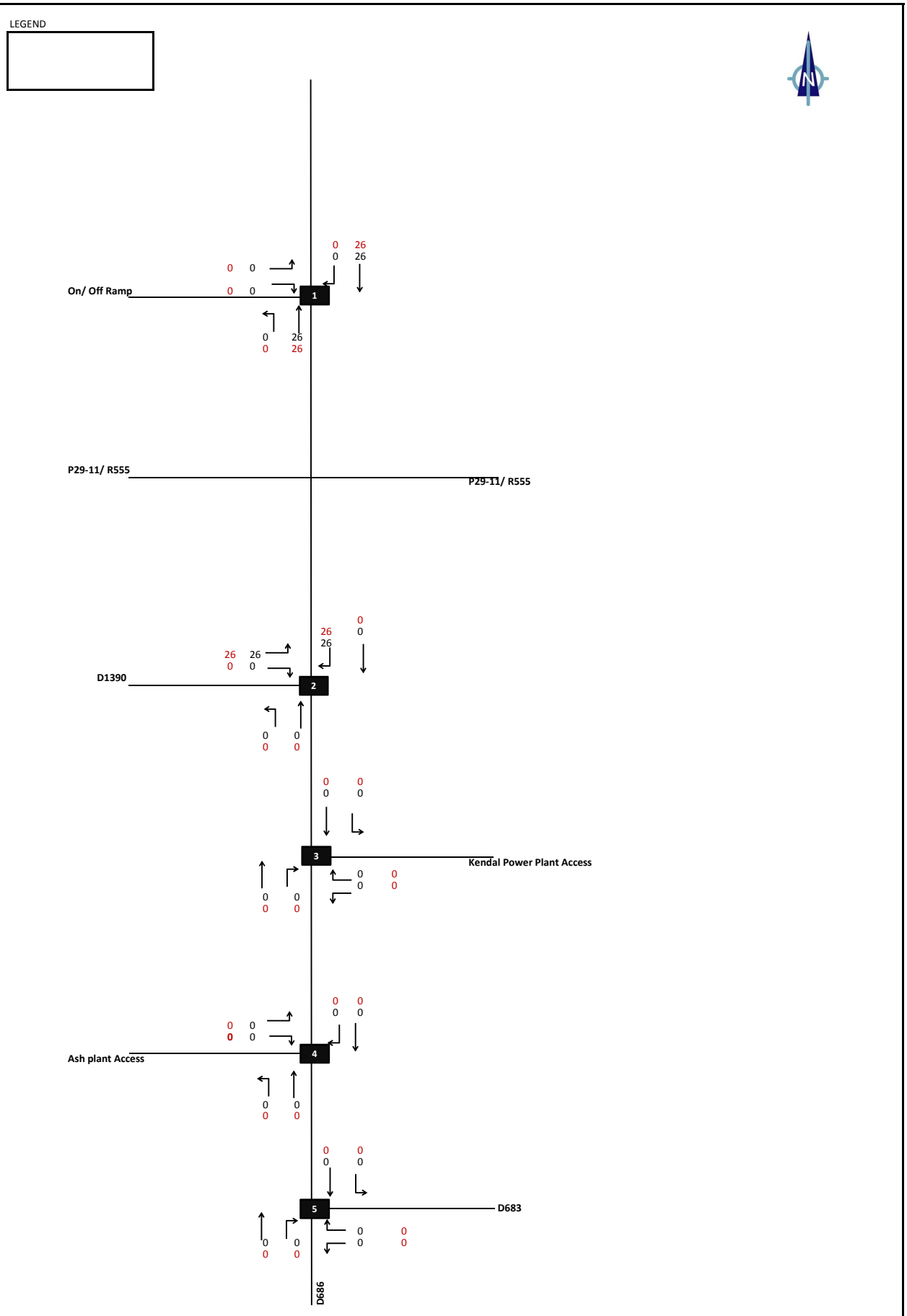


HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2014 BACKGROUND TRAFFIC	Figure 5
	12 HOUR LIGHT	

