ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE N17 TOLL ROAD

PROPOSED REHABILITATION AND UPGRADING OF THE N17 FROM SPRINGS TO ERMELLO AND PROPOSED CONSTRUCTION OF NEW SECTIONS BETWEEN LEANDRA AND LEVEN STATION, AT TRICHARDT AND BETHAL

FINAL SCOPING REPORT

L&W Environmental

THE SOUTH AFRICAN NATIONAL ROADS AGENCY

Third Document,
February 2002
The South African National Roads Agency Limited (NRA) proposes to declare the existing N17 between Springs and Ermelo as a national road and charge toll fees to cover construction and future maintenance costs. The proposed project will involve the improvement of certain sections of the N17 between Springs and Ermelo, together with the construction of new sections and toll plazas.

An Environmental Impact Assessment (EIA) is being done by L&W Environmental, an independent company, to evaluate the potential environmental and social impacts of the proposed project. The EIA is being done in terms of the EIA Regulations under Section 21 of the Environment Conservation Act, 1989 (stakeholders are welcome to request a copy of the full EIA Regulations from the public participation office).

The first phase of an EIA is the Scoping Phase (see Figure 1 below). This is the phase during which public issues and concerns must be identified so that relevant issues can be evaluated by the EIA technical specialists during the next phase (the Impact Assessment Phase) of the EIA.

The EIA Regulations make provision for authority consideration based on the Scoping Phase of the EIA. Therefore this Final Scoping Report and its accompanying Issues and Response Report serves the following purpose:

- An introduction to the EIA that is being carried out for the proposed N17 toll road between Springs and Ermelo.
- A description of the regulatory framework for the EIA.
- Description of the proposed project.
- The project alternatives that were considered.
- A description of the way in which the interested and affected parties (I&APs) or stakeholders have been involved.
- To list all issues raised by stakeholders to date.
- To indicate whether all their concerns and suggestions have been considered to date.

Stakeholders could comment on the Draft Scoping Report in the following ways:

- Completing the comment sheet enclosed with the report
- Additional written submissions
- Comment by email or telephone
- Attending the Open Day held in Secunda on 5 December 2001

Figure 1. An Environmental Impact Assessment consists of various phases. The EIA for the proposed N17 toll road project is currently in the Scoping Phase. This is the first phase of the EIA during which issues are raised that must be evaluated during the next phase.
PUBLIC PLACES WHERE THE DRAFT SCOPING REPORT WAS AVAILABLE FOR PUBLIC SCRUTINY

The Draft Scoping Report was distributed to everyone that requested to be kept informed about this proposed project in response to invitations distributed in October 2001. Copies of this report were distributed for comment as follows:

- Left in the following public places: local libraries in the towns of Springs, Leandra, Kinross, Secunda, Bethal, Trichardt and Ermelo, as well as offices of the local councils
- Proactively mailed to all key stakeholders e.g. the authorities and local land owners

In addition a Summary Draft Scoping Report was distributed as follows:
- Proactively mailed to all 400 stakeholders
- Public places as listed above

ENQUIRIES

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1. INTRODUCTION AND OVERVIEW

The South African National Roads Agency (NRA) has been responsible for the maintenance, upgrading and operation of the national road network since its establishment in 1998. The NRA receives an annual allocation from the country’s national budget to maintain, upgrade and operate approximately 7 000km of roads in South Africa. However, these funds are not sufficient to operate all the national roads under the jurisdiction of the NRA, nor to build the new roads required by the country for economic growth. In line with Government policy, the NRA therefore makes use of the “user-pay” principle where appropriate for the upgrading, maintenance and expansion of the national road system. The approximately 2000km of toll roads serviced by 50 toll gates, introduced since the early 1980’s, are examples of this strategy representing a total capital improvement in excess of R12 billion.

The NRA’s proposal to declare the N17 from Springs to Ermelo as a national road and charge toll fees to cover construction and future maintenance costs in a total length of approximately 164 kilometres with toll plazas at three possible locations along this route is a further development of this strategy which will enable the provinces of Gauteng and Mpumalanga to allocate scarce funding to improvements on their remaining road network. The proposed project will involve the improvement of certain sections of the N17 between Springs and Ermelo, together with the construction of new sections and toll plazas.

The N17 currently runs in an east/west direction, joining the N3 east of Johannesburg and ending at the Oshoek Border Post, between Swaziland and South Africa. The proposed toll road will thus traverse the provinces of Gauteng and Mpumalanga.

In terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), an Environmental Impact Assessment (EIA) must be undertaken before construction can begin. The EIA must ensure that environmental consequences are considered at all stages of the project. In addition, the EIA will assist the NRA and its consulting engineers to design a road based on sound environmental principles. It should be remembered that the term ‘environment’ in the context of an EIA refers to the biological, physical, economic and social environments.

The initial phase of the EIA is a Scoping exercise. This defines the nature and extent of the impact assessment required. A Draft Scoping Report was circulated to key stakeholders and authorities and a Summary Draft Scoping Report was mailed to all stakeholders on the N17 database and their comments are included in this Final Scoping Report. The Final Scoping Report will be submitted to the lead authority for the EIA, which is the National Department of Environmental Affairs and Tourism. Specialist Studies are then carried out. The findings of the Specialist Studies will be presented in a Draft Environmental Impact Report (EIR) for stakeholder comment in May 2002, after which a Final Environmental Impact Report will be submitted to the lead authority in July 2002.

1.1 WHO IS CONDUCTING THE EIA?

In line with the Environment Conservation Act, the proponent, the NRA, has appointed an independent consultant, L&W Environmental (Pty) Ltd, to undertake the Environmental Impact Assessment for this project.

L&W is experienced in environmental management and assessment, familiar with the EIA requirements for road development and rehabilitation projects, and has worked in the project area. L&W is well known for its integrity, independence and skill in assisting stakeholders to participate in the EIA process. The consultants have signed declarations of independence in terms of the EIA regulations, which confirms that they have no vested interest in the proposed project.
1.2 **Motivation for the Proposed Project**

The current N17 road is not continuous and motorists have to make time-consuming detours. The proposed project aims to provide a continuous route offering an improved, safer road for all road-users which will serve as a development spine for a fast growing area and which will link this area with the economic hub of Gauteng. Existing sections will be upgraded and new sections added. Once completed, the N17 will be 2 km shorter than the current road. It will also provide excellent travelling conditions and reduced travelling time.

