ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED REALIGNMENT OF THE REGIONAL ROUTE 22 (R22) AROUND HLUHLUWE TOWN, KWAZULU-NATAL:

DRAFT SCOPING REPORT

AUGUST 2017

Carried out by:

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SYNOPSIS:

Draft Scoping Report for the proposed realignment of the R22 around Hluhluwe town, Big 5 Hlabisa Local Municipality, KwaZulu-Natal.

KEY WORDS:

R22 Road, Realignment, Hluhluwe, SANRAL

QUALITY VERIFICATION

This report has been prepared under the controls established by a quality management system that meets the requirements of ISO9001: 2008 which has been independently certified by DEKRA Certification under certificate number 90906882

Verification	Capacity	Name	Signature	Date
By Author	Environmental Assessment Practitioner	Ms I. Summers		13/09/2017
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LIST OF ABBREVIATIONS / ACRONYMS

CARA – Conservation of Agricultural Resources Act
CBO – Community Based Organisation
DEA – Department of Environmental Affairs
DAFF – Department of Agriculture, Forestry and Fisheries
DoT – Department of Transport
DSR – Draft Scoping Report
DWS – Department of Water and Sanitation
EAP – Environmental Assessment Practitioner
ECO – Environmental Control Officer
EIA – Environmental Impact Assessment
EIAR – Environmental Impact Assessment Report
EKZNW – Ezemvelo KZN Wildlife
EMF – Environmental Management Framework
EMPr – Environmental Management Programme
FSR – Final Scoping Report
GIS – Geographic Information System
HIA – Heritage Impact Assessment
IAP – Interested and Affected Party
IDP – Integrated Development Plan
NEMA – National Environmental Management Act
NEM:AQA - National Environmental Management: Air Quality Act
NEM:PAA – National Environmental Management: Protected Areas Act
NEM:WA – National Environmental Management: Waste Act
NGO – Non-Governmental Organisation
NWA – National Water Act
PDA – Planning and Development Act No.6 of 2008
SABS - South African Bureau of Standards
SDF – Spatial Development Framework
SEA – Strategic Environmental Assessment

EXECUTIVE SUMMARY

Terratest (Pty) Ltd has been appointed by the South African National Roads Agency Limited (SANRAL) to undertake an Environmental Impact Assessment (EIA) for the proposed construction of the realignment of the R22 around Hluhluwe town, Big 5 Hlabisa Local Municipality[1], KwaZulu-Natal. The initial project proposal consisted of the proposed R22 road realignment, and a proposed road-over-rail bridge. After a Pre-Application meeting was held with the DEA, it was determined that a Basic Assessment Application process would be undertaken for the road-over-rail bridge application, and that a Scoping and Environmental Impact Assessment Application would be undertaken for the R22 realignment. The Basic Assessment Application process for the road-over-rail bridge application has been completed and authorised (Ref) but not yet constructed. Reference has been made to the road-over rail bridge in this document, as the proposed realignment will tie into the road-over-rail bridge.

The proposed realignment will assist in re-diverting traffic not destined for Hluhluwe, around the town, adjoining the Mbazwana/Sodwana Bay Road. The diversion of traffic will serve to reduce existing traffic volumes within the town, thereby reducing the risk to both road users and pedestrians, as well as decreasing road maintenance expenditure. In addition, travel time delays will be minimised for road users as a more direct route bypassing the town, will be available.

The design requirements envisaged for the realignment are as follows:

- Construction of a single carriageway road, with a total width of 13 meters (m), within the national road reserve of 50m. This will serve to accommodate one lane of traffic per direction; and
- The single carriageway road will tie into the authorised, but not yet constructed, road-over-rail bridge and approach alignment.

A Route Determination Report and Traffic Impact Assessment were undertaken to determine the feasibility of the layout alternatives and to identify if any fatal flaws were present along the proposed route alignments. No fatal flaws were identified for any of the proposed layout alternatives.

Two site alternatives were initially considered in the Planning Phase of this development and included the southern and norther corridors. The southern corridor was proposed to pass around the southern part of Hluhluwe town, whilst the norther corridor passes to the north of the town. Of these, the northern corridor was considered the Preferred Site as it has a shorter realignment length, it does not bisect the town of Hluhluwe, it does not impact upon the proposed Local Area Plan for Hluhluwe and there is only one watercourse crossing required for this corridor. Within the Preferred Site, three layout alternatives were identified and have been assessed in this Scoping Report. These are referred to as the Preferred Layout, Alternative Layout 1 and Alternative Layout 2.

The Preferred Layout starts east of the N2/R22 interchange at approximately the km1.2 marker. The alignment heads in an easterly direction on the northern municipal boundary of the Big 5 Hlabisa Local

[1] The Big 5 Hlabisa Local Municipality was established through the amalgamation of The Big 5 False Bay Local Municipality and Hlabisa Local Municipality on 3 August 2016. As such, all planning documentation within this report makes reference to The Big 5 Hlabisa Local Municipality, but is based on the information procured from the relevant Big 5 False Bay planning documents such as the Spatial Development Framework.

Municipality. The alignment then passes to the north of the Hluhluwe Airfield at chainage 2540 and ties into the already approved, but yet to be constructed, road-over-rail bridge and approach alignment. Access will be accommodated by means of at-grade intersections and two short link roads. Alternative Layout 1 follows the same route as the Preferred Layout, but has a different intersection tie-in point. Alternative Layout 2 commences at a new intersection tie in point to the existing R22 near Hluhluwe when approaching from the west. The alignment continues northwards for approximately 700m before a right hand curve with a radius of 440m takes the routing eastwards. The alignment of the Alternative Layout 2 then ties in with and follows the Preferred Layout.

The impacts and the consequent significance associated with the planning, design, construction and operational phases of the proposed Preferred Route Layout Alignment development were assessed and no fatal flaws were encountered. Proposed mitigation measures have been provided for those impacts listed.

A Plan of Study has been provided in this report which recommends a way forwards in terms of undertaking the Environmental Impact Assessment Report in accordance with the requirements listed in GNR 326 of NEMA (Act 107 of 1998), as amended.

In accordance with the EIA Regulations, 2014, as amended, this Scoping Report has been drafted based on the requirements detailed in Appendix 2 of GNR 326. The Scoping Report requirements and location of such in this report have been tabulated in Table 0-1.

TABLE 0-1: Content of a Scoping Report (2014 EIA Regulations, as amended)

Section of the EIA Regulations, 2014 (As Amended)	Description of EIA Regulations Requirements for Scoping Reports	Location in the DSR
Appendix 2, Section 2 (a)	Details of –	
	(i) The EAP who prepared the report; and the expertise of the EAP; and	Section 1.2
	(ii) The expertise of the EAP, including a curriculum vitae.	Section 1.3 Appendix 4
Appendix 2, Section 2 (b)	The location of the activity, including – (i) The 21 digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Section 4
Appendix 2, Section 2 (c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Section 4
Appendix 2, Section 2 (d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered; (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 2.2 and Section 4
Appendix 2, Section 2 (e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 2
Appendix 2, Section 2 (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Section 4.4

Section of the EIA Regulations, 2014 (As Amended)	Description of EIA Regulations Requirements for Scoping Reports	Location in the DSR
Appendix 2, Section 2 (h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including-	
	(i) Details of all alternatives considered;	Section 5
	(ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 8
	(iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Section 8.4
	(iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 6
	(v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed, or mitigated.	Section 9
	(vi) The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 9
	(vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects;	Section 9
	(viii) The possible mitigation measures that could be applied and level of residual risk;	Section 9
	(ix) The outcome of the site selection matrix;	Section 4
	(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and;	N/A
	(xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 4
Appendix 2, Section 2 (i)	A plan of study for undertaking the environmental impact assessment process to be undertaken including- (i) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) A description of the aspects to be assessed as part of the environmental impact assessment process; (iii) Aspects to be assessed by specialists; (iv) A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists; (v) A description of the proposed method of assessing duration and significance; (vi) An indication of the stages at which the competent authority will be consulted; (vii) Particulars of the Public Participation Process that will be conducted during the Environmental Impact Assessment Process; (viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process; (ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	Section 10
Appendix 2, Section 2 (j)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and (iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 11

Section of the EIA Regulations, 2014 (As Amended)	Description of EIA Regulations Requirements for Scoping Reports	Location in the DSR
Appendix 2, Section 2 (k)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.	To be included in final Scoping Report
Appendix 2, Section 2 (l)	Where applicable, any specific information required by the competent authority.	Not required
Appendix 2, Section 2 (m)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	Not required

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1. INTRODUCTION

Terratest (Pty) Ltd was appointed by the South African National Roads Agency Limited (SANRAL) to undertake an Environmental Impact Assessment (EIA) for the proposed construction of the R22 realignment that will bypass the town of Hluhluwe, within the Big 5 Hlabisa Local Municipality, KwaZulu-Natal.