LEGEND



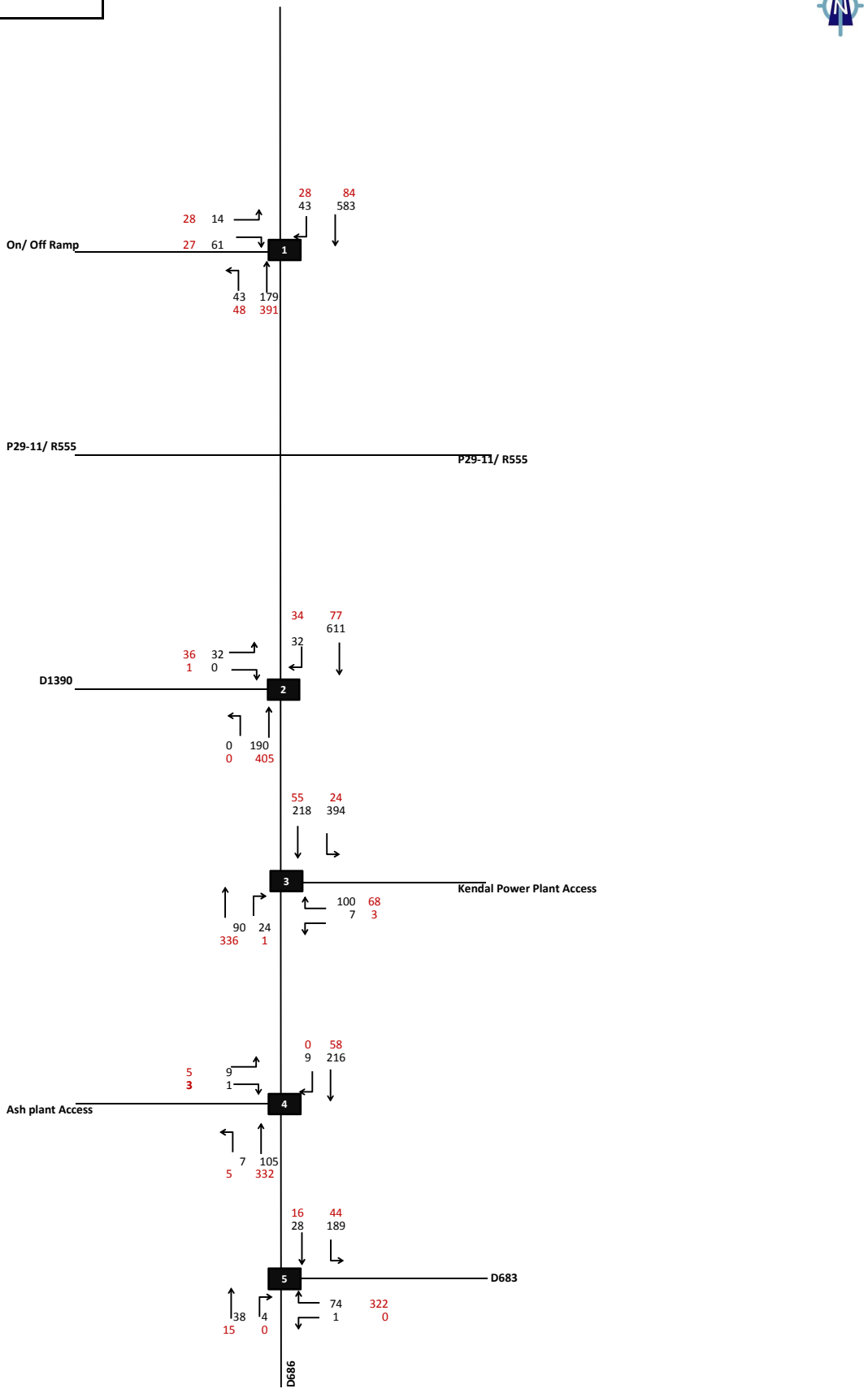
HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2014 BACKGROUND TRAFFIC	Figure 6
	12 HOUR HEAVY	