Secunda, Kinross and Evander are strategically placed for export markets in relation to the Maputo Corridor and the ports of Richards Bay and Durban, as well as for trading with the Gauteng Metropolitan Region. Improved road networks could encourage business, industry and investment for these towns and help alleviate the high unemployment in the region as a whole. A delegation of the Eastern Ridge Municipality, Highveld Ridge Business Chamber and the Afrikaans Handels Instituut, approached the NRA to assist with the provision of an improved road network between the Highveld Ridge area and ports as well as the Gauteng region.

1.3 **Project Feasibility**

National routes are of strategic importance to the economic well being of South Africa. These routes need to be maintained and improved to accommodate increased traffic volumes and ensure safe and efficient travelling between economic hubs in South Africa. Due to its budgetary constraints, the NRA has studied the viability of using toll roads to pay for national route improvement and maintenance. The study has indicated that the N17 between Springs and Ermelo would be a feasible route to improve and toll. Ultimate viability hinges on construction cost, traffic volumes, traffic growth, possible revenue streams, inflation, bank interest rates and other factors. The NRA has studied all these variables and concluded that the proposed N17 upgrade is feasible with an Internal Rate of Return, when the road is in full operation, in excess of 10%.

1.4 **Legal Requirements for Scoping**

The Environment Conservation Act, 1989, requires that an EIA be undertaken to assess the environmental consequences of the proposed project, especially those that might have an adverse effect. The proposed rehabilitation and upgrading of certain sections of the existing N17 Toll Road, as well as the construction of new sections of road between Springs in Gauteng and Ermelo in Mpumalanga, are activities that require an EIA in terms of Sections 21, 22 and 26 of the Environment Conservation Act, 1989 (Act No. 73, 1989).

The EIA Regulations R1182 and R1183 were published in September 1997 in terms of the Environment Conservation Act, 1989, in order to firstly, list those activities for which an EIA is required and secondly, describe how an EIA should be conducted. In terms of these Regulations, activities that require an EIA include:

- The construction or upgrading of roads, railways, airfields and associated structures and activities outside the borders of town planning schemes, where “roads” mean:
  - Any road declared under section 4(1)(a) of the National Roads Act, 1971 (Act No. 74 of 1971), a national road and this includes a part of such a road or route; or
  - A toll road, by which is meant any road for which a fee is charged for the use thereof; or national freeways; or
  - A provincial road numbered and administered by a provincial authority and arterial roads and major collector streets administered by a metropolitan or local authority, or
• Any road in a designated sensitive area or in any area regarded by the relevant authority as sensitive.

Broader environmental legislation that is also of relevance includes, but is not limited to:

• The National Environmental Management Act (NEMA)
• The Minerals Act, 1991

2. BACKGROUND TO THE PROPOSED PROJECT

2.1 HISTORY AND NATIONAL ROAD AGENCY (NRA) INVOLVEMENT

The N17 from Springs to Ermelo is currently under the jurisdiction of the Gauteng and Mpumalanga provincial authorities. In the late 1970’s and early 1980’s, the previous Transvaal Provincial Administration (TPA) investigated and designed a future alignment for the N17 between Springs and Oshoek. The route was proclaimed by the TPA. In 1990, the first section of the new alignment was constructed between Springs and Leandra. Since then, political changes have taken place in South Africa and the previous Transvaal Province has been sub-divided into four provinces. Due to the increased social responsibilities of the new provincial governments, budgets for infrastructure development and maintenance have diminished to levels where it has become impossible to provide new facilities or even upgrade existing facilities.

Concurrently with the feasibility study, strategic planning by the Eastern Ridge Municipality together with the business community, which includes the development of the towns of Secunda, Kinross and Evander, has indicated the need for improved road infrastructure. Improved networks would encourage business, industry and investment, not only for the abovementioned towns but for the region as a whole, which would in turn, help alleviate the high level of unemployment.

The Eastern Ridge Municipality, Highveld Ridge Business Chamber and Afrikaans Handels Instituut thus approached the NRA to assist with the provision of road infrastructure. A financial institution has expressed its desire to finance road infrastructure in South Africa. After further investigation by the financial institution, an Aide de Memoir was set up between the NRA and the institution for the development of engineering proposals and financing options for the N17 between Springs and Ermelo.
2.2 **CONSIDERATION OF ALTERNATIVES**

2.2.1 Route alignment alternatives

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Figure 2. The proposed N17 route stretches from Springs, Gauteng to Ermelo, Mpumalanga.
The project proposes that the existing N17 route generally be retained. Traffic capacity requirements indicated that the existing route could be used with limited upgrading in certain areas. However, three discontinuities exist on the existing N17 route and new alignments are proposed for these sections. These are discussed in detail below.

**Leandra to Leven Station**

A discontinuity exists at Leandra where the new N17 alignment constructed in 1990 ends at a half diamond interchange with the R50 (Delmas – Standerton road). The existing route to Trichardt requires the road user to make use of other provincial routes, which traverse the main streets of Leandra and Kinross. It is therefore necessary to complete the link between the end of the 1990 construction up to the point where it intersects the existing N17. For route continuity, the Leandra half diamond interchange and Trichardt are fixed points on the N17 route. The NRA has investigated two options.

Firstly the TPA alignment between the Leandra half diamond interchange and Leven Station and the existing alignment between Leven Station and Trichardt were considered. The TPA alignment was determined by engineering consultants appointed by the former TPA in the late 1970’s and early 1980’s. The consultants considered various alignments at the time. Factors such as engineering design standards and best practice, farming activities, existing and future mining activities, existing and future services, i.e. power lines, pipelines, road and rail lines, and existing and future town developments were considered. Landowner needs were also taken into account, all within the norms of engineering, practicality and financial viability. All parties then agreed on the position of the alignment and the road reserve was proclaimed and owners paid compensation.

Secondly, an alternative alignment whereby the N17 from the Leandra half diamond interchange is linked with the Evander-Secunda dual carriageway road (P185-2) was considered. A mine slimes dam is situated on the alignment and there is inappropriate intersection spacing on the existing P185-2. Due to the costs associated with the removal of the slimes dam and the improvement of the intersection spacing, this alternative alignment was discarded.

The NRA therefore concluded that the TPA alignment between the Leandra half diamond interchange and Leven Station where it intersects with the existing N17 is the most appropriate alignment. However, the NRA understands that the alignment was decided 20 years ago and since then, changes in landowners, land use and environmental requirements have taken place. Landowners and environmental issues have therefore been revisited.

The NRA has already agreed in principle to a realignment of the Green Fields section where it crosses the Rolspruit at two places. The previous alignment required river diversions. With the revised road alignment, no river diversions are required.

