3. DESCRIPTION OF THE PROJECT

The Groot Letaba River Water Resources Development Project is aimed at improving the management of the water resources in the catchment as a whole. It consists of non-infrastructure options to make more water available as well as the construction of infrastructure components. Although only the construction of the infrastructure components require authorisation from the DEAT and are subject to this EIA, they cannot be fully understood or evaluated in isolation from the non-infrastructure components.

The infrastructure components of the project include:

- Construction of Nwamitwa dam on the Groot Letaba River, downstream of the confluence of the Nwanedzi River. The dam wall will be 36 m high and have a gross storage capacity of 144 million m^3.
- The R529, D1292 and the P43/3 will have to be re-aligned to accommodate the dam.
- Raising of the Tzaneen dam will result in storage from 157.5 million m^3 to approximately 203 million m^3.
- Construction of water treatment works, and construction of bulk water pipelines and pump stations from the dam for water supply for domestic to communities in the area. Pump stations and reservoirs could each occupy an area of about half a football field.
- Construction activities will take approximately 5 years with several construction teams working concurrently in different areas at the proposed dam site and along the pipeline routes.
- Residential accommodation for construction staff will be established in the vicinity of the proposed dam or in established towns. Housing, internal roads, water and electricity supply, water treatment, solid waste disposal, emergency facilities and recreational amenities will be provided.
- The construction cost of the infrastructure components of the project is estimated in excess of R1100 million.
- Construction sites will include offices, internal roads, water and electricity supply, waste water treatment, solid waste disposal, emergency facilities, areas for the

handling of hazardous substances, workshops, washbays, areas for the safe storage or explosives and communication infrastructure.

Supply of water from new Nwamitwa dam targeted by 2012 with full yield around 2013. Construction will start in 2009.

3.1 NON-INFRASTRUCTURE OPTIONS TO MAKE MORE WATER AVAILABLE

The DWAF is pursuing the following non-infrastructure options, which do not form part of the project for environmental authorisation, to make more water available:

- Water conservation and demand management, as well as water recycling and re-use. The aim is to ensure that increased efficiency and effectiveness of water use will help address some of the short- and long-term water requirements of the area.

- Local groundwater resources

  During the feasibility studies in the 1990s and from recent investigations, it was found that although groundwater cannot be considered as the only source of water to satisfy increasing needs, it can be used to good effect for small-scale domestic water supplies and food plot irrigation. In this area with limited water resources, the conjunctive use of ground and surface water should be promoted. Groundwater resources should be developed incrementally to increase yields, but with ongoing monitoring to ensure good water quality. The Department will make recommendations to local authorities in this regard.

- Removal of invasive alien vegetation

  DWAF's Working for Water Programme is actively removing invasive alien vegetation in the Groot Letaba Valley as a means of improving the yield in the river system.

3.2 INFRASTRUCTURE COMPONENTS OF THE PROJECT

As agreed with DEAT, this project is being implemented in an iterative manner. The details of the design of the infrastructure components (e.g. height of dam wall and

pipeline routes) were not available for the Scoping Phase. These details will be finalised in time for the specialist studies and impact assessment phase.

3.2.1 Dam at Nwamitwa Site

The main component of the proposed GLeWaP project comprises a new major storage dam at a site in the Groot Letaba, referred to as the Nwamitwa site, downstream of the confluence of the Nwanedzi River (**Figure 3.1**). The size of the dam has not been finalised yet. The maximum possible dam size (i.e. 36 m high) was used for Scoping purposes. The dam comprises of a concrete structure in the river section accommodating a spillway and outlet works, with earth embankments on both flanks. With a storage capacity of 144 million m³ it would increase the system yield by about 47 million m^3 per year. (By comparison, the capacity of Tzaneen Dam is 157,5 million m³).