1.1 Project Overview

The proposed realignment of the R22 around Hluhluwe town will assist in diverting traffic that is not destined for Hluhluwe to the adjoining Mbazwana/Sodwana Bay Road. The diversion of traffic will reduce existing traffic volumes within the town, thereby reducing the risk to road users and pedestrians, reduce wear on town infrastructure and decrease road maintenance costs. In addition, travel time delays will be reduced for road users as a more direct route bypassing the town, will be available.

The requirements for the realignment are as follows:

- The establishment of a new SANRAL road reserve to accommodate the realignment;
- Construction of a single carriageway road, with a total width of 13 meters (m), within the national road reserve of 50m. This will serve to accommodate one lane of traffic per direction; and
- The single carriageway road will tie into the authorised, but not yet constructed, road-over-rail bridge and approach alignment.

Two site alternatives were considered and three layout alignment alternatives were considered. This Scoping Report addresses the environmental impacts associated with the site and layout alternatives (refer to Section 5).

1.2 Environmental Assessment Practitioner

Details of the Environmental Assessment Practitioner (EAP) appointed to undertake the EIA for the proposed realignment are noted in Table 1-1.

Table-1-1: Details of the EAP

COMPANY:	Terratest (Pty) Ltd		
PROJECT LEADER:	Mr Magnus van Rooyen	**EMAIL:**	vanrooyenm@terratest.co.za
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1.3 Team Members

Mr Magnus van Rooyen

Mr van Rooyen is an Executive Associate and the Regional Head of the Environmental Division of Terratest (Pty) Ltd in KwaZulu-Natal and the Eastern Cape. In addition to holding a Masters degree in Environmental Management, Mr van Rooyen also holds a BSc degree in Botany and Zoology, an Honours Degree in Botany and a Post Graduate Certificate in Education. He has 13 years' experience conducting EIAs in various sectors, including but not limited to, the mining sector, industrial and housing sectors. Further, he has worked on numerous linear developments, including the development of national roads and pipeline construction. Mr van Rooyen is also proficient in conducting Specialist Biodiversity Assessments, as well as Riparian Assessments associated with EIAs and Project Feasibility Studies. Mr van Rooyen prescribes to the International Association for Impact Assessment South Africa (IAIAsa) code of conduct. See Appendix 4 for a copy of Mr van Rooyen's CV.

Ms Imke Summers

Ms Summers graduated from the University of KwaZulu-Natal, Pietermaritzburg, with an MSc degree in Environmental Science. She has six (6) years' experience conducting EIAs in South Africa, with the main focus of work being located within KwaZulu-Natal. Applications conducted include work in the linear, agricultural and municipal sectors. Ms Summers prescribes to the IAIAsa code of conduct and is currently an IAIAsa KZN Committee Member. See Appendix 4 for a copy of Ms Summers' CV.

2. LEGAL FRAMEWORK

2.1. National Environmental Management Act (Act No. 107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998) (NEMA) is the overarching environmental legislation applicable in South Africa. It supports the Constitution by enabling the right to an environment that is not harmful to the health and well-being of South African citizens; the equitable distribution of natural resources, sustainable development, environmental protection and the formulation of environmental management frameworks (Government Gazette, 1998).

The Act aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for co-ordinating environmental functions exercised by Organs of State. Section 24 of NEMA provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.

2.2. National Environmental Management Act 107 of 1998, EIA Regulations (2014, as amended)

In terms of the Environmental Impact Assessment (EIA) Regulations, as amended (GNR 326, 07 April 2017), promulgated in terms of NEMA, certain Listed Activities are specified for which either a Basic

Assessment (GNR 327 and / or GNR 324) or an EIA Process (GNR 325) is required.

The Listed Activities under GNR 327 and GNR 324 (Basic Assessment) and GNR 325 (Full Scoping and EIA) which are applicable to the proposed development of the R22 Realignment are detailed in Table 2-1:

Table 2-1: Applicable Listed Activities

THE NUMBER OF THE RELEVANT NOTICE, ACTIVTY NUMBER AND ACTIVITY DESCRIPTION		DESCRIPTION OF PROJECT ACTIVITY THAT TRIGGERS LISTED ACTIVITY
GNR 327 (Listing Notice 1) **Activity 12:**	"The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs – (a) within a watercourse."	The proposed realignment crosses a wetland and watercourse. It is anticipated that the proposed construction of the culvert infrastructure will exceed 100 square metres in size.
GNR 327 (Listing Notice 1) **Activity 19:**	"The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse."	The construction of the culvert infrastructure will entail the infilling and depositing of more than $10m^3$ into the wetland/watercourse.
GNR 327 (Listing Notice 1) **Activity 24:**	"The development of - (i) a road with a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 metres."	The proposed realignment will be developed on land where there is, at present, no road reserve. The proposed road width will be approximately 13m in extent, with a reserve of 50m.
GNR 325 (Listing Notice 2) **Activity 27:**	"The development of – (i) A road with a reserve wider than 30 metres."	The Applicant, the South African National Roads Agency Limited, is proposing to develop a road with a reserve 50m in width.
GNR 324, (Listing Notice 3) **Activity 14:**	"The development of – (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs – (a)within a watercourse d. In KwaZulu-Natal, (x) Outside urban areas: (hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve".	The proposed road realignment will require the establishment of culvert infrastructure that will cover an extent of $10m^2$ or more and is situated within 10 kilometres of the Isimangaliso Wetland Park, a World Heritage Site. In addition, Bonamanzi Game Park is situated in close proximity to the development.

Conducting any of the Listed Activities noted in Table 2-1 prior to obtaining Environmental Authorisation from the Competent Authority, i.e. the National Department of Environmental Affairs (DEA), is a punishable offence, prosecutable by law.

2.2.1. Purpose of the EIA Process

The aim of the EIA Regulations is to assess the possible environmental impacts that may arise from a proposed development in order to make an informed decision on the future of the proposed development. Scoping is carried out at as Phase 1 of the Scoping and EIA Process and aims to identify all potential issues, impacts, project alternatives, the assessment methodology and the key issues to be addressed in the Assessment Phase. Where available, mitigation measures that can be implemented in order to avoid, manage or mitigate the impacts identified are also included. Thereafter, the project proceeds onto Phase 2, the EIA Phase and the key issues identified are assessed in further detail. Specialist Studies can be conducted at either Phase to assist in the investigation of specific impacts identified.

Public Participation forms a major part of the Scoping and EIA Process, and aims to assist in identifying potential impacts and areas of concern though consultation with IAPs.