**Trichardt Ringroad**

The former TPA appointed consultants to investigate a northern ring road around Trichardt. The NRA intends to include the construction of the ring road as part of the project. The consultants appointed by the NRA reviewed the TPA alignment and concluded that the alignment does not conform to appropriate standards associated with high-speed toll roads. Alternative alignments were investigated to balance the effect of the required geometric (safety) standards and land requirements. The proposed alignment crosses the Trichardtspriu and requires access roads to be relocated. The needs of the affected landowners will be addressed within the norms of engineering, practicality and financial viability. This re-alignment will also affect businesses in Trichardt to some extent and this matter will be addressed with the affected parties. *(Peter, do we need a more detailed description of the possible alternative alignments here, or will that be detailed in the EIR?)*
Bethal Link Road

A 1.2km link road through Bethal has been proposed. The link road would be constructed to remove the staggered, inconvenient routing through Bethal. It would pass through a wetland and would cross the Blesbokspruit. Since the beginning and end points of this link road are fixed, and the road length very short, little room for alignment alternatives are available. Different radii for the link road have been considered to minimise the impact on the wetland.
Figure 4. The proposed 1.2km link road through Bethal will enable a continuous journey for motorists.

2.2.2 Technology alternatives

The NRA is aware of different noise levels associated with different pavement (road) surfacing. This will be taken into account during the engineering design in order to minimise the effect of noise to adjoining landowners and residents. Similar application of technology will prevail for the:

- discharge of water from the road
- provision of cross accesses where required
- construction techniques to limit dust and other air pollution issues
- erosion protection of embankments
- stability of cut and fill slopes
- width of construction where applicable

2.2.3 The no-action alternative

The condition of some sections of the existing N17 is poor. If rehabilitation is not done timeously, the current asset will become degraded (e.g. the R35 between Bethal and Middelburg) with a major loss in national assets. Due to provincial budgetary constraints, it is unlikely that any road improvements, such as horizontal and vertical alignment and capacity and structural improvements, will take place. Two consequences will follow. Firstly, due to increased traffic volumes, the road will deteriorate, resulting in uncomfortable and unsafe driving conditions. Secondly, due to poor accessibility to the Highveld Ridge area, the area may become unattractive for investors, which will have a negative effect on economic growth and associated job opportunities.

2.3 Planned project scheduling

If the financial, technical and environmental / social feasibility of the project is established, the proposed key dates for the project are:

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
</tr>
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<tbody>
<tr>
<td>August 2001</td>
<td>Initiate the EIA</td>
</tr>
<tr>
<td>April 2002</td>
<td>Complete detailed design.</td>
</tr>
<tr>
<td>July 2002</td>
<td>Submit the Environmental Impact Report (EIR) to the authorities for approval</td>
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<tr>
<td>October 2002</td>
<td>Record of Decision</td>
</tr>
<tr>
<td>January 2003</td>
<td>Commencement of construction (NRA confirm date)</td>
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3. DESCRIPTION OF THE PROPOSED ROUTE

The existing N17 (see Figure 2) is currently under the jurisdiction of the Mpumalanga and Gauteng roads authorities. The N17 is currently a provincial road and therefore needs to be declared as a national road. Once this is done, the proposed project will comprise two types of road development:

- firstly, certain sections of the existing N17 road between Springs and Ermelo will be rehabilitated and upgraded
- secondly, a new section of road will be constructed between Leandra and Leven Station, a ringroad will be constructed at Trichardt and the N17 will be rerouted at Bethal

3.1 SPRINGS TO LEANDRA

A stretch of 48km of the existing N17 road, commencing at Anchor Road in Springs and ending where the N17 meets the R50 near Leandra will be repaired and upgraded. Road repairs will entail resurfacing the road with an asphalt overlay. Upgrading will include adding climbing lanes where traffic volumes necessitate this. Climbing lanes are additional lanes along steep sections of the road to enable slow moving traffic to be easily passed.

Two new interchanges will be constructed along this section of the N17. These will be constructed at existing intersections and will consist of overhead bridges with on- and off-ramps on either side of the road. The first interchange will be constructed at the Nigel – Delmas intersection and the second interchange at the Devon/Delmas – Balfour intersection. The Boesmanskop – Langzeekoeigat at grade-intersection will be eliminated by means of an overpass structure. No on- and off ramps will be provided at this intersection. Agricultural over- and underpasses were constructed during the initial construction of this section of the N17. It is therefore unlikely that any additional agricultural over- and underpasses will be required for this section.

3.2 LEANDRA TO KINROSS

New road construction will take place along a 21km stretch of undulating hills and valleys between Leandra and Kinross. An existing half diamond -interchange south of Leandra, where the N17 meets the R50, will be upgraded to a full diamond interchange by constructing the two eastern ramps. A toll plaza will be constructed within close proximity to this new interchange. The exact location of the toll plaza has not been established as yet. An existing borrow pit at the interchange will be used to alleviate a shortfall of approximately 0.5 million cubic metres of road construction material.

A new diamond interchange, including on- and off-ramps, will be constructed south of Kinross, where the proposed N17 will meet the R546.

Three new over-passes, including two agricultural overpasses, will be constructed to allow access to farmland. (Hennie / Alex please elaborate where – on which farms – these over-passes will be). The 21km stretch of new road will traverse wetlands and streams, which are environmentally sensitive areas requiring careful routing and construction of the road. This will require two watercourse bridges across the Rolspruit and approximately 10 box/pipe culverts at various points along the route.

3.3 KINROSS TO TRICHARDT

New road construction will resume from Kinross to Leven Station, just before the Secunda - Delmas intersection, where the road will join the existing N17. A new grade separation in the form of a partial interchange will be constructed at the existing Delmas – Secunda intersection. A cutting will be blasted from the junction with the N17, to the Secunda - Delmas intersection. An existing borrow pit in the vicinity of this intersection will be used to gather approximately 50 000 cubic metres of road

...
construction material. The proposed N17 will cross water pipes, telephone lines and power lines at certain points.

Upgrading of the N17 will occur along an 8km stretch from Leven Station to Trichardt. This will entail adding climbing lanes as well as the addition of paved shoulders. A squatter camp exists on either side of the N17, at Leven Station. No relocation will occur as a result of the upgrading of the N17 at this point.

3.4 At Trichardt

A 3.5km (confirm distance) ring road is proposed (see Figure 3) to circumvent the town of Trichardt. Two access points to Trichardt will be provided. The first will be a grade separation in the form of a partial interchange, on the western side. The second will be an at-grade intersection near the existing sand works on the eastern side, where a small gravel road joins the existing N17. The ring road will cross the Trichardtspruit.