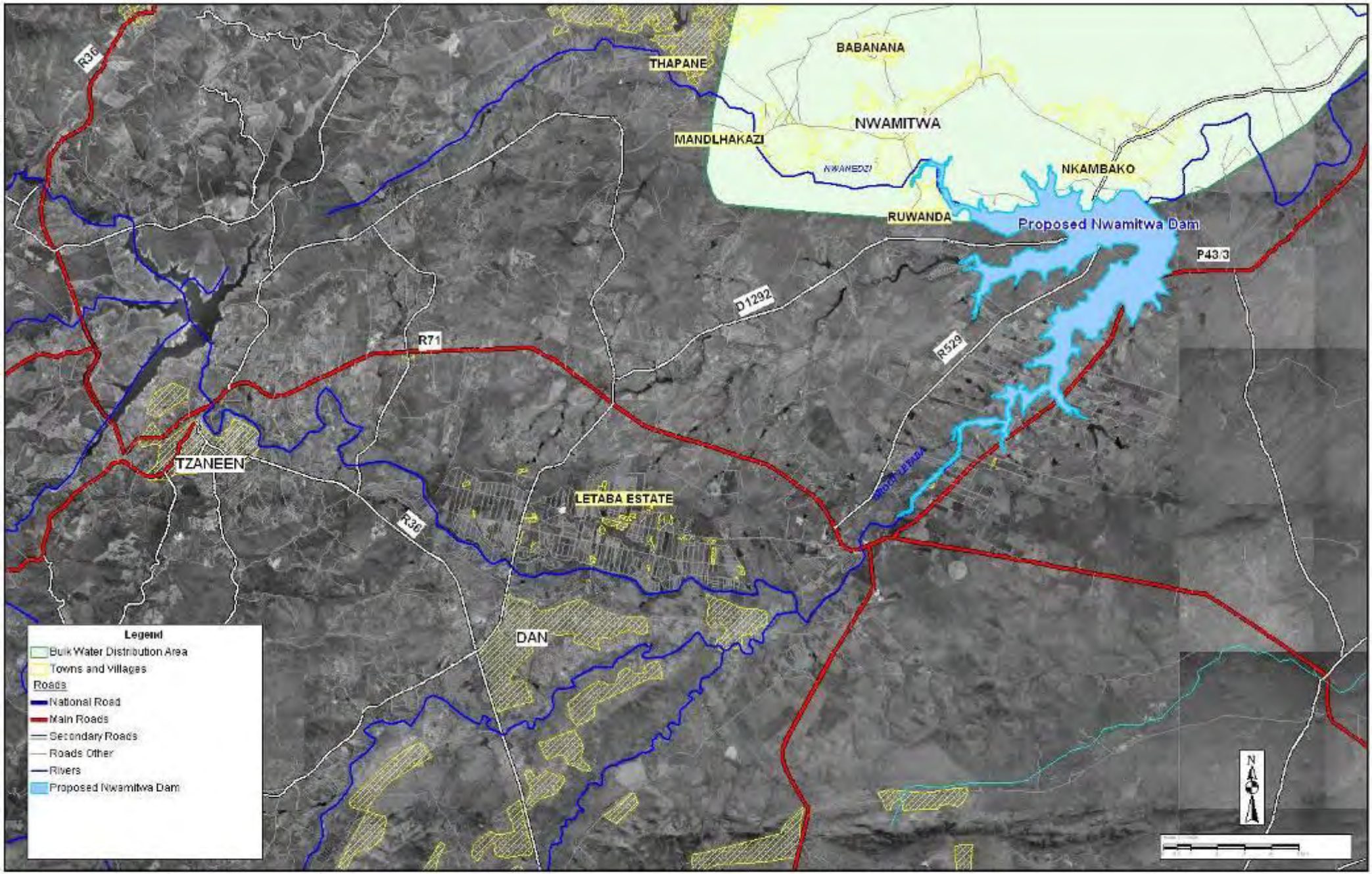
The final size of the dam will be determined in a series of technical and financial investigations, informed by the findings of the EIA. The relative socio-economic impacts of different dam sizes, including number of households to be relocated and effects on the citrus industry are receiving particular attention. The possible dam sizes that are currently being investigated are indicated in **Figure 3.2**. The dam will be designed to enable the requirements of the Reserve in the Groot Letaba River, particularly in the river reach downstream of the dam, to be provided.

Local road alignments

The R529, D1292 and the P43/3 will have to be re-aligned to accommodate the dam. Proposed re-alignments are indicated on (**Figure 3.3**). Local alignments will be determined in consultation with landowners and the provincial road authorities and will take cognisance of the impacts investigated during the EIA.