The EIA Regulations (2014), GNR 326 (as amended), Appendix 2 notes that the Scoping Process is a consultative process, which when implemented must achieve the following objectives:

a) Identify the relevant policies and legislation relevant to the activity;
b) Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
d) Identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process, inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic and cultural aspects of the environment;
e) Identify the key issues to be addressed in the Assessment Phase;
f) Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required, as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
g) Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Based on the findings of the Scoping and EIA investigation, the following outcomes are possible:

- The Competent Authority, in this case the DEA, may determine that the development is too environmentally detrimental and will refuse the application; or
- The DEA may determine that the issues identified in the EIA Process can be mitigated, and as a result, will issue the Applicant with Environmental Authorisation, which may, or may not, specify certain conditions of establishment.

The requirements of a Scoping Report, and the content thereof, as noted in GNR 326, Appendix 2 of the EIA Regulations (as amended), are listed in the Executive Summary, Table 0-1. The relevant sections of this report in compliance with the Scoping Report requirements are noted.

2.3. National Environmental Management: Waste Act (Act No. 59 of 2008)

The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEM: WA) was implemented on 1 July 2009. One of the main objectives of the NEM: WA is to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. Another objective is to secure ecologically sustainable development and to provide for:

- National norms and standards for regulating the management of waste by all spheres of government;
- Specific waste management measures;
- The licensing and control of waste management activities;
- The remediation of contaminated land; to provide for the national waste information system; and
- Compliance and enforcement.

In terms of the NEM: WA, certain waste management activities must be licensed and in terms of Section 44 of the Act, the licensing procedure must be integrated with an EIA Process in accordance with the EIA Regulations promulgated in terms of the NEMA.

Government Notice 921, which was published in Government Gazette No. 37083, on 29 November 2013 and implemented with immediate effect, lists the waste management activities that require licensing. A distinction is made between Category A waste management activities, which require a Basic Assessment, and Category B activities, which require a full EIA. Based on the proposed bypass development, no waste management activities have been identified that would trigger the need for a Waste Management Licence.

2.4. National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)

The National Environmental Management Biodiversity Act (Act No. 10 of 2004) (NEM: BA) makes provisions for achieving the objectives of the United Nation's Convention on Biological Diversity, to which South Africa is a signatory.

The Bill promotes management, conservation and sustainable use of indigenous biological resources and provides for:

- The management and conservation of biological diversity within South Africa;
- The use of indigenous biological resources in a sustainable manner; and
- The fair and equitable sharing of benefits arising from the commercialisation through bio-prospecting of traditional uses and knowledge of generic resources.

The Act gives effect to international agreements relating to biodiversity which are binding on the Republic of South African and provides for co-operative governance in biodiversity management and conservation, and provides for a National Biodiversity Institute to assist in achieving the above objectives.

The Act gives wide powers to a National Biodiversity Institute to *inter alia* protect animals and micro-organisms in appropriate enclosures, the collection of information, undertaking and promotion of research on indigenous biodiversity and the sustainable use of indigenous biological resources, the prevention, control or eradication of listed invasive species, biodiversity planning and other functions.

2.5. National Water Act (Act No 36 of 1998)

The National Water Act (Act No. 36 of 1998) (NWA) makes provisions for the protection of surface water and groundwater resources and their sustainable management for the prevention and remediation of the effects of pollution, and for the control of emergency occurrences.

The primary purpose of this Act is to ensure that South Africa's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account, amongst other factors:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Facilitating social and economic development;
- Providing for growing demands for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety; and
- Managing floods and droughts.

2.5.1. Water Use Licensing

Water use requires a licence, or other form of regulatory authorisation, under the NWA. Section 21 of the NWA lists the water uses for which a Water Use Licence (WUL) is required. For the purposes of the Act, a 'water use' includes, amongst other things:

- Taking water from a water resource;
- Storing water;
- Stream flow reduction activities;
- Impeding or diverting the flow of water in a watercourse;
- Disposing of waste in a manner that may detrimentally impact on a water resource;
- Altering the bed, banks, course or characteristics of watercourse;
- Controlled activities, such as irrigating with wastewater, power generation with water, recharging an aquifer; and
- Using water for recreational purposes.

Given the linear nature of the proposed development, a watercourse and wetland will be crossed. As per the NWA, Section 21 (c) and (i) notes that any activity that impedes or diverts the flow of water in a watercourse; or alters the bed, banks, course of characteristic of a watercourse will require a Water Use Licence prior to the activity commencing.

Based on the above requirements, an application will be made to the Department of Water and Sanitation (DWS) in terms of a Water Use Licence. A copy of the Water Use Licence Application will be included in the submission of the final Environmental Impact Assessment Report.

2.6. Conservation of Agricultural Resources Act (Act No. 43 of 1983)

The Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA) is an Act of the National Department of Agriculture and makes provision for the conservation of the natural agricultural resources of South Africa through:

- Maintaining the production potential of land;
- Combating and prevention of erosion;
- Preventing the weakening or destruction of water sources;
- Protecting vegetation; and
- Combating weeds and invader plants.

Amended Regulations 15 and 16 of CARA were promulgated on 30 March 2001. These changes were necessitated by the accelerating deterioration of South Africa's natural resources due to invasion by alien invasive plants, as well as a heightening public awareness with regards to environmental matters. With the amendments, the Act now boasts a far more comprehensive list of species that are declared weeds and invader plants and has also divided the species into three categories.

Category 1 species (e.g. Triffid Weed, *Lantana*) are generally the worst offenders. They are declared weeds and many not occur on any land or on any inland water surface throughout South Africa. No person is allowed to sell, advertise, exhibit, transmit, send, deliver for sale, exchange or dispose of any weed. It is also illegal to cause or permit the dispersal of any weed from one place to another.

Category 2 species (such as pine and *eucalyptus*) are also problematic but are commonly grown for commercial purposes or any viable and beneficial function, such as woodlots, fire belts, wind breaks, building material, animal fodder and soil stabilization. These invader plants can only be grown in areas demarcated as sites where such plants may be established, retained and strictly controlled.

The land user also has to ensure that steps are taken to curb the spread of propagating material of the invader plants to land and inland water surfaces outside the demarcated areas. Category 2 species are regarded as weeds outside of these demarcated areas, and landowners are required to take steps to control the species where they occur on their properties.

Category 3 plants (such as Jacarandas) are generally ornamental plants, which may be retained, but no new planting or trade of propagating of these plants is permitted.

If weeds or invader plants occur contrary to the provisions of these regulations, the land user must control them by means of any of the control methods that are appropriate for the species concerned. Any action taken to control weeds of invader plants must be executed with caution and in a manner that will have minimal environmental impact. If a landowner fails to comply with these regulations, a criminal case may then be brought against the landowner and the National Department may issue a directive setting a date by when the property must be cleared.

2.7. National Heritage Resources Act (Act No. 25 of 1999)

The National Heritage Resources Act (Act No. 25 of 1999) governs the management of heritage resources which are of cultural significance. The South African Heritage Resources Agency (SAHRA) is the national body responsible for the protection of South Africa's cultural heritage resources. Amafa aKwaZulu-Natali (Amafa) is the KwaZulu-Natal body responsible for the protection of the provinces cultural heritage resources. In this regard, an application, including a Heritage Impact Assessment, will be lodged with Amafa and uploaded via SAHRIS (South African Heritage Resources Information System) once complete.

2.8. Other policies, plans and guideline documents

Other policies, municipal plans and guideline documents that are relevant to the proposed development are as follows:

- Guidelines published in terms of the NEMA EIA Regulations;
- National Road Traffic Act (Act No. 93 of 1996);
- The South African National Road Agency Limited & National Roads Act (Act No. 7 of 1998);
- Umkhanyakude District Municipality's Integrated Development Plan;
- Big 5 False Bay Local Municipality's Spatial Development Framework; and
- Big 5 False Bay Local Municipality's Integrated Development Plan.