3.5 Trichardt to Bethal

A stretch of 23km of the existing N17 road, from Trichardt to Bethal will be upgraded to include new climbing and passing lanes. Shoulder upgrades will occur within the existing road reserve. Existing intersections will be upgraded to smooth the flow of traffic. New borrow pits will be excavated. Old rehabilitated borrow pits may also be used. A toll plaza may be constructed between Trichardt and Bethal, however, the exact location of the proposed toll plaza has not been established. The Intent to Toll Process, which is being conducted independently to this EIA, will provide more information on the tolling strategy.

3.6 At Bethal

A 1.2km re-alignment of the road (See Figure 4) at the north-west entrance to Bethal has been proposed in order to eliminate the staggered routing of traffic through Bethal. The link road will pass through a wetland and will cross the Blesbokspruit.

3.7 Bethal to Ermelo

A 55km stretch of road, from Bethal to Ermelo, will be upgraded. Climbing lanes and shoulders will be upgraded and/or added. The road surface will be sealed. The intersection at Davel will be upgraded. The road will be realigned at two sections, with one involving a river crossing. A toll plaza may be constructed between Bethal and Ermelo.

4. Planned Project Activities

The project activities include those during the pre-construction (setting up servitudes and site camps before construction), construction and operational phases of the proposed N17 toll road development. Each activity has potential impacts on the environment.

4.1 Pre-construction Phase

4.1.1 Demarcation of servitude

- **Surveying**: all sections of the proposed route have been surveyed in detail.
- **Fencing**: the surveyed sections will be temporarily fenced in order to constrain construction activities.
• **Search-and-rescue:** any species of flora of high conservation status within these servitudes will be removed by the Environmental Site Officer (ESO) and stored for transplantation.

• **Clearing and grubbing:** the removal of all vegetation and topsoil in preparation of stable foundations for new construction works as well as along proposed access routes and in areas set aside for construction camps.

• **Topsoil stripping:** topsoil within the servitudes will be stripped and stockpiled or removed.

• **Access road construction:** this will involve the construction of the various roads required to access the construction areas, construction camps and other surface infrastructure sites.

### 4.1.2 Transport of material to site

**Road transport:** materials sourced outside of the study area will be transported to the servitude by road. The existing N17, secondary and farm roads will be utilised as a means of delivering these materials to site, with potential impacts on the transport infrastructure and road users in the region.

### 4.1.3 Establishment of construction camps

**Construction of temporary camps:** these will be established by each contractor, and involve clearing of the vegetation, fencing of camps and the construction of houses, workshops, store-rooms and vehicle parking areas. The camps will be electrified and ablution and potable water provided. The exact number and location of these camps has not been determined yet. An Environmental Management Plan (EMP) will be compiled as part of the EIA, which will describe parameters such as the following:

- The contractor will provide a plan detailing the layout of site facilities, such as chemical toilets, areas for stockpiling of materials, storage of hazardous materials and provision of containers.
- Stockpiles for concrete materials will comprise side-restrained triangular bin-type structures. Bund walls will be constructed. High quality materials with low dust generating characteristics will be used.
- Hazardous waste such as bitumen, tar, oils etc. will be disposed of at a Department of Water Affairs and Forestry approved landfill site. Special care will be taken to avoid spillage of tar products such as tar prime or pre-coating fluid to prevent water-soluble phenols from entering the ground or contaminating water.
- All hazardous materials i.e. bitumen binders will be stored in a secured, appointed area that is fenced and has restricted entry. Suitable containers will be used for the storage of bituminous products.
- Fuel and gas will be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Fuel storage will generally occur in the workshop areas of site camps, which is generally fenced and paved. Bund walls will be built around an impermeable substratum. A mobile tanker will be used to refuel vehicles on-site.
- Workshops will be equipped with grease traps in the drainage collection system. Used oil will be collected in drums from these traps and disposed of off-site.
- Domestic waste will be collected in drums and removed to the nearest municipal waste site for disposal.
- Suitable washing facilities and sanitary arrangements at site offices, workshops and construction sites will be provided. Sanitary facilities for the site camps will comprise either prefabricated septic tanks or stand-alone bucket-systems.
- Water for human consumption will be available at the site offices and at other convenient locations on site.

**Additional construction sites:** separate construction sites may be established for the larger concrete structures required, i.e. bridges and culverts.

- These sites might have a stockpiling area for sand, stone, reinforcing steel and cement as well as a batching plant to mix concrete.
• The sites will be guarded.

4.1.4 Establishment of crusher plants

During the detailed assessment stage, the engineering consultants identified the possible need for a crusher plant to crush rock obtained from road cuttings to be used for the construction of pavement layers. The inclusion of crusher plants will form part of each contractor’s financial proposal during the tender stage. The responsibility for the establishment and operation of crusher plants will lie with the contractor, who will be required to follow the environmental and mining guidelines and regulations.

4.2 Construction phase

4.2.1 Structures

The proposed road requires the construction of new bridges and drainage structures as follows: (AvH to verify this with Rajen Govender)

- 10 stream crossings will require the use of box culverts
- 1 stream crossing will require the use of a pipe culvert
- 11 cross drains will require the use of pipe culverts
- 1 cross drain will require the use of a box culvert
- 1 river bridge will require the use of a box culvert
- 2 cattle creeps will require the use of box culverts

4.2.2 Earthworks

Clearing of vegetation: vegetation along the route will be cleared and grubbed.

Cuttings: cuttings will be initiated using bulldozers and back actors to remove the softer material.

Blasting: drilling and blasting will occur where rock is encountered that cannot be ripped. These activities will be strictly controlled. The NRA together with the appointed contractor is responsible for property protection.

4.2.3 Borrow pit establishment

Existing borrow pits along the route will be used. New borrow pits may have to be established where existing borrow pit material is not suitable or enough. Designated borrow pit areas will be identified once detailed design work has been carried out on the proposed project. The establishment of borrow pits will be done in consultation with the Department of Minerals and Energy (DME), according to environmental protection regulations pertaining to borrow pits and their rehabilitation. In terms of the Minerals Act, 1991, the operator is liable for remediation of environmental damage. However, the NRA would still be liable for the rehabilitation of the mining site should the Mining Operator not be in a position to do so.