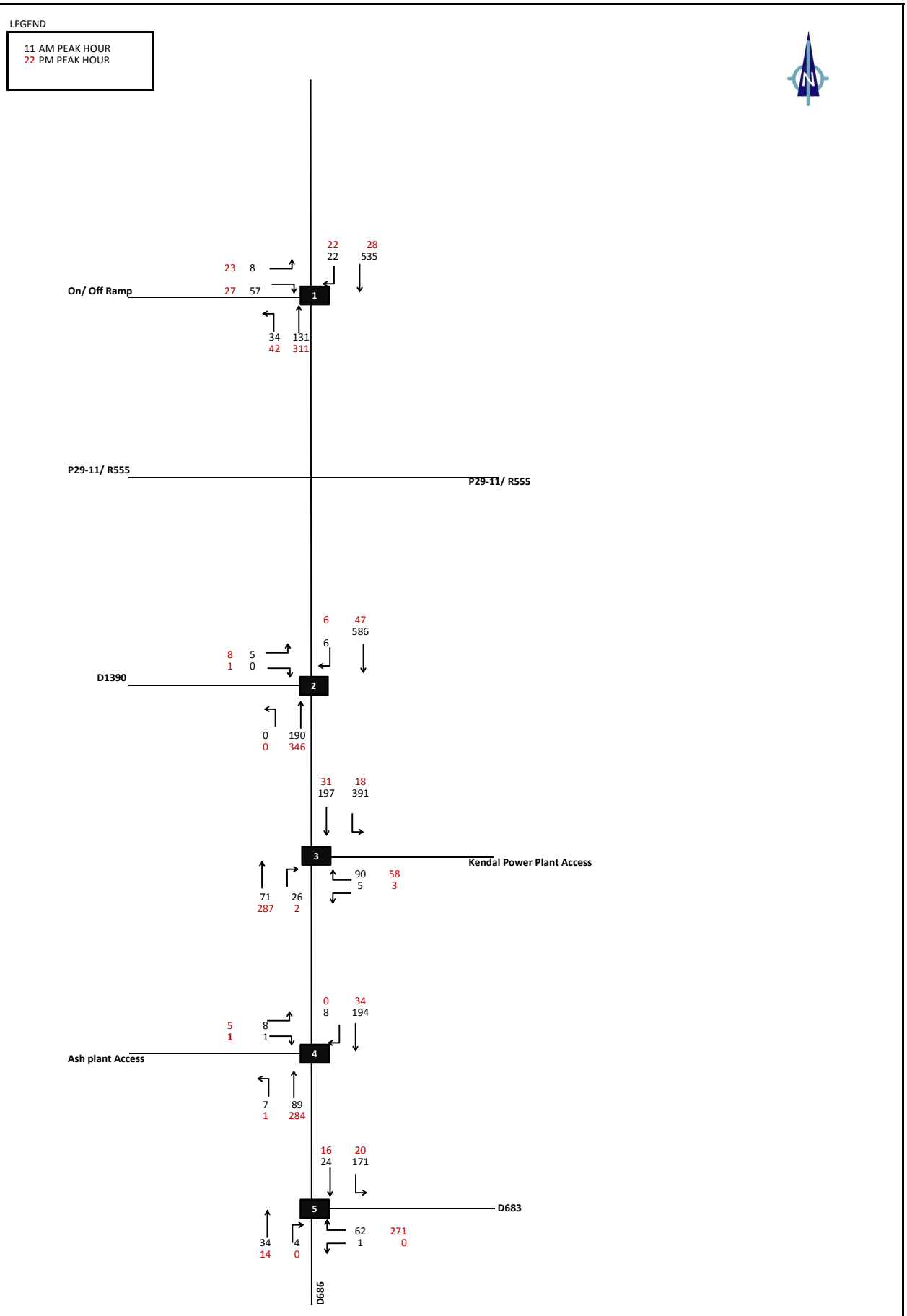
HATCH GOBA Member of the Hatch Group	**KENDAL 30 YEAR ASH DISPOSAL SITE**	**Project: H-344245**
	2025 FORECAST TRAFFIC + 30 YEAR (CONSTRUCTION+ CONTINUOUS OPERATIONAL)	**Figure 7**
	AM - PM PEAK HOUR CONSTRUCTION ONLY	

LEGEND

14 AM PEAK HOUR
28 PM PEAK HOUR



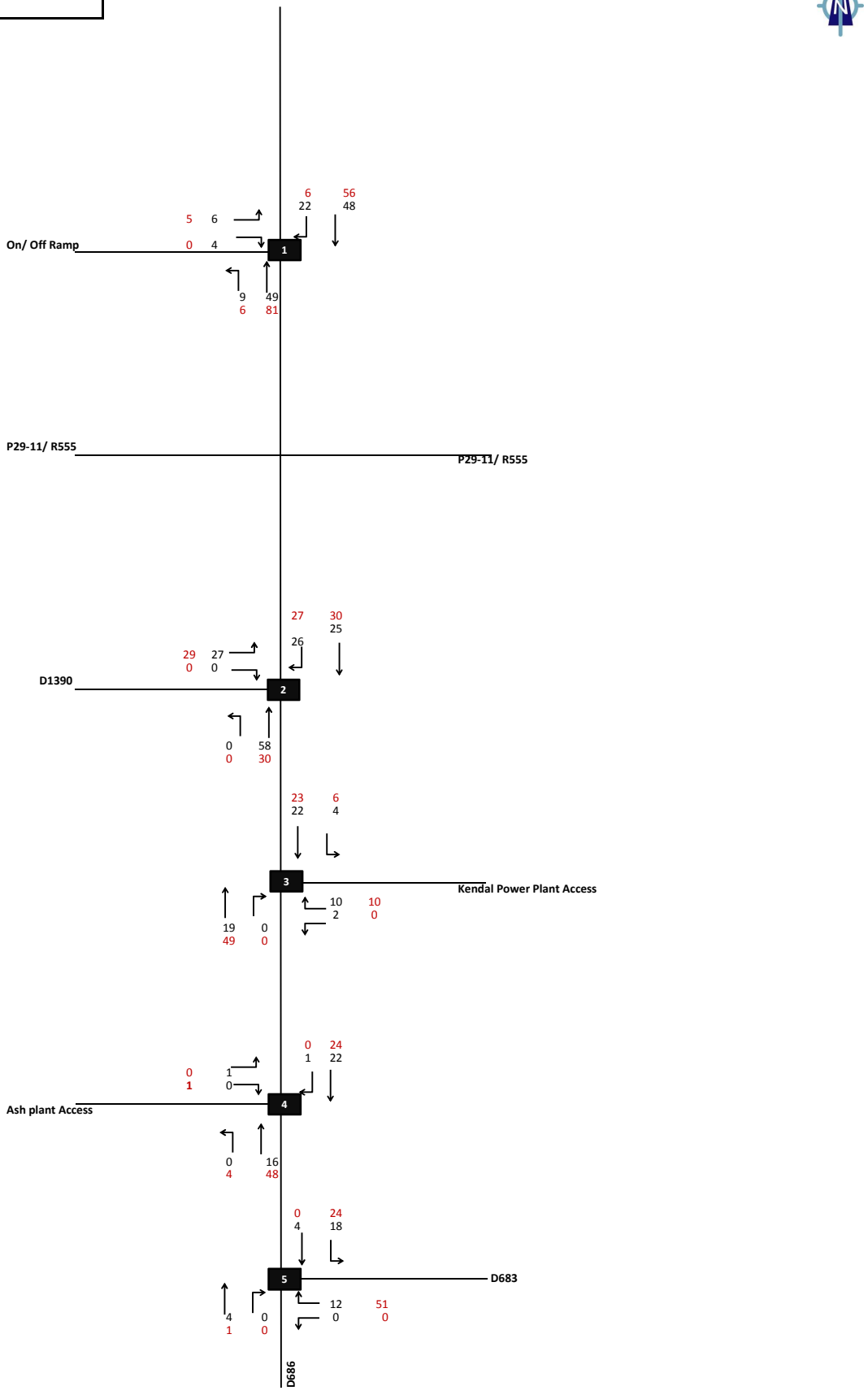
HATCH GOBA (Member of the Hatch Group)	**KENDAL 30 YEAR ASH DISPOSAL SITE**	**Project: H-344245**
	2025 FORECAST TRAFFIC + 30 YEAR (CONSTRUCTION+ CONTINUOUS OPERATIONAL)	**Figure 8**
	AM - PM PEAK HOUR TOTAL	