3. APPROACH TO THE SCOPING PHASE

The objective of the Scoping Phase is to identify what information is required to adequately assess the environmental impacts of the project. This phase is designed to focus on data collection and investigations on issues of concern and importance.

The Scoping Phase therefore includes not only a thorough review of environmental data relevant to the project site and receiving environment, but also a preliminary identification of environmental issues and impacts, including direct, indirect and cumulative impacts. All aspects of the biotic, physical, socio-economic, legislative and planning environments are considered in terms of their applicability to the proposed development, as well as to determine any constraints that these features may impose on the development.

3.1. Legislated Process

The methodology for the Scoping and EIA Process is based on the procedures detailed in Appendices 2, 3 and 4 of the EIA Regulations (2014) as amended, promulgated in terms of NEMA, GNR 326. The EIA Regulations were promulgated on 04 December 2014.

Timeframes are fixed according to the relevant legislation, to allow for timeous consideration and issuing of decisions in terms of the respective legislation. Figure 3-1 provides a schematic of the EIA Process in its entirety, including timeframes and the submission process, as well as the relationship between other government departments and the EIA Process.

Based on the legislated timeframes, the Scoping and EIA Process is to take 300 days to complete, from the time that the Environmental Authorisation Application form is submitted to and acknowledged by the DEA. Should the EAP, for whatever reason, not be able to adhere to these timeframes, the Application will lapse and the Scoping and EIA Process will have to begin anew.

The Environmental Authorisation Application will be lodged with the DEA upon circulation of the Draft Scoping Report (this report) to Key Stakeholders and registered IAPs. Thereafter the Final Scoping Report will be drafted and submitted to the DEA for acceptance and approval. Upon approval of the Final Scoping Report, the EIA Phase of this Application will be undertaken, as described in the Plan of Study for EIA (see Section 10).

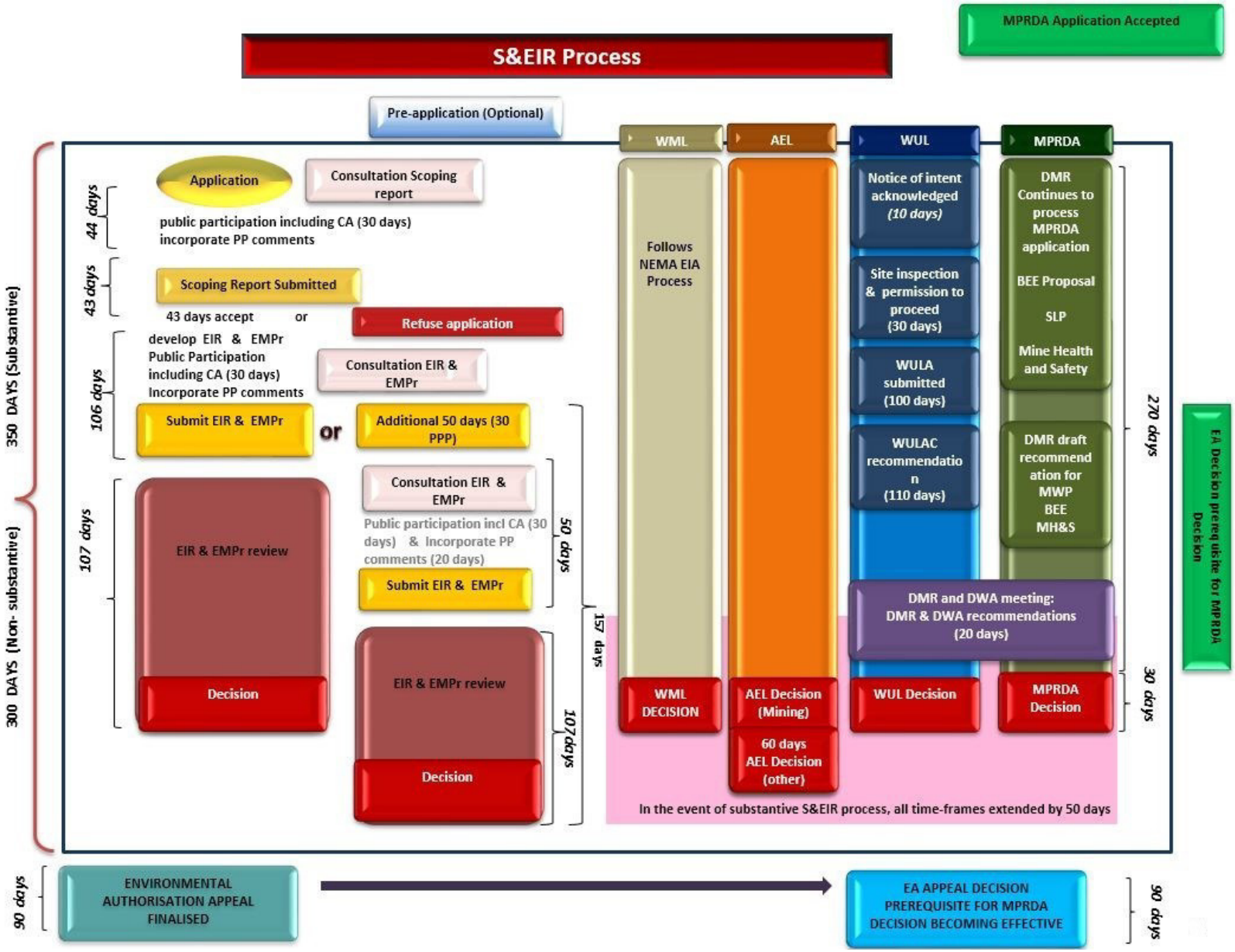


Figure 3-1: The Scoping and EIA Process.

3.2. Project initiation

The project was initiated through a Pre-Application meeting with the DEA, to confirm the way forward. Further to this, site visits were undertaken to gather detailed baseline environmental information and identify the sensitivity of the proposed route alternatives. This was supplemented by information gathered through related desktop and field studies, including:

- Topography - Visual aspects, steepness of slope, stability;
- Surface / groundwater - Presence of sensitive hydrological features e.g. wetlands and aquatic ecology;
- Biodiversity - Presence of sensitive vegetation communities and fauna, specifically Red Data species;
- Air quality and noise - Effect of increased levels;
- Cultural heritage – Identification of areas of significant heritage value;
- Socio-economic impacts – Effect on local inhabitants, including business and surrounding land use; and
- Sense of place impacts – Effect on neighbouring landowners / surrounding land uses.

3.3. Application for Environmental Authorisation

The official Environmental Authorisation Application Form has been completed and will be submitted to the DEA upon circulation of the Draft Scoping Report being circulated for public review and comment in order to ensure that the legislated EIA timeframes are adhered to. As such, a DEA EIA reference number has not been provided in this report, but will be included with the Final Scoping Report. The Terratest (Pty) Ltd reference number, however, is 41537 and should be used in all correspondence pertaining to this Application.

3.4. Public Participation Process (PPP)

Chapter 6 of the EIA Regulations (2014), as amended, details the requirements of the PPP and notes that any persons who may be affected by and/or have an interest in a proposed project, are entitled to submit comments on the development proposal. Procedures for informing Stakeholders about a project and engaging their participation requires an inclusive and transparent process of engagement. The following subsections contain the legislated requirements and the associated methodology adopted for this project.

3.4.1. Compilation of Stakeholder and IAP Database

The compilation of a Stakeholder and IAP Database is a legislated requirement of the EIA Process and entails the development and maintenance of an electronic database for the duration of the project. The database is used to register IAPs interested in the proposed development and is managed by the EAP.

The database is developed by reviewing applicable national, provincial and local authorities in order to determine potential Stakeholders. In addition, non-governmental organisations (NGO's) are identified and included in the database for notification of the project. Landowners, as well as adjacent landowners are also notified, as well as any local associations such as farmers associations, conservation groups etc.