4.2.4 Road construction

Road construction activities such as earthworks, the construction of pavement layers, surfacing, drainage structures and bridge structures and ancillary works are foreseen for this project. The work will be done in accordance to the COLTO (Committee for Land Transport Officials) standard specifications for road and bridge works.
4.2.5 Site removal and rehabilitation

Site removal encompasses the removal of all building material, temporary structures and any other waste material generated during construction. All such material must be removed from site and disposed of appropriately once construction is complete. The following will be removed from site where necessary (infrastructure such as storage structures, accommodation structures and workshops may be left on site for the benefit of the farmer concerned, if requested and agreed upon):

- Storage structures
- All construction material, including concrete slabs and braai areas
- Accommodation structures
- Workshop structures
- Waste material generated by the workforce and during construction
- Extra construction material not used or required on site
- Stripped vegetation
- Stockpiled topsoil
- Rock and other material generated during construction (e.g. during blasting and excavations), which cannot be utilised on site

4.3 OPERATIONAL PHASE

4.3.1 Road maintenance

Hennie / Alex please highlight what the primary activities during road maintenance are likely to entail. Who will be responsible for road maintenance?

Also add other activities that are likely to occur during the Operational Phase

5. THE ENVIRONMENTAL ASSESSMENT PROCESS

This chapter outlines the broad technical and public participation processes followed during this environmental assessment.

5.1 TECHNICAL PROCESS FOLLOWED DURING THE SCOPING PHASE OF THE EIA

The EIA is part of the feasibility study of the proposed project. The findings of the EIA will also assist the engineering design team in taking into consideration potential environmental impacts. During the Scoping phase the technical assessment focuses on identifying issues of concern. These will be taken into consideration during the impact assessment phase. The following has been carried out:

1. A review of the proposed project and available information by L&W Environmental.
2. Meetings with the NRA project team and design engineers.
3. A biophysical assessment of the route by technical specialists.
5. A Draft Scoping Report and Summary Draft Scoping Report were distributed to stakeholders.
Biophysical assessment explained
The biophysical assessment covered the entire route and was a key component in the identification of technical issues. The route was divided into seven logical sections, commencing at Springs and ending in Ermelo. The assessment consisted of:

- walking the uncultivated areas of the proposed route and identifying all flora in order to establish the condition of the vegetation and ascertain sensitive areas such as wetlands, rivers and streams;
- identifying any restricted access areas to private landowners;
- recording all possible fauna and flora observed during the site visits in order to compile species checklists;
- photographing and collecting samples of unidentifiable plant species for positive identification at a later stage.

The sensitivity of each of the seven sections of the route was assessed as follows:

Areas of high sensitivity
- Pristine grassland: undisturbed veld, dominated by climax grasses such as *Themeda triandra*.
- Wetland areas (including stream courses): characterised by features such as seepage slopes, sedges, bird life and heavy soils. These areas carry out important water conservation functions.
- Unique / isolated habitats: these may include isolated koppies and cliffs, which may provide habitats for fauna and flora in otherwise disturbed landscapes.
- Inhabited areas (homesteads), which may be intruded upon by the proposed road.
- Potential mineral extraction areas.
- High agricultural potential areas, such as areas with good soils.
- Economically viable production areas: where the proposed road’s subdivision of fields would result in the areas becoming uneconomical.

Areas of low sensitivity
- Disturbed grassland and old cultivated lands: veld which has been heavily grazed or previously cultivated and which generally shows a change in species composition. The species mix includes grasses such as *Eragrostis curvula*, *Eragrostis chloromelas* and *Cynodon dactylon*, amongst stands of the original *Themeda triandra*.
- Roadside verges: grassland in the road reserve that has been disturbed by previous road construction and is degraded. This is characterised by plant species such as *Bidens pilosa*, *Bidens formosa*, *Tagetes minuta* and various thatching grass species.
- Cultivated pastures: cultivated areas specifically for grazing purposes. These are characterised by stands of *Eragrostis curvula* and *Cynodon dactylon*.
- Fallow lands: previously cultivated though not presently under cultivation.

5.2 Public participation process followed during the Scoping exercise

The principles of the National Environmental Management Act (NEMA), 1998 (Act No. 197 of 1998) govern many aspects of environmental impact assessments, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth.

5.2.1 Objectives of public participation process

The public participation process is designed to provide sufficient, accessible and objective information to interested and affected parties (I&APs) or stakeholders to assist them to participate.

During the Scoping Phase they should:

- raise issues of concern and suggestions for enhanced benefits
- verify that their issues have been captured
During the Impact Assessment Phase they should:

- verify that their issues have been considered by the technical investigations
- comment on the findings of the EIA

The public participation process and approximate scheduling are summarised below.

5.2.2 Stakeholder composition

The full list of the more than 400 stakeholders that were given the opportunity to contribute is appended to this report as Appendix A, and includes the following sectors of society:

- National, provincial and local government
- Agriculture, including local landowners
- Industry and mining in the area
- Commerce
- Environmental bodies, both as authorities and NGOs
- Labour unions and the unemployed
- Community representatives, CBOs, development bodies in the immediate vicinity
- Local groupings in the vicinity, including church groups, women's groups, youth groups, schools, voluntary associations, and others

5.2.3 Announcing the opportunity to participate

The opportunity for stakeholders to participate in the EIA was announced as follows:

- Several hundred copies of a 4-page Background Information Document (BID) were distributed to stakeholders in the area in October 2001 as a first step to announce the opportunity for comment. The document outlined the proposed project and environmental assessment, and listed potential issues of concern. These documents were also left in various public places such as local libraries and council offices, including the Eastern Highveld Ridge Transitional Local Council (TLC). Copies were also left with stakeholders for further distribution to their colleagues and neighbours. The document was available in English, Afrikaans and Zulu.
- More than 400 stakeholders received a letter of invitation to comment, addressed to them personally and mailed on 26 October 2001.
- More than 40 telephone calls were made to stakeholders in the area to advise them of the opportunity to comment, and to arrange meetings.
- Advertisements were placed in two local newspapers, the Springs Advertiser (11 October 2001) and the Ridge Times (18 October 2001), as well as one national newspaper, the Sunday Times (14 October 2001).

5.2.4 Stakeholder briefings and community consultation

Numerous local landowners on farms along the route were visited personally or phoned, in particular those who may be directly affected by the road, as well as the chairpersons of some of the local Agricultural Unions active in the area, i.e. Mr Kobus Fourie, Mr Theo Wassenaar, and Mr Deon Urquhart.

The Eastern Highveld Ridge TLC was consulted to obtain issues of a local government nature, and in particular regarding proposed future infrastructure developments in the Trichardt and Bethal areas. A meeting was convened with the Eastern Highveld Ridge Business Commerce to obtain their views, comments and concerns regarding the project.
In addition, several meetings were arranged with representatives of the eMbalenhle community, as well as with local Councillors, representatives of the South African National Civic Organisation (SANCO) and the Community Development Forums, including the Unemployed Forum in Leandra.