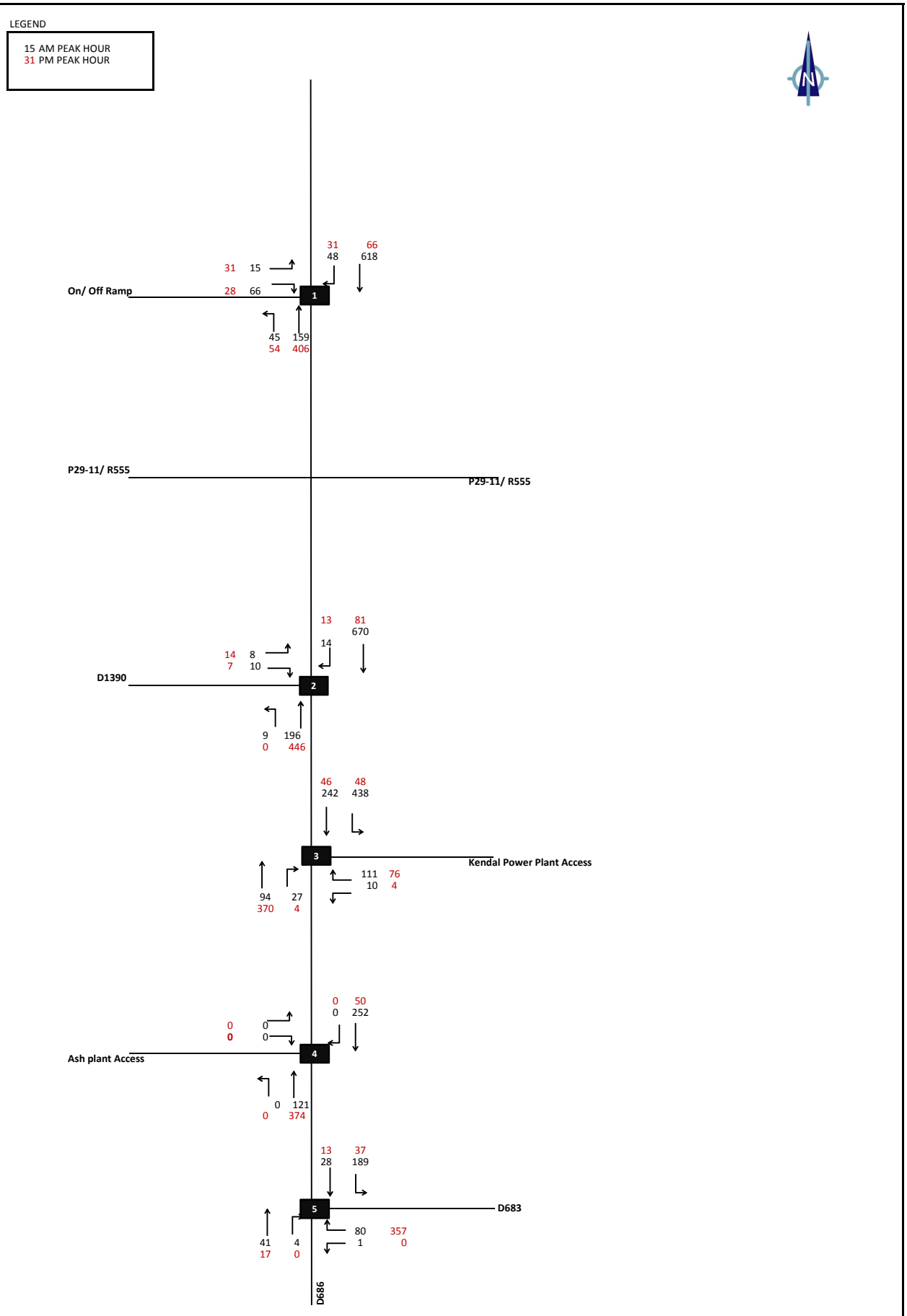
HATCH GOBA Member of the Hatch Group	**KENDAL 30 YEAR ASH DISPOSAL SITE**	**Project: H-344245**
	2025 FORECAST TRAFFIC + 30 YEAR (CONSTRUCTION+ CONTINUOUS OPERATIONAL)	**Figure 9**
	AM - PM PEAK HOUR LIGHT	