Notification can occur via the placement of on-site notices, newspaper advertisements and contact with relevant stakeholders and IAP's.

For this project, communication has been initiated with all affected parties which include private property owners, service providers, the Big 5 Hlabisa Local Municipality and the KwaZulu-Natal Department of Transport. The aforementioned parties have all been made aware of the project and further liaison will continue throughout the design, Scoping and Environmental Impact Assessment phases of the project. A copy of the IAP Register can be found in Appendix 2 of this report.

3.4.2. Notification

SITE NOTICES

The EIA Regulations (2014) require that a site notice be fixed at a place conspicuous to the public, at the boundary, on the fence or along the corridor of the site where the activity to which the application relates is to be undertaken, and on any alternative sites. The purpose of the site notices is to notify surrounding residents and the general public of the project and to provide details for registration as an IAP.

ADVERTISEMENTS

The EIA Regulations (2014), as amended, require that an advertisement be placed in either a local newspaper or any official Government Gazette. Should the project have a potential impact that extends beyond the boundaries of the Metropolitan or Local Municipality, the project should be advertised in at least one provincial or national newspaper.

3.4.3. Comments and Responses

Following notification, comments are summarised and responded to in a Comments and Responses Table report.

3.4.4. Public Review

All project documentation that will be submitted to the DEA for review will be subject to Stakeholder review. Details of the public review process are provided in Section 8.

3.5. Alternatives

A requirement of the EIA Process is to identify and evaluate feasible alternatives to the project. This could include alternative locations, technologies, activities and sources. Alternative site localities and layouts have been discussed in Section 5 of this document.

3.6. Identification of potential issues and impacts

Impact identification is conducted through a systematic process of identifying the baseline environmental conditions, an understanding of the activity being proposed and the potential future impacts as a result of that activity's interaction with the baseline environmental conditions.

Two mechanisms used to identify potential issues and impacts include:

- Stakeholder and IAP issue trail; and
- Specialist and engineering input.

The issues and impacts identified during the Scoping Phase are a guide to shortlisting the preferred alternative and the level of studies that need to be undertaken in the EIA Phase. Although Specialist Studies have been undertaken in the Scoping Phase, further assessment may be required in the EIA Phase should any aspect, or impact of an aspect be flagged for further assessment.

3.7. Plan of Study for EIA

The Plan of Study (PoS) for the EIA spells out the process for the detailed impact assessment. The PoS is the final product of the Scoping Phase as it ensures that all issues raised during the Stakeholder engagement process and technical scoping are captured in the scope of work for the EIA. The issues are then addressed, if found to be significant, in the resultant management plans.

3.8. Submission of Scoping Report for Stakeholder and Public Review

As per the EIA Regulations (2014), as amended, the Draft Scoping Report will be circulated to all registered Stakeholders and IAPs for a period of 30 days. Chapter 2: Timeframes, Section 3 (4) of the EIA Regulations (2014) notes, "*When a State Department is requested to comment in terms of these Regulations, such State Department must submit its comment in writing within 30 days from the date on which it was requested to submit comments and if the State Department fails to submit comments within such 30 days, it will be regarded that such State Department has no comments*." Therefore, should no comment be received from Stakeholders or IAPs within the 30 day timeframe of a report being circulated, they will not be considered in the EIA Process. This is imperative to note, as any delay in terms of legislated commenting timeframes may ultimately, result in the Application for Environmental Authorisation lapsing.

A Draft Scoping Report will be made available for public comment at the Big 5 Hlabisa Local Municipality and the Hluhluwe Public Library. In addition, the Draft Scoping Report will be made available on the Terratest (Pty) Ltd website (www.terratest.co.za) for review, comment and download. Additional electronic copies of the report will be made available to individual stakeholders and IAPs on request.

4. PROJECT DESCRIPTION

4.1. Background

The proposed development is a part of / features in the upgrade and expansion of the road and rail network of the greater Lubombo Spatial Development Initiative (LSDI). The development comprises the realignment of the R22 around Hluhluwe town and the construction of the road-over-rail bridge and approach alignment at the intersection of the R22 with the Sodwana/ Mbazwana R22 Road[2].

At the commencement of the EIA Process, a Pre-Application meeting was held with the DEA to discuss both applications i.e. realignment of the R22 and the road-over-rail Application. The DEA advised that two

[2] The R22 Sodwana/Mbazwana road is authorised but not yet constructed.

separate EIA Processes be undertaken to ensure a stream-lined and efficient environmental process. In this regard, it was determined that a Basic Assessment process would be undertaken for the road-over-rail bridge and approach alignment application, while a Scoping and Environmental Impact Assessment would be undertaken for the R22 realignment. The Basic Assessment (DEA EIA Reference number 14/12/16/3/3/1/1502) has since been conducted and Environmental Authorisation obtained on 18/04/2016, but the associated infrastructure has not yet been constructed.

This report deals with the alignment of the R22 bypassing Hluhluwe town. The proposed realignment of the R22 will tie into the road-over rail bridge and will eliminate the existing at-grade[3] railway crossing on the National Route R22 at km5.5. The road-over rail bridge crossing forms an integral component of this EIA, as the bypass route will tie directly into the road-over-rail bridge structure. The entire bypass system forms part of the long-term expansion vision of the regional rail network that will service the greater northern KwaZulu-Natal and surrounds.[4]

4.2. Site Location

The road realignment will bypass the town of Hluhluwe, located in the Province of KwaZulu-Natal, Umkhanyakude District Municipality. Hluhluwe town is located ~85km to the north of Richards Bay and falls within the jurisdiction of the Big 5 Hlabisa Local Municipality.

The proposed project is located on the National Road R22, Section 1 on the outskirts of Hluhluwe town. The predominant land use to the north of the town is agriculture and tourism. In the west, the agricultural activities are centred around pineapple farming. To the north and east of the municipal boundary, the farming activities consist of mainly game farms, which support the tourism industry. iSimangaliso Wetland Park is located approximately 7.15km to the east of the realignment, and Bonamanzi Game Park is situated approximately 500m to the south-east of the proposed realignment.

The proposed realignment will take traffic in a west-east direction, 100m to the north of the town. The site is accessed ~2km off the N2, along the existing R22. See Figure 4-1 for the locality of the site.

[3] Grade refers to the level of the land. If a stretch of road is level with the surrounding land, then it is at grade.
[4] Mothilal, A., & Bradley, C., 2015: *Elimination of the at-grade Railway Crossing on R22 Section 1 at km5.5., Route Determination Report*, 2015: Hatch Goba (Pty) Ltd, Umhlanga.