The purpose of the meetings with landowners and community representatives was to:

- introduce members of the public participation team to stakeholders
- announce the proposed project and environmental impact assessment
- clarify the statutory need for public participation in environmental impact assessments in terms of South Africa’s most recent legislation (copies of documents such as the User Guide to the NEMA, You and your environmental rights, a summary of the Minimum Requirements of the Department of Water Affairs and Forestry, newsletters explaining the new National Water Act and other documents were left with stakeholders)
- explain the proposed project and the feasibility studies to date
- obtain their initial issues of concern and suggestions, and encourage further involvement

These meetings took place in the language of choice of the stakeholders.

### 5.2.5 Raising issues for investigation by EIA specialists

Stakeholders had the opportunity to raise issues either in writing, by telephone or e-mail, during meetings with individuals or small groups of stakeholders (see above), and during an open day on the 5\textsuperscript{th} of December 2001.

To date, more than 2050 issues (Toni check) have been received from stakeholders. These issues are summarised in an Appendix to this Final Scoping Report, the Issues / Response report (Appendix B). This report also provides an indication of which issues will be taken up in the EIA studies.

### 5.2.6 Review of the Draft Scoping Report and Issues and Response Report

All the issues raised to date are captured in this Final Scoping Report. Stakeholders had the opportunity to verify that their issues have been captured, raise further issues and comment on the aspects to be covered by the Specialist Studies that will be conducted during the impact assessment phase of the EIA. A period of almost three weeks was available for public comment on the Draft Scoping Report (21 November–17 December 2001).

#### Announcement of availability of reports

The availability of the Draft Scoping Report was announced by way of:

- All initial calls for comment
- All initial contact and meetings with stakeholders
- A letter addressed personally to all 400 stakeholders on the distribution list

#### Distribution of the Draft Scoping Report

The report was distributed for comment as follows:

- Left in the following public places: local libraries in the towns of Springs, Leandra, Kinross, Secunda, Bethal, Trichardt and Ermelo, as well as offices of the local councils
- Proactively mailed to all key stakeholders e.g. the authorities and local land owners
A Summary Draft Scoping Report was distributed as follows:

- Proactively mailed to all 400 stakeholders
- Public places as listed above

Public review

Public review of the Draft Scoping Report was by the following methods:

- Written comment, including email – a comment sheet asking stakeholders to respond to particular questions accompanied the report; further written submissions were encouraged
- Verbal comment during the open day on the 5th of December 2001 where the contents of the Draft Scoping Report were presented.

The contents of the Draft Scoping Report together with other relevant information were displayed at the open day. Copies of relevant documents were available for stakeholders to take away. Reference materials were available. Information on display included:

- The Background Information Document on the proposed project, with comment sheet
- The Draft Scoping Report
- Summary Draft Scoping Report
- The National Water Act
- The National Environmental Management Act
- User’s Guide to the National Environmental Management Act
- Your Environmental Rights – information booklet
- Principles of the National Environmental Management Act (simplified version)
- The EIA Regulations 1998 - DEAT
- Working towards a clean and healthy community – information booklet
- Waste Management and the Minimum Requirements by the DWAF – information booklet as well as full set of documents
- The Assessment Guide for Quality of Domestic Water Supplies – Volume 1
- The Minerals Development Bill
- Source book for students on air pollution topics: Parts 1 – 4
- Various informative posters produced by the Department of Water Affairs and Forestry and Department of Environmental Affairs and Tourism.

5.2.7 Final Scoping Report and Issues and Response Report

The Final Scoping Report was prepared at the end of the comment period in early January 2002. It was updated with additional issues raised by stakeholders and new information and submitted to the lead authority, the National Department of Environmental Affairs and Tourism (N-DEAT). The N-DEAT will decide whether the next phase of the EIA may proceed, i.e. the Impact Assessment Phase, during which the specialist studies will be undertaken. Stakeholders were informed once the Final Scoping Report was submitted to the N-DEAT. Copies of the Final Scoping Report were distributed to key stakeholders and to everyone who requested a copy, for their information.

5.2.8 Ongoing progress feedback

As the process progresses, all stakeholders on the distribution list will receive personalised letters. These will report on progress to date, thank those who commented and outline the next steps in the process.
6. DESCRIPTION OF RECEIVING ENVIRONMENT

6.1 PHYSICAL CHARACTERISTICS

6.1.1 Climate
Rainfall in the area varies between 650 and 750 mm per annum. The average is 719 mm. Most rain falls in the summer months between October and March with heavy falls commonly associated with thunderstorms. The average wind direction is N to NE while average monthly temperatures are between 2.7 °C and 25.9 °C.

6.1.2 Geology
The predominant geology within the project area is that of the coal bearing Ecca Group, with minor intrusions of Bushveld granophyte, felsite and pyroclasts. The area is also intruded by Karoo dolerite.

The geology of the proposed 22km route between Leandra and Leven Station is underlain by rocks of the Karoo Supergroup comprising mainly dolerite with mudrock and sandstone of the Ecca Group occasionally occurring in places.

6.1.3 Soils
The distribution of soil forms present varies considerably along the route in keeping with changing topography and position on the slope. The soils present can be broadly divided into areas with heavy textured soils (black turf soils derived from dolerite), sandy soils, medium textured soils and shallow and stony soils. Common soil forms present include Rensburg, Arcadias, Mayos, Milkwoods, Wesleigh, Mispah and Glenrosas.

6.1.4 Hydrology
The landscape is characterised by mature rivers and streams of low gradient. These meander over small, alluvial plains associated with oxbow lakes and other wetland features. The divide between the Vaal River catchment and the Olifants River catchment roughly follows the Leandra-Ermelo railway line.

Eight streams were identified within the study area. The Rolspruit, Grootspruit and Trichardtspruit flow in a southerly direction into the Watervalrivier and finally into the Vaal River. The Blesbokspruit flows in a southerly direction directly into the Vaal River. The upper Vaal River east of Standerton feeds the Grootdraai Dam, while the western section feeds the Vaal Dam. The Debeerspruit and Piekespruit flow in a northerly direction into the Olifants River. The Olifants system feeds the Loskop Dam.

6.1.5 Air quality
The Highveld region through which the proposed N17 will traverse is already fairly polluted by power generation and industry (gaseous and particulate emissions). New road construction per se is not a marked generator of dust since effective dust suppression systems exist. However, gaseous emissions as a result of increased traffic volumes may affect the air quality.