LEGEND

6 AM PEAK HOUR
5 PM PEAK HOUR



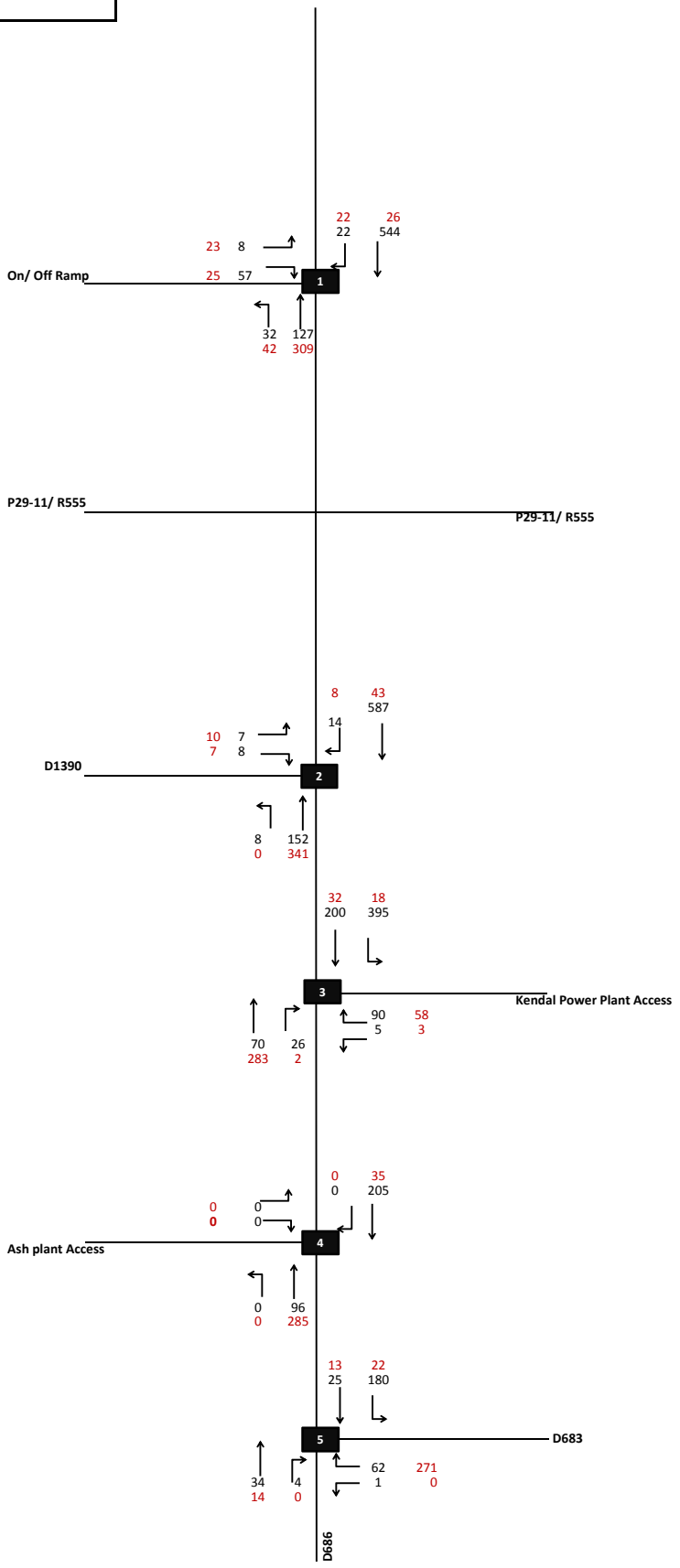
HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2025 FORECAST TRAFFIC + 30 YEAR (CONSTRUCTION+ CONTINUOUS OPERATIONAL)	Figure 10
	AM - PM PEAK HOUR HEAVY	



HATCH GOBA Member of the Hatch Group	**KENDAL 30 YEAR ASH DISPOSAL SITE**	**Project: H-344245**
	2030 FORECAST TRAFFIC + 30 YEAR OPERATIONAL	**Figure 11**
	AM - PM PEAK HOUR TOTAL	