3.2.2 Raising of the Tzaneen Dam wall

It was also proposed to increase the capacity of Tzaneen Dam to approximately 203 million m³ by raising the dam wall. This could increase the firm yield of the dam by about 6% from 60 million m^3/a to 64 million m^3/a, but more importantly, the dam could then be operated so as to minimize the frequency and intensity of restrictions on water allocations for the irrigation of permanent fruit orchards.



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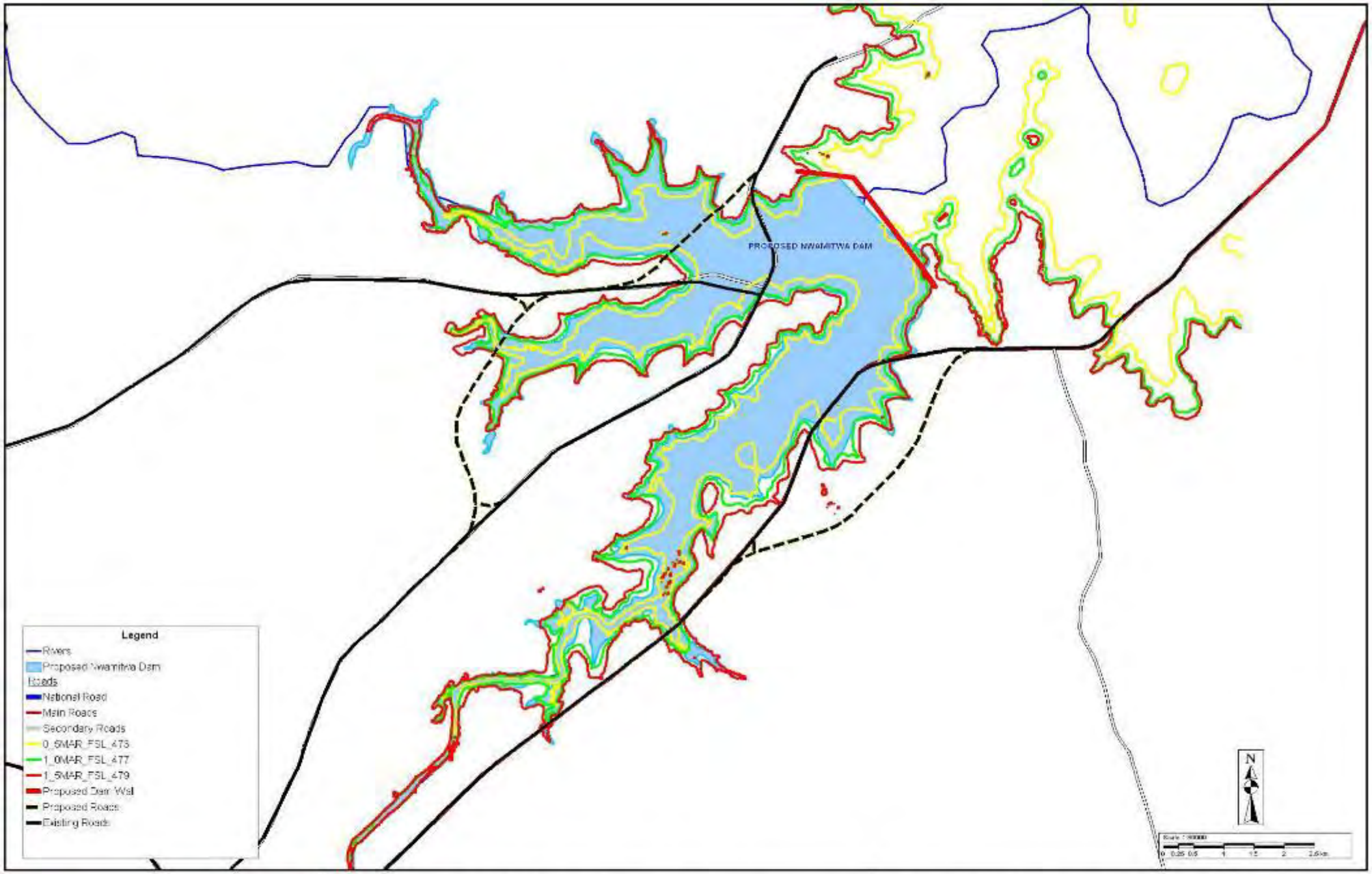
GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)