6.2 Fauna and Flora
A large proportion of the original grassland cover in the area has been lost through agricultural development. The natural veld is a short highveld turf grassland also called a Moist Clay Highveld grassland. Good areas of natural veld are dominated by Rooigrass Themeda triandra and similar grass species.
In certain parts of the new road section perennial or semi-perennial streams and small wetlands occur. The condition of the plant communities in these areas varies. Nevertheless these moist plant communities continue to play a valuable role in the local ecology, acting as a buffer between the dry slope communities and the watercourses and slowing the loss of water from the system.

There are a number of old lands and fallow lands within the footprint of the new road section. These previously disturbed areas are dominated by Cosmos Bidens formosa and a variety of other opportunistic weeds and grasses. In areas of good quality veld there is considerable evidence of small mammal activity. Red Data mammal species likely to occur in the vicinity of the route are: Rough-haired Golden Mole (vulnerable), South African Hedgehog (rare), African Striped Weasel (rare), Aardwolf (rare), Brown Hyaena (rare) and Serval (rare). At certain times of the year vulnerable or threatened species of birds, including the Blue Crane, Bald Ibis and Blue Korhaan may be found in the area. Grass Owls frequent the moist grassland and wetland areas within the region.

6.2.1 Sensitive areas

The following sensitive areas were identified along the proposed route:

- Springs to Leandra: 1 existing wetland crossing
- Leandra to Kinross: 2 wetland crossings, 2 river crossings (Rolspruit), 2 stream crossings (Grootspruit) and cultivated fields
- Kinross to Trichardt: 1 wetland crossing, 1 stream crossing (tributary of the Grootspruit)
- At Trichardt: 2 stream crossings (Trichardtspruit)
- Trichardt to Bethal: none
- At Bethal: 1 river crossing (Blesbokspruit); 1 wetland crossing
- Bethal to Ermelo: 2 river crossings (Brakspruit & Tweefonteinspruit)

6.3 Visual and Noise Aspects

6.3.1 Noise

The new sections of the proposed N17 will pass through land that is used primarily for agricultural purposes. These areas are typically relatively quiet during the day and experience low levels of night time noise. Rural areas generally have a background (ambient) noise level of 35dB at night and 45dB during the day, which is considerably lower than in the average urban area (65dB during the day). Rural farming areas, particularly along the 22km stretch of new road between Leandra and Kinross, are thus susceptible to noise intrusion, particularly at night. Existing sources of noise along the route would include traffic along the existing N17, agricultural activities (tractors) and road traffic using the secondary and farm roads in the area.

6.3.2 Aesthetics

The countryside through which the proposed N17 will pass is largely one of rural agriculture on a low undulating landscape with shallow valleys. Existing mining, power generation or industrial infrastructure is, however, visible along the proposed route and has a major aesthetic impact in the area.

6.4 Sites of Cultural Importance

The study area is not a high-density archaeological area. Members of the technical team observed no sites of archaeological interest during the two route walkovers.

With respect to palaeontological sites, the whole of the study area is underlain by Ecca rocks, which so far are only known to yield plant fossils. There are no known unique localities that would justify influencing the course of the proposed N17 road. I&APs should, however, be given the opportunity to
collect exposed fossils following fresh excavations, particularly if they are likely to be covered by
earthworks.

Monuments, memorials, historical buildings and war graves are centred mainly in and around the
towns.

6.5 **LAND USE**

Most of the land along the proposed route is proclaimed road servitude, from Springs to Leandra and
from Leven Station to Ermelo. The existing road servitude passes through numerous small towns,
where the land use can be classified as residential and light to medium industrial. The proposed new
road passes through farmland primarily used for agriculture and grazing.

6.6 **SOCIO ECONOMIC ISSUES**

6.6.1 **Security**

The majority of farmsteads along the route, particularly the stretch between Leandra and Leven
Station, are isolated, making them vulnerable to criminal activities, especially after dark. Given the
current spate of attacks on farmers in South Africa, the security of farmers is particularly important
when considering a road development.

6.6.2 **Sub-division of farms**

The value and / or viability of farms could be negatively impacted by the proposed road. The principal
issues of concern are that:

- The value of farmland will be lowered
- The economic viability of farms would be negatively impacted upon
- Existing agricultural infrastructure such as airstrips for crop sprayers, boreholes, points of access
to farms or portions of farms would be affected
- Current farming practices on certain portions of farms may no longer be viable if these areas are
  split by a road
- Any compensation offered should account for both loss of production / earnings and the associated
  increase in running costs
- The road will sterilise arable land
- Any bridging structures to be constructed over the proposed road to provide farmers with vehicle
  access should also be designed to allow for the safe passage of large herds of livestock

7. **ISSUES TO BE ADDRESSED IN THE IMPACT ASSESSMENT PHASE**

7.1 **WHAT THIS CHAPTER CONTAINS**

This chapter briefly describes those issues that have been captured thus far:

- through the public participation process
- in one-on-one consultation with affected landowners
- via specialists on the project team

The full list of issues raised accompanies this report in the form of an Issues and Response Report
(see Appendix B).
The next phase of the EIA will involve detailed assessments by specialists to evaluate the magnitude, duration, significance and probability of occurrence of the potential environmental impacts. During this next phase mitigation measures will be proposed to mitigate negative impacts and enhance positive impacts. Specialist findings will also be used in the development of an Environmental Management Plan (EMP) to guide construction and operation of the proposed toll road. The EMP will contain a monitoring programme against which performance can be monitored.

7.2 **ISSUES RAISED**

The purpose of this section is to describe the issues raised to date regarding the proposed N17 toll road.

### 7.2.1 Land value and agricultural viability

A number of stakeholders have expressed concern that the value and / or viability of their farms could be negatively impacted by the construction of the proposed toll road. The principal issues of concern are that:

- The value of farmland will be lowered, especially if the road traverses their land
- The economic viability of farms would be negatively impacted upon
- Existing agricultural infrastructure such as airstrips for crop sprayers, boreholes, pipelines, points of access to farms or portions of farms would be affected
- Current farming practices on certain portions of farms may no longer be viable if these areas are split by a road
- Any compensation offered should account for both loss of production / earnings and the associated increase in running costs
- Any bridging structures to be constructed over the proposed road to provide farmers with vehicle access should also be designed to allow for the safe passage of large herds of livestock and large 30 to 60 tonne trucks

### 7.2.2 Socio-economic and social issues

Interest was expressed by stakeholders in becoming involved in aspects of the project that would boost the local economy. Stakeholders asked if local expertise and resources could be used whenever possible. Key issues raised included:

- The proposed ring roads would impact negatively on the economic viability of businesses
- Quality of life for adjacent residents will be affected by the proposed road, particularly the ring road at Trichardt
- Local labour should be utilised if the project created new job opportunities
- If possible, local haulage companies should be used to transport materials
- Residents wished to know if any graves on farmland would be in the path of the road and whether there were plans to relocate affected graves
- Informal settlements next to the proposed N17 should be provided with a bridge or underway to enable safe crossing of the highway
- Informal settlements next to the N17 should not be relocated
- Transport costs would become prohibitive if local road users have to pay toll fees
- Informal settlements should be addressed in accordance with the responsibilities of the various spheres of government
- The EIA should ensure that legislation in terms of health is applied
7.2.3 Route alignment

Stakeholders have raised a number of issues concerning the refinement of the selected route and made suggestions regarding minor alignment changes. Key issues raised regarding the selected route are:

- The route should be aligned so as to minimise disruption to existing agricultural practices, where practical
- Where possible, the route should rather run on grazing land in preference to arable land, or on rocky wilderness land in preference to good quality grazing land
- The proposed ring road at Trichardt and all alternatives considered should be discussed with affected stakeholders

7.2.4 Impacts on the local ecology

Parts of the land crossed by the proposed toll road comprises natural veld. A number of issues have been raised regarding possible impacts on local fauna and flora. These include:

- The flora and fauna in areas to be impacted by the proposed road should be adequately assessed to ensure that no protected or threatened species are lost
- Appropriate fencing should be erected to prevent game and livestock from gaining access to the proposed road
- The presence of threatened bird species should be established and disruption of these species during the breeding season avoided
- Existing wetlands, especially the one in Bethal, should be conserved
- Impacts on fountains on various farms along the route should be addressed

7.2.5 Mineral rights

Stakeholders have expressed concerns about the issue of minerals and mineral rights. Key issues identified include:

- The mineral rights of most of Trichardt town and the farm Trichardtsfontein belong to Duiker Mining, which may impact on the proposed highway and/or access roads crossing Trichardtsfontein, as land is extremely expensive.
- The mineral rights for the entire route require investigation

7.2.6 Security, safety and access to the proposed toll road

Stakeholders have expressed mixed opinions regarding safety and security issues associated with the proposed highway (new road section) and access roads. There is consensus that safety of humans and livestock must be ensured by adequately aligning the highway, e.g. it should preferably not pass directly next to farmhouses and cattle kraals.

Key issues identified thus far are:

- The construction of access ramps and / or pedestrian bridges over the highway at regular intervals may make farms vulnerable to theft
- There should be adequate protection against veld fires. This would benefit adjacent farms
- Access roads should be able to carry heavy vehicles and be designed to facilitate the turning of heavy vehicles
- The authority responsible for the maintenance of access roads should be identified
- Access roads should be tarred
- Stakeholders want clarity on how the proposed toll road will interact with existing and planned railed infrastructure
• Any possible changes in road traffic patterns may affect safety at new or existing level crossings

7.2.7 Noise, air quality and aesthetics
Stakeholders are concerned about the potential noise from the highway (new road section) and its visual impact on the environment. Key issues raised are:

• The highway will be visible from farmhouses and be unsightly
• The noise (large vehicles) and air pollution (dust) that will be generated during construction of the road will be disturbing
• The acoustic impact of the proposed road should be investigated

7.2.8 Integration with planned regional, industrial and local developments.
A number of regional developments are planned. The project team has been made aware of these and asked to ensure that the proposed route does not conflict with them. The key issues captured are:

• Stakeholders are concerned that the exploitation of other mineral resources and/or reserves will be impacted
• Council wants to avoid a repeat of N4 situation where stakeholder consultation was inadequate. It is important that everyone be given the opportunity to comment.

The full list of issues raised is appended in the form of an Issues and Response report (Appendix B). The issues captured thus far will be used to define the scope of the specialist studies to be carried out in the next phase of the EIA.

8. ASPECTS TO BE COVERED BY SPECIALIST ASSESSMENTS
The purpose of this chapter is to provide an overview of the type of environmental issues that will be addressed in the specialist studies during the Impact Assessment phase of the EIA. The final specialist studies can only be determined at the end of the Scoping Phase, when stakeholders and the authorities have verified that all their issues have been considered, and once the final alignment of the proposed road has been determined.

During this phase, the specialists will evaluate all potential impacts on the environment in terms of the following in order to determine the significance of each impact:

• Probability (how likely is it that the impact will occur?)
• Magnitude (how severe will the impact be?)
• Duration (how long will the impact last?)
• Scale of the impact (what size of the area will be affected?)

Thereafter, mitigation measures will be proposed in order to reduce or eliminate negative impacts and enhance positive impacts. The impact of the proposed toll road on the environment will be considered for the pre-construction, construction and operational phases. The necessary mitigation measures will be consolidated in the form of an Environmental Management Plan (EMP).

Aspects to be addressed in specialist studies are briefly described below. Detailed terms of reference will be compiled for each specialist study at the end of the Scoping phase, once stakeholders and the authorities have had the opportunity to verify that all relevant issues for further investigation have been listed.
8.1 **Noise**

An acoustic specialist will identify sensitive sites in the Trichardt and Bethal areas, through which the toll road will pass. Some farmsteads along the new section of road between Leandra and Kinross will experience an increase in noise. The design engineers will be advised of these sites so that they can incorporate noise-reducing surfaces at these points.

8.2 **Social Assessment**

Compensation for loss of production or earnings as a result of, for example, sub-division of agricultural land, will not be dealt with in the specialist assessment or the EIA. Compensation for affected landowners will be addressed independently by the Land Acquisition Team appointed by the NRA, in direct consultation with landowners, should NRA decide to proceed with construction of the road. A socio-economic assessment will also be conducted independently by the NRA. The assessment will address aspects such as … (Jenine please elaborate).

8.3 **Wetlands**

Scoping has highlighted concerns regarding disruption of indigenous biota. Specialist ecological input will be sought to:

- Characterise the faunal and floral ecology of affected areas
- Assess the impact of the proposed toll road on local ecology and biota
- Recommend mitigation measures to avoid or reduce impacts

8.4 **Soils**

Soil surveys will be undertaken in the necessary sections along the new section of road, between Leandra and Leven Station, paying particular attention to identification and delineation of wetland soils and areas of permanent, seasonal and temporary inundation with water in wetland areas.

8.5 **Geohydrology**

Specialist opinion will be sought on whether the toll road will impact on the flow of underground water, particularly where fountains occur on the farms along the new section of road between Leandra and Leven Station. If specialist opinion highlights any impacts, further specialist studies will be undertaken.