LEGEND

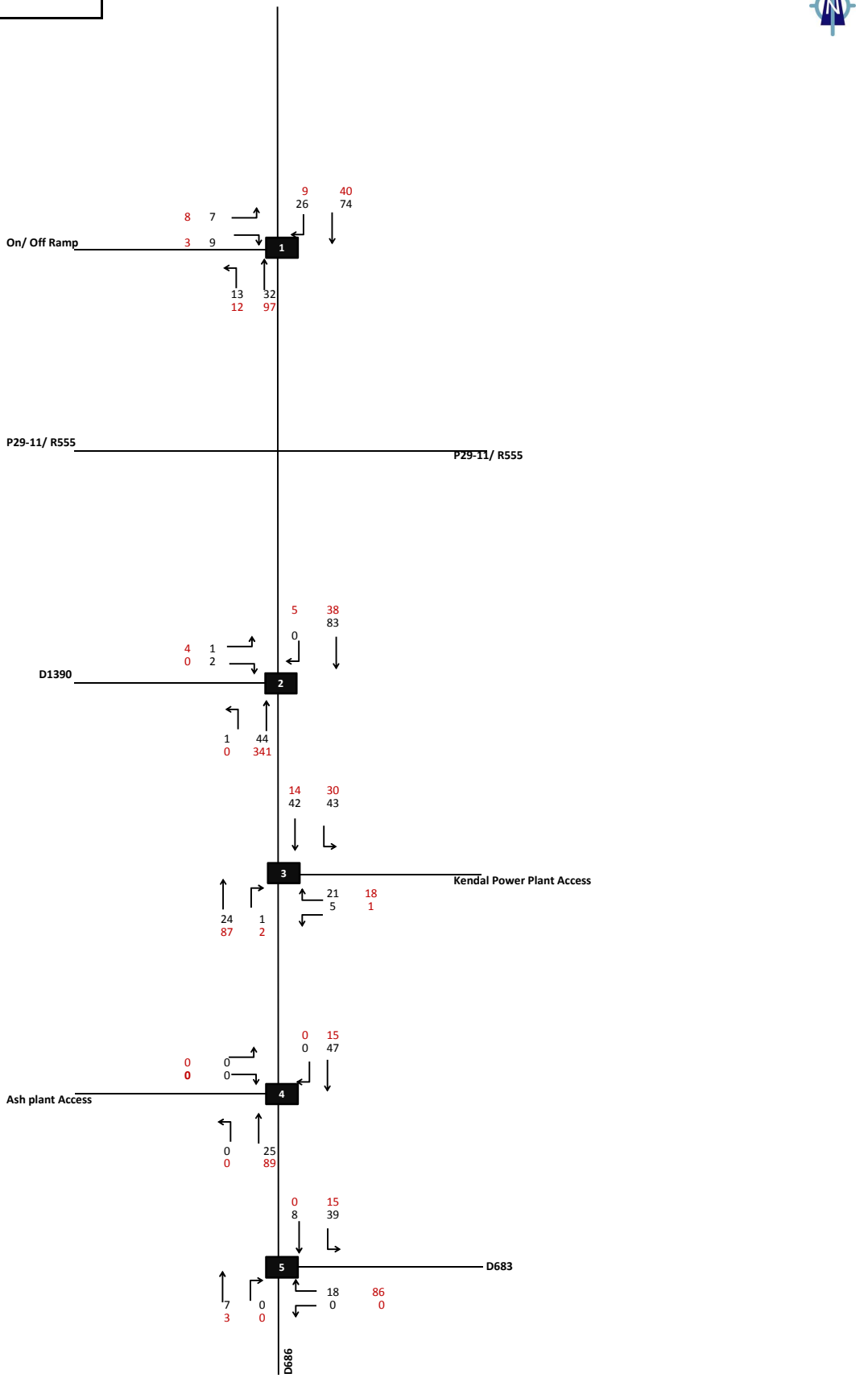
8 AM PEAK HOUR
23 PM PEAK HOUR



HATCH GOBA (Member of the Hatch Group)	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2030 FORECAST TRAFFIC + 30 YEAR OPERATIONAL	Figure 12
	AM - PM PEAK HOUR LIGHT	

LEGEND

7 AM PEAK HOUR
8 PM PEAK HOUR



HATCH GOBA Member of the Hatch Group	KENDAL 30 YEAR ASH DISPOSAL SITE	Project: H-344245
	2030 FORECAST TRAFFIC + 30 YEAR OPERATIONAL	Figure 13
	AM - PM PEAK HOUR HEAVY	

Appendix C:
Impact Rating Table

Before Mitigation						
Nature of Impact	**Significance**	**Temporal Scale**	**Probability**	**Spatial Extent Scale**	**Impact Risk**	**Impact Class**
Construction Traffic	Moderate (3)	Short Term (2)	Unlikely (2)	Local (3)	1.17	Low
Operation and Maintenance Traffic	Low (2)	Medium Term (3)	Unlikely (2)	Local (3)	1.17	Low
Conveyor Belt Failure	Very Low (1)	Incidental (1)	Could Happen (3)	Local (3)	1.1	Low
Site H cuts across the D1390	Moderate (3)	Permanent (5)	Its going to happen (5)	Local (3)	4.0	High