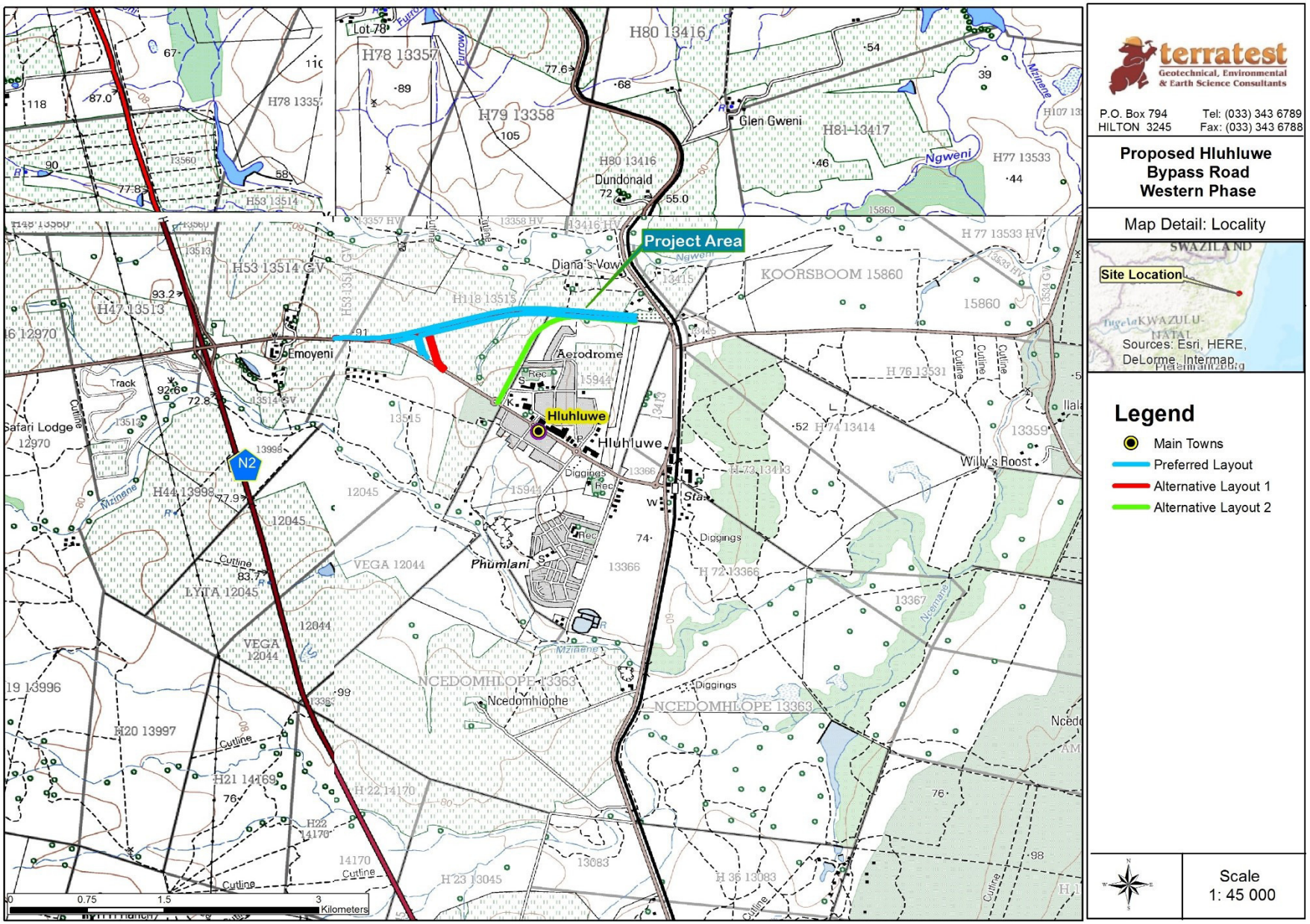


Figure 4-1: Locality of the proposed realignment in the context of Hluhluwe Town and the R22.

4.3. Planning Context

A critical action within the National Development Plan for 2030 is as follows: “Public infrastructure investment at 10 percent of gross domestic product (GDP), financed through tariffs, public-private partnerships, taxes and loans and focused on transport, energy and water.” The proposed realignment seeks to pursue this vision by providing safe, more easily accessible and direct transport infrastructure. In addition, the realignment of the R22 will assist in realising a number of other regional planning initiatives, including the following:

- The first of these is the existing Lubobmbo Spatial Development Initiative (LSDI) route which was upgraded to asphalt in the 1990’s and is prioritised as an SDI of national significance. It has greatly improved access to large parts of the Zululand Region to the north of Hluhluwe. The route extends from Hluhluwe, on the R22, through to Mbazwana to join the only other asphalt road in the region at Pelindaba, before heading north east through KwaNgwanase to the Mozambique border at Farazel.
- The second of these is the proposed Transnet Swaziland Rail Project (SRL) which aims to divert traffic from road to rail, optimising capacity on the Coal Line, through alternative accommodation of General Freight (GF) traffic, creating a logistics corridor linking the hinterland to the eastern seaboard ports. This entails the doubling and electrification of the railway line and provides a viable connection for rail freight from western Swaziland to markets in South Africa, Mozambique and overseas. The upgrading and proposed expansion of the railway line will have a direct impact on the safety of road users at the present at-grade railway crossing, hence the need for the establishment of the proposed road-over-rail bridge. The proposed road-over-rail bridge has therefore taken into consideration the future expansion of the railway line.
- As part of the last Local Economic Development (LED) planning undertaken in 2009, a Strengths, Weakness, Opportunities and Threats (SWOT) analysis was undertaken for the Big 5 Hlabisa Local economy. This SWOT analysis confirmed that the strategic location of the municipality remains one of its most important strengths. Good connectivity due to the road systems, the airfield and railway line, as well as the existence of a diversified economy was further identified as strengths for the future development of the local economy.

4.4. Transport Network

Currently, the R22 receives a low but consistent volume of traffic, including heavy, light and long distance movement from local, cross border and tourism traffic. All of this traffic is routed through Hluhluwe town. Four (4) traffic circles are intercepted along the current routing which necessitates the need for braking and stopping. The stopping and acceleration of a vehicles increases fuel consumption, particularly for heavy vehicles. This increases expenditure in terms of fuel costs. Further, the deterioration of road infrastructure through the town can be attributed to daily traffic, particularly heavy delivery trucks. Heavy loads contribute substantially to road wear and tear, which increases maintenance needs and costs.

Traffic volumes also contribute to road and pedestrian safety impacts, as well as traffic flow in terms of congestion and ultimately, inconvenience for road users. Conversely, traffic volumes stimulate the local economy along the route, namely fuel filling stations, convenience stores and the informal market.

4.5. R22 Realignment Alternatives

During the initial route realignment identification process, two corridors were identified. These were a southern corridor located to the south of Hluhluwe town and the existing R22, passing through the southern portion of Hluhluwe and a northern corridor passing through mainly agricultural land, located to the north of Hluhluwe. The design speed for both proposed corridors investigated is 100km/hr.

Based on an evaluation of the two corridors proposed, the advantages of the northern corridor make this the preferred site alternative. See Section 5.1. for further detail.

Within the northern corridor, three alternative layouts (see Figure 4-2) for the realignment of the R22 and positioning of the proposed road-over-rail bridge were initially identified and investigated further. All the alternatives proposed a road-over-rail bridge and the re-routing of traffic along the northern edge of Hluhluwe town centre, to re-join the R22 to west of the town. Details of the three alternative layouts (See Figure 4-1) initially considered within the Route Determination Report[5], have been provided in Section 5.3 of this report.

The Preferred Layout (blue line) starts east of the N2/R22 interchange at approximately the km1.2 marker. The alignment heads in an easterly direction on the northern municipal boundary of the Big 5 Hlabisa Local Municipality. The alignment then passes to the north of the Hluhluwe Airfield at chainage 2540 and ties into the road-over-rail bridge and approach alignment. Access will be accommodated by means of at-grade intersections and two short link roads.

Alternative Layout 1 (red line) follows the same route as the Preferred Layout, but has a different intersection tie-in point, as per Figure 4-2.

Alternative Layout 2 (green line) commences at a new intersection tie in point to the existing R22 near Hluhluwe when approaching from the west. The alignment continues northwards for approximately 700m before a right hand curve with a radius of 440m takes the routing eastwards. The alignment of the Alternative Layout 2 then ties in with and follows the Preferred Layout. Alternative Layout 2 was investigated to reduce the impact on agricultural land.

Access to Hluhluwe town will still be maintained from both the east and west approaches. Access will be accommodated by means of at-grade intersections and two short link roads.