LOCALITY OF PROPOSED NWAMITWA DAM

FIGURE 3.1



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POSSIBLE DAM SIZES UNDER CONSTRUCTION

FIGURE 3.2

Date: September 2007
Map File: P:\...\Letaba.mxd
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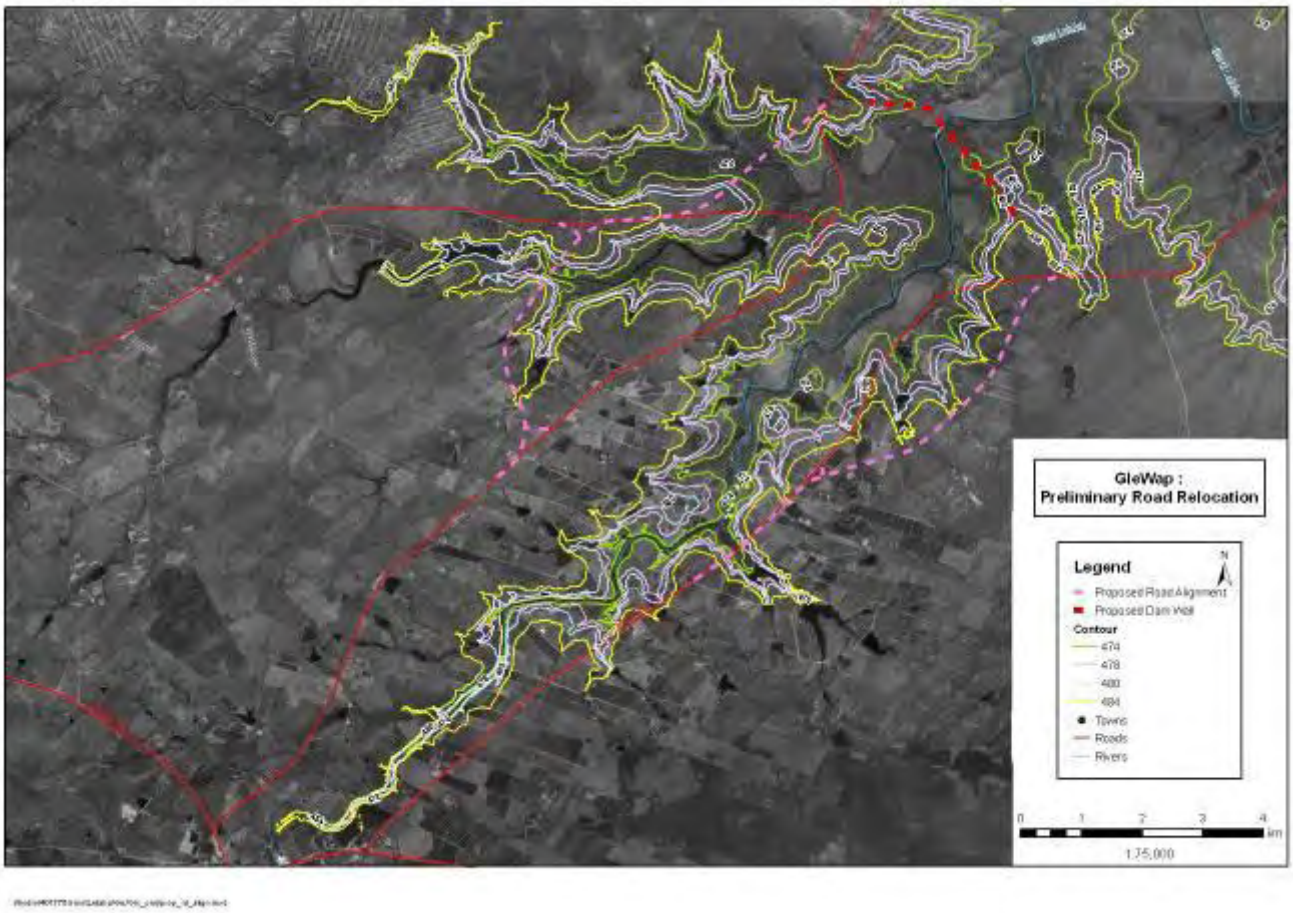
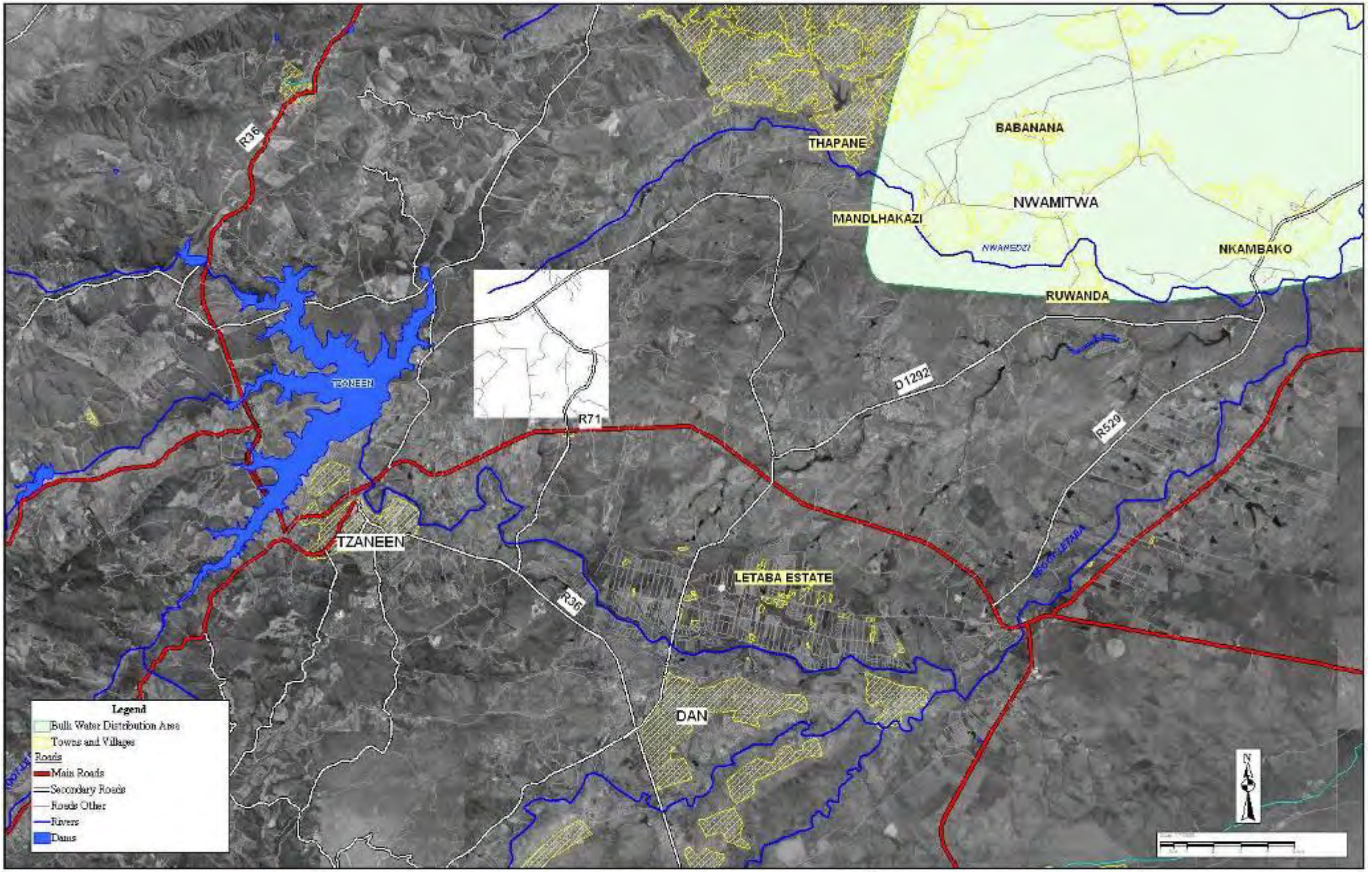