After Mitigation							
Nature of Impact	**Proposed Mitigation**	**Significance**	**Temporal Scale**	**Probability**	**Spatial Extent Scale**	**Impact Risk**	**Impact Class**
Construction Traffic ï	Drilling tests reveal that there is suitable construction material on site, Right turn lane on D686/D1390 provided	Low (2)	Incidental (1)	Unlikely (2)	Local (3)	1.0	Very Low
Operation and Maintenance Traffic	None						
Conveyor Belt Failure	None						
Site H cuts across the D1390	Short deviation route, access to main developments maintained, reconnection to D686 at existing Kendal Power Station access, convert junction from AWSC to a TWSC junction	Low (2)	Permanent (5)	Itõs going to happen (5)	Local (3)	3.68	Moderate

Appendix D :
Mpumalanga Future Traffic Projections Report

Available on CD

Appendix E :
AM and PM Peak Hour Model Results

TABLE 1: 2014 AM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	8	A	0.10	8	A	0.31				2	A	0.10	7	A	0.31
M2	D686/D1390	P	8	A	0.01	1	A	0.28				0	A	0.09	1	A	0.28
M3	D686/Kendal Power Station access	AWS				28	D	0.52	18	C	0.22	15	C	0.23	22	C	0.52
M4	D686/Continuous ash dam access	P	5	A	0.01	1	A	0.11				1	A	0.05	1	A	0.11
M5	D686/D683	P				7	A	0.11	9	A	0.07	1	A	0.02	7	A	0.11

TABLE 2: 2014 PM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	7	A	0.05	5	A	0.06				1	A	0.20	2	A	0.20
M2	D686/D1390	P	9	A	0.01	2	A	0.05						0.19	1	A	0.19
M3	D686/Kendal Power Station access	AWS				22	C	0.21	20	C	0.18	32	D	0.71	29	D	0.71
M4	D686/Continuous ash dam access	P	5	A	0.01	3	A	0.03				0	A	0.16	1	A	0.16
M5	D686/D683	P				7	A	0.04	9	A	0.29	2	A	0.01	8	A	0.29

TABLE 3: 2025 AM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	10	A	0.15	18	C	0.47				1	A	0.14	14	B	0.45
M2	D686/D1390	P	9	A	0.01	2	A	0.36				1	A	0.17	2	A	0.36
M3	D686/Kendal Power Station access	P	13	B	0.05	1	A	0.12	16	C	0.28	2	A	0.05	5	A	0.28
M4	D686/Continuous ash dam access	P	5	A	0.01	1	A	0.19				1	A	0.07	1	A	0.19
M5	D686/D683	P				7	A	0.13	9	A	0.09	1	A	0.02	7	A	0.13

TABLE 4: 2025 PM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	8	A	0.07	6	A	0.12				1	A	0.27	3	A	0.27
M2	D686/D1390	P	10	B	0.02	3	A	0.08				1	A	0.23	1	A	0.24
M3	D686/Kendal Power Station access	P	17	C	0.08	4	A	0.05	18	C	0.22	1	A	0.19	4	A	0.22
M4	D686/Continuous ash dam access	P	6	A	0.01	4	A	0.04				0	A	0.20	1	A	0.20
M5	D686/D683	P				7	A	0.04	9	A	0.36	1	A	0.01	8	A	0.36

TABLE 5: 2030 AM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	11	B	0.18	23	C	0.50				2	A	0.13	17	C	0.50
M2	D686/D1390	P	11	B	0.02	1	A	0.40				0	A	0.13	1	A	0.40
M3	D686/Kendal Power Station access	P	13	B	0.04	0	A	0.14	17	C	0.32	2	A	0.06	5	A	0.32
M4	D686/Continuous ash dam access	P	5	A	0.00	1	A	0.15				0	A	0.08	0	A	0.15
M5	D686/D683	P				7	A	0.16	10	A	0.11	1	A	0.02	7	A	0.16

TABLE 6: 2030 PM RESULTS

Int. number	Description		West			North			East			South			Overall		
			Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C	Delay	LOS	V/C
M1	D686/R555	P	8	A	0.08	7	A	0.09				1	A	0.29	3	A	0.29
M2	D686/D1390	P	12	B	0.02	6	A	0.07				0	A	0.49	1	A	0.49
M3	D686/Kendal Power Station access	P	14	B	0.04	2	A	0.02	20	C	0.27	0	A	0.22	4	A	0.27
M4	D686/Continuous ash dam access	P	6	A	0.00	2	A	0.03						0.23	0	A	0.23
M5	D686/D683	P				7	A	0.03	9	A	0.41	1	A	0.01	8	A	0.41

Appendix F

Letter from the Mpumalanga Provincial Department of Public Works, Roads and Transport

public works,
roads & transport
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