The total lengths of the Preferred and Alternative Layouts are as follows:

- Preferred Layout - Total length of 2.42km;
- Alternative Layout 1 - Total length of 2.55km; and
- Alternative Layout 2 - Total length of 1.55km and

[5] Mothilal, A., & Bradley, C., 2015: *Elimination of the at-grade Railway Crossing on R22 Section 1 at km5.5., Route Determination Report*, 2015: Hatch Goba (Pty) Ltd, Umhlanga.

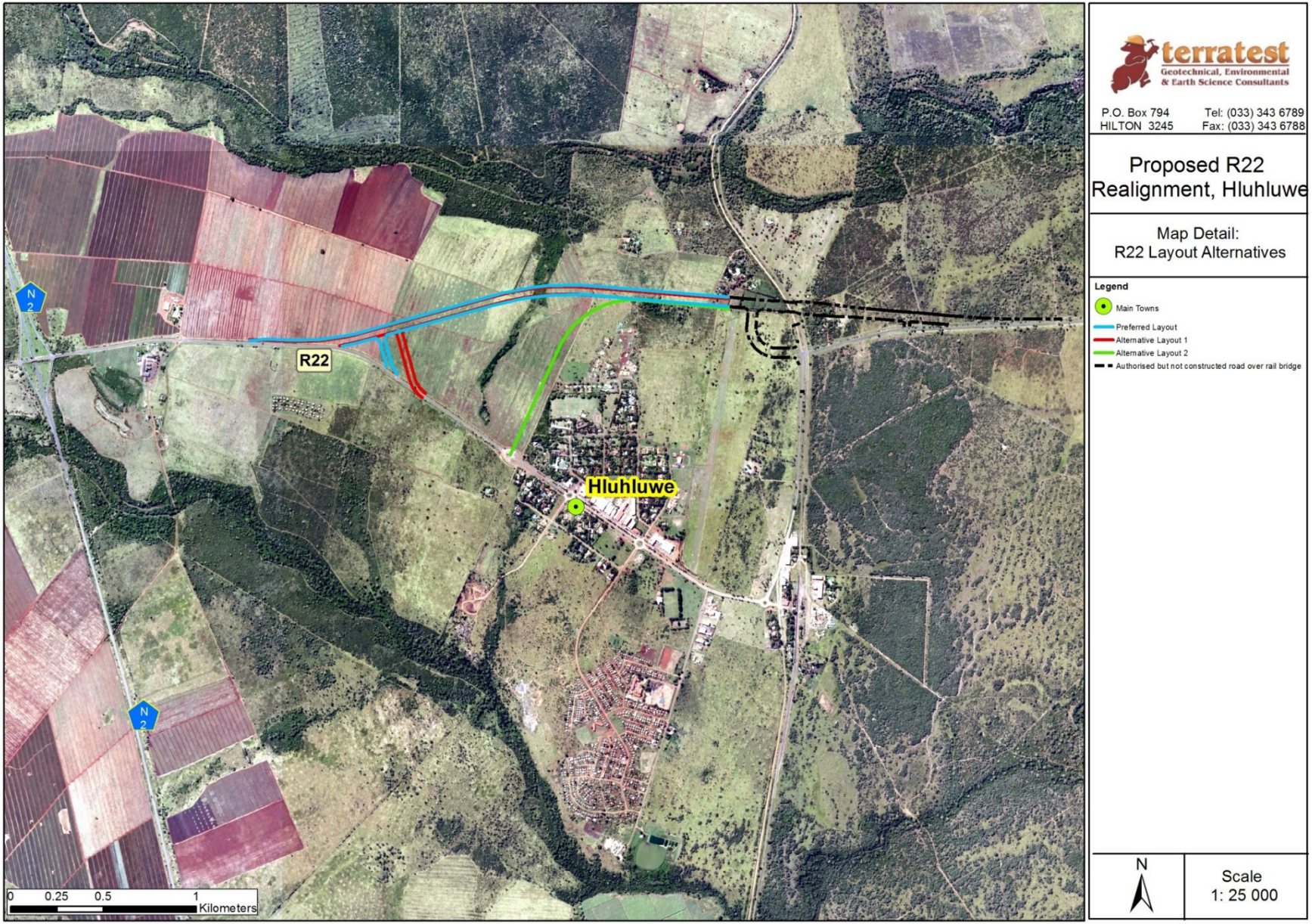


Figure 4-2: Proposed Layout Alternatives and their tie in to the authorised but not constructed road-over-rail bridge.

The 21-digit Surveyor General Code for each cadastral land parcel that the proposed layouts will traverse, together with the co-ordinates of the layout, are provided in Tables 4-1 and 4-2 and Figure 4-2.

Table 4-1: 21 digit SG codes and land parcel details for the Preferred and Alternative Layouts.

LAND OWNER	21 DIGIT SURVEYOR GENERAL CODE	PORTION NUMBER
Nyathi Family Trust	N0GV00000001353500000	Lot H120 13535
Onsgroei Bordery	N0GV00000001751400000	Portion 0 of Farm Dorptoe
Kwa Lala Property Inv (Pty) Ltd	N0GV00000001351500002	Portion 2 (Remaining Extent) of Lot H 118
	N0GV00000001351500005	Portion 5 of Lot H 118
Big 5 Hlabisa Local Municipality	N0GV01440000034900000	Erf 349 of Hluhluwe Ext 4
	N0GV01440000035000000	Erf 350 of Hluhluwe Ext 4
	N0GV01440000035100000	Erf 351 of Hluhluwe Ext 4
	N0GV01440000035200000	Erf 352 of Hluhluwe Ext 4
	N0GV01440000035300000	Erf 353 of Hluhluwe Ext 4
	N0GV01440000035400000	Erf 354 of Hluhluwe Ext 4
	N0GV01440000035500000	Erf 355 of Hluhluwe Ext 4
	N0GV01440000035600000	Erf 356 of Hluhluwe Ext 4
	N0GV01440000035700000	Erf 357 of Hluhluwe Ext 4
	N0GV01440000035800000	Erf 358 of Hluhluwe Ext 4
	N0GV01440000035900000	Erf 359 of Hluhluwe Ext 4
	N0GV01440001000000000	Unknown
Alfred Barrie Trust	N0GV00000001751600000	Portion 0 of Farm number 17516

Table 4-2: Co-ordinates along the relevant layouts.

ALIGNMENT	CO-ORDINATES (SOUTH)	CO-ORDINATES (SOUTH)
Preferred Layout and Intersection	28° 00’ 39.54”	32° 15’ 16.14”
	28° 00’ 37.71”	32° 15’ 25.58”
	28° 00’ 30.74”	32° 15’ 57.29”
	28° 00’ 30.65”	32° 16’ 07.35”
	28° 00’ 32.51”	32° 16’ 30.49”
	28° 00’ 37.71”	32° 15’ 25.58”
	28° 00’ 40.60”	32° 15’ 26.51”
	28° 00’ 44.76”	32° 15’ 28.01”
Alternative Layout 1 and Intersection	28° 00’ 39.54”	32° 15’ 16.14”
	28° 00’ 37.71”	32° 15’ 25.58”
	28° 00’ 30.74”	32° 15’ 57.29”

ALIGNMENT	CO-ORDINATES (SOUTH)	CO-ORDINATES (SOUTH)
	28° 00’ 30.65”	32° 16’ 07.35”
	28° 00’ 32.51”	32° 16’ 30.49”
	28° 00’ 47.73”	32° 15’ 35.96”
	28° 00’ 42.61”	32° 15’ 31.14”
	28° 00’ 36.83”	32° 15’ 29.27”
Alternative Layout 2	28° 00’ 59.16”	32° 15’ 51.11”
	28° 00’ 46.04”	32° 15’ 58.38”
	28° 00’ 35.76”	32° 16’ 05.25”
	28° 00’ 32.16”	32° 16’ 15.78”
	28° 00’ 33.60”	32° 16’ 31.37”