Figure 3.3: Proposed re-alignment of roads affected by the Nwamitwa Dam

The Tzaneen Dam, located on the Groot Letaba River close to the town of Tzaneen (**Figure 3.4**), mainly serves the irrigation demand along the Groot Letaba River valley, domestic and industrial water supply to Tzaneen, Nkowakowa, Letsitele, Consolidated Murchison Gold Mine, several other small industrial users, and a large number of rural villages.

3.2.3 Pipelines, Treatment works, Pump Stations and Reservoirs

Bulk water supply infrastructure including pipelines, a water treatment plant, various pump stations and reservoirs will be investigated. The area expected to be served is indicated in (**Figure 3.5**).



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GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)

LOCALITY OF THE TZANEEN DAM

FIGURE 3.4

Date : September 2007

Map Ref. : F:\...\Locality.map

The various reservoirs will be located so that local authorities will be able to obtain water for reticulation to individual users. Existing bulk water supply infrastructure (**Figure 3.5**) will be incorporated into future development wherever it is feasible. The upgrading of one or more of the three existing water treatment works in the study area will be investigated as an alternative to constructing a new one.

Pump stations, reservoirs and treatment works will be fenced off with security fencing. Final sizing is still to be completed but pump stations and reservoirs could each occupy an area of approximately 0.5 ha (about half a football field).

Electricity requirements for the project will be assessed separately by Eskom, and will be subject to a separate EIA process, if required.