16 Hope Street, Mbombela, 1200, Mpumalanga Province
Private Bag X11310, Mbombela, 1200, Mpumalanga Province
Tel l: +27 (13) 766 8525, Fax: +27 (13) 766 8648

TRANSPORT INFRASTRUCTURE

Litiko Letemisebenti Yemphakatsi, Temigwaco Netekutfutsa | Departement van Openbare Werke, Paaie en Vervoer | UmNyango wezemiSebenzi yomPhakathi, zeeNdlela nezokuThutha

Ref: F15/11/1/1/2 ï D 1390
Enq: M.J. Mojapelo

Zitholele Consulting
P.O. Box 6002
Halfway House
1685

Attention: Tania Oosthuizen

RE: APPROVAL: ESKOM KENDAL 30 YEAR ASH DISPOSAL FACILITY PROJECT – GRAVEL ROAD DIVERSIONS

This is with reference to your application, 12935-Let-001, dated 19 January 2015.

Consent in terms of Provision of the Advertising on Roads and Ribbon development Act, 1940 (Act 21 of 1940) for the purpose of the approved application for deviation of Provincial Road D 1390.

This is on condition that the following are strictly adhered to:

- The three conditions as indicated on your attached map, (Road to remain open as a Public Road, Intersection to meet design standards and Radius to meet Design Standards of 80 Km/h), must be adhered to.
- The necessary and prescribed road signs for the proposed work must conform to the S.A.D.C Manual for Road Traffic Signs.
- The Department will not be financially involved by any means in the process, but will assist and monitor the whole process if and when necessary. The applicant accepts all costs with regard to the deviation, the restoration of the existing road, the surveying and monitoring and reporting according to the conditions herein, should the be required.
- The applicant safeguards the Premier and exempts him from any claims of loss of whatever nature that may be put forward or be suffered by any person, including legal costs of whatever nature, as a result of the deviation and related matters.
- Should the Ash Disposal Facility cause significant numbers of additional trucks on the road, The Department of Public Works, Roads and Transport may require the applicant to surface the road or part thereof.
- If any dispute of disagreement of whatever nature should arise with regard to fulfilment of the conditions contained herein, The Department shall reserve the right to cancel any previous agreement and to incur such repair costs with regard to the existing road as he deems necessary, for recovery from the applicant or the guarantors In such event mining activities that may influence the existing road shall be discontinued
-

_____
M J Mojapelo
Project Manager
Date: _____

Tania Oosthuizen

From: John Mojapelo <jmojapelo@mpg.gov.za>
Sent: Wednesday, March 25, 2015 9:22 AM
To: Tricia Njapha
Cc: Jyothika Heera; Tania Oosthuizen; Nevin Rajasakran; Stephan; Nicolene Venter
Subject: Re: 12935: Road Options Diversion Reference Query & Rectification
Attachments: MEMO NO OBJECTION DEVIATION D 1390.docx

Madam,
Attached please find the amended version of the previous approval letter.

Hoping this will clarify and satisfy your queries.

Regards,
John

>>> Tricia Njapha <trician@zitholele.co.za> 3/24/2015 11:42 AM >>>
Good day Mr Mojapelo,

I hope you are well.
Thank you for receiving my phone call earlier, it is much appreciated.

Please see Tania's attached email which bears reference to our response.

I am assisting Tania with the following request on the letter received prior to your sending us the Final signed version.
You refer to markings in Purple when referencing the 3 Conditions in your response letter. Are you referring to Purple markings on the map attached in Tania's correspondence or in another document?
The map contains no Purple markings. Kindly clarify this for us.

Could you also kindly replace the word "mine" (highlighted in yellow) with Ash Disposal Facility as the proposed project reads above – The Proposed Ash Disposal Facility and not a mine.

Once again, thank you very much for your valuable feedback.

We look forward to receiving your updated response.

Thanking you in advance.

Kind regards,

Tricia Njapha
Public Participation Practitioner
Building 1, Maxwell Office Park, Magwa Crescent West, cnr Allandale Road & Maxwell Drive, Waterfall City, Midrand, RSA
T: +27 11 207 2060 **D:** +27 11 088 8454 **F:** +27 86 206 7720/+27 86 676 9950 **C:** +27 83 775 3197 **E:** trician@zitholele.co.za **W:** www.zitholele.co.za

ZITHOLELE CONSULTING

From: John Mojapelo [mailto:jmojapelo@mpg.gov.za]
Sent: 24 March 2015 10:10 AM

To: victori@hcicoal.co.za; William Matshata
Cc: Peter Sonemann; Sibongile Ntuli; Stephan Pienaar; Mary Ntolwane; Tania Oosthuizen
Subject: Re: Fwd: Road options diversion

Madam,

Attached please find the approval document as requested by Zitholele Consulting.

Kindly note that the signed original document will follow shortly.

Regards,

John

>>> William Matshata 2/17/2015 9:58 AM >>>

>>> Victor Lebepe <victorl@hcicoal.co.za> 2015/02/17 09:47 AM >>>
Bro Willy,

Attached please find road plans diversion options.

Maybe this will do and not bounce.

Regards
Victor