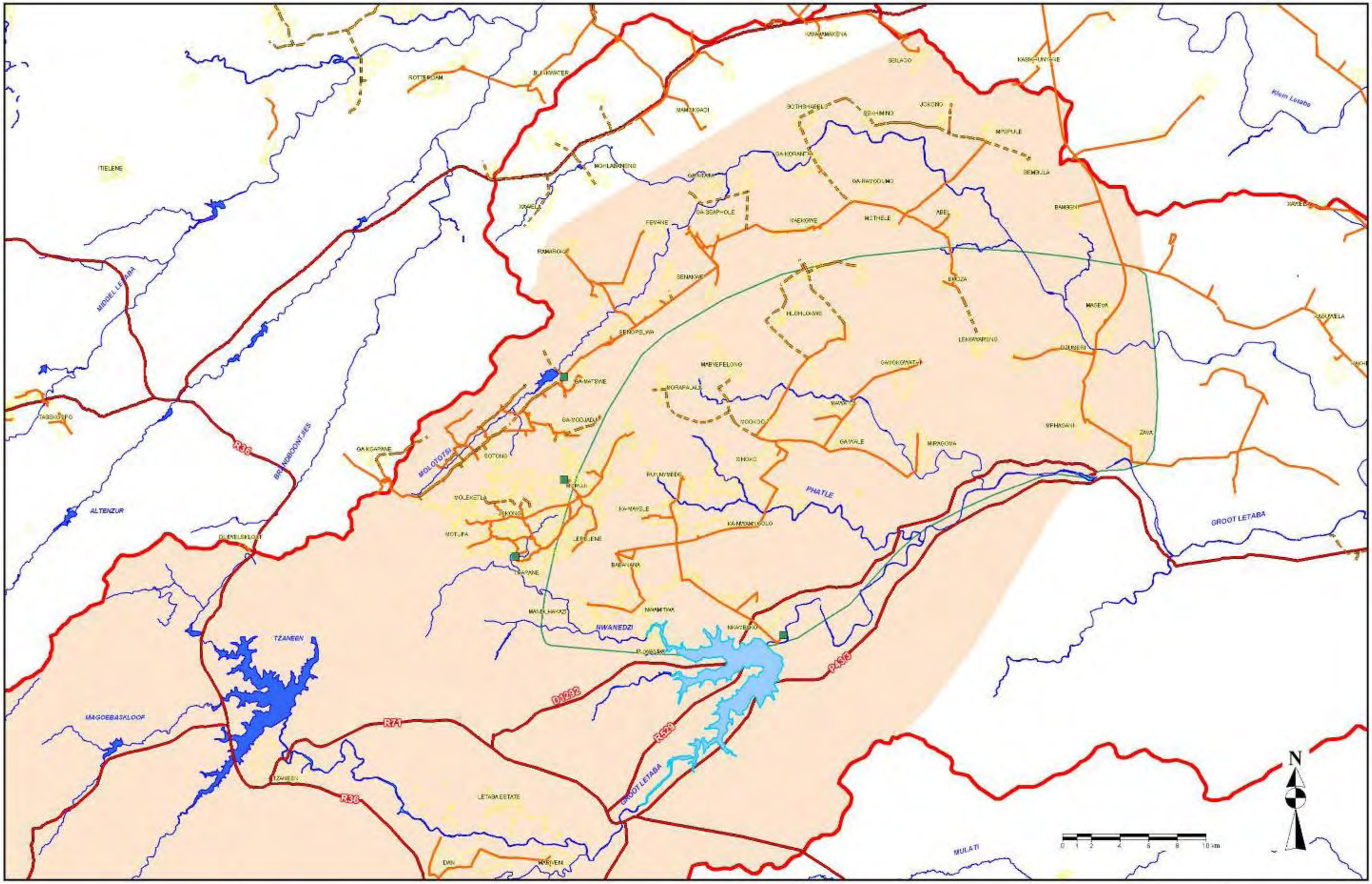
3.2.4 Construction

Construction activities will take approximately five (5) years, with several construction teams working concurrently in different areas at the proposed dam site and along the pipeline routes. Residential accommodation for construction staff will be established in the vicinity of the proposed dam or in established towns. Housing, internal roads, water and electricity supply, waste water treatment, solid waste disposal, emergency facilities and recreational amenities will be provided.
Construction sites will include offices, internal roads, water and electricity supply, waste water treatment, solid waste disposal, emergency facilities, areas for the handling of hazardous substances, workshops, washbays, areas for the safe storage of explosives, and communication infrastructure.

The sites will also include facilities for the bulk storage and dispensing of fuel for construction vehicles and working areas for stockpiling construction materials and concrete batching and bitumen plants.

3.2.5 Borrow pits

Location of the borrow areas for the sourcing of material for the dam and road construction works will be determined during the study and local landowners are invited to contribute information about the occurrence of material suitable for this purpose.



Legend

- Project Area
- Groot Letaba Catchment
- Bulk Water Distribution Area
- Towns
- Main Rivers
- Dams
- All Roads (project area roads)
- Proposed Nwamitwa Dam
- Existing Bulk Pipelines
- Proposed Bulk Pipelines
- Existing Treatment Works

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AREA TO BE SERVED BY BULK WATER SUPPLY INFRASTURCTURE

FIGURE 3.5

Date: September 2007
Map Ref.: P:/ /Letaba.map
System: WGS 84 Lat/Long

3.2.6 Scheduling

DWAF's target is to commence with the supply of water from the new dam by 2012, with full yield by around 2013, should environmental authorisation be obtained. For this to be achieved construction of some of the infrastructure must start in late 2009. The possibility of starting to abstract water from the dam during the filling period is also being considered.

3.3 INSTITUTIONAL ARRANGEMENTS

It is foreseen that the Department of Water Affairs and Forestry will be the owner of the water resource components of the project. This will be revisited as and when new institutions such as the proposed National Water Resource Infrastructure Agency and the Catchment Management Agency (CMA) have been established. After completion, a regional water supply entity would be considered for the management of the new bulk distribution infrastructure . Any potable water supply systems that will be served by the bulk distribution system will thus be the responsibility of the relevant municipalities.

A high-level Project Steering Committee has been established by the DWAF, and includes the Limpopo Provincial Government, the Mopani District Municipality, local municipalities, traditional authorities, sectors such as conservation, agriculture and industry to steer the post feasibility bridging studies.

3.4 COOPERATIVE GOVERNANCE

Investigating and implementing such a major infrastructure project to improve water management in the area is likely to give rise to many development opportunities, lead to change in socio-economic circumstances, cause changes in land use and have other beneficial effects.

Numerous other government authorities thus need to be consulted and participate to accommodate these proposed developments in their planning and future activities. This includes the local authorities who will be required to include these proposals in

their Integrated Development Plans (IDPs) in order to ensure access to potable water for the communities they serve.

Together with the Department of Water Affairs and Forestry, they will assist in ensuring that, in the longer term, all the projects and developments resulting from this initiative are sustainable, and that as many people as possible benefit from infrastructure development now being investigated.

3.5 CAPACITY FOR COMMUNITY WATER SUPPLY

Although this project will not be directly responsible for community water supply, it will make more water available for this purpose to local water service providers, such as municipalities. Provision will be made for off-takes from the bulk water distribution system or alternatively water will be delivered into reservoirs at agreed locations.

3.6 FUNDING OF THE GLEWAP

The construction cost of the infrastructure components of the project is estimated to be in excess of R1 500 million. Funding sources are likely to include a private sector component and a public sector component funded by Treasury.