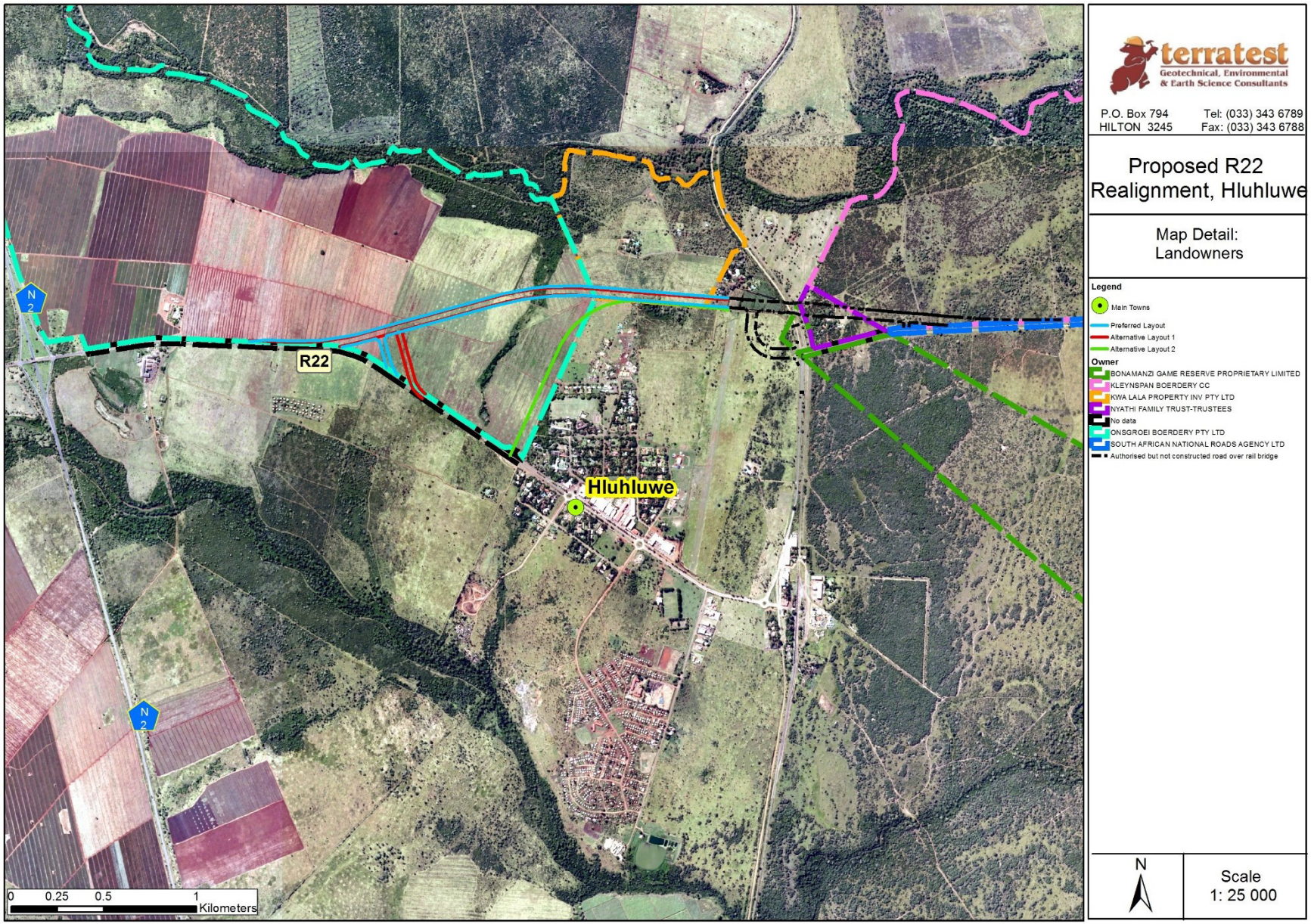


Figure 4-3: Parcel details for farms through which the Preferred and Alternative Layouts will pass.

4.6. Need and Desirability

GN792 of 2017: Integrated Environmental Management Guideline on Need and Desirability, defines the need as being the timing of a development and its desirability as being the location of said development.

4.6.1. Need

- The construction of the road-over-rail bridge cannot commence without the authorisation and consequent construction of the R22 realignment (the two components are directly dependent on one-another).
- Hluhluwe is the starting point of the LSDI, which links the N2 with Sodwana, Kosi Bay and Mozambique. The realignment of the R22 will ensure continued ease of use of the LSDI.
- The realignment of the R22 ties directly into the authorised road-over-rail bridge alignment, which consequently also enables the realisation of the widening of the railway line, a component of the Transnet Swaziland Rail Project (SRL).

4.6.2. Desirability

- The primary reason for the realignment is the tie into the authorised road-over-rail bridge which eliminates the present R22 at-grade railway crossing. This enhances the safety of all road users in the Hluhluwe area (local and visitor traffic).
- Concurrently, the realignment would provide an alternative route for the vehicles identified which are not destined for the town centre, removing most of them from the town centre. This would increase the lifespan of the pavement of the existing road infrastructure.
- The realignment provides an opportunity for through traffic to bypass Hluhluwe north of the town reducing travel time by ~50%.
- The realignment improvement of road safety along the section of the R22 that passes through the town centre, especially for pedestrian's due to the reduction of vehicular and pedestrian conflict in the town area.
- Opportunity for local construction contractors and associated local community enterprises to gain temporary economic benefits from the construction phase.
- The reduction of heavy volumes of traffic through the town, reducing noise and vehicle emissions within the town.
- The Spatial Development Framework (SDF) Situational Analysis records that the lack of appropriate road infrastructure has a negative impact on overall service delivery. The realignment of the R22 around Hluhluwe town, tying into the road-over-rail bridge, will improve road infrastructure for all road users in the local and regional context.
- The proposed project is located on the National Road R22, Section 1 on the eastern outskirts of Hluhluwe town, ~2km off the N2. The municipality is therefore highly accessible at both a regional and national level.

4.7. Development specifications

The design requirements envisaged for the realignment of the road are as follows:

- Construction of a single-carriageway, with a width of 8 meters (m). This will serve to accommodate one lane of traffic, travelling in both directions;
- A road reserve of 50m.

A 20-year horizon was used for the future forecasting to ensure that the recommended alternative can accommodate future predicted traffic conditions.

4.8. Land acquisition

The layout for the proposed rerouting of the alignment will occur outside of the existing SANRAL road reserve and as such privately-owned property will need to be acquired under a land acquisition process. The land acquisition process is run separately from the EIA Process and as such is not dealt with by the EAP.

5. ALTERNATIVES

The layout alternatives identified for assessment, as presented in Figure 4-1, are discussed in the sub-sections that follow.

5.1. Site Alternatives

During the initial feasibility process, two approach corridors were identified. These were a southern corridor located to the south of the existing R22, passing through the southern portion of Hluhluwe and a northern corridor passing through mainly agricultural land (located to the north of Hluhluwe). The northern corridor was considered the favourable option for the following reasons:

- The northern corridor has distinct advantages over the southern corridor in that the alignment is shorter, thus reducing road construction costs, as well as reducing the amount of land required.
- In terms of the Big 5 Hlabisa Local Municipality Local Area Plan (LAP), any road located to the south of the existing R22 and north of the Hluhluwe River will effectively bisect the township developments within Hluhluwe. A route located here will create a similar situation to the present situation in Hluhluwe town, with respect to uncontrolled access and vehicular and pedestrian movements along the R22. These factors are undesirable for a National Route. The northern corridor does not bisect the town of Hluhluwe and there is little or no impact on the LAP of Hluhluwe.
- Whilst the northern corridor is bound by the Ngweni River (~400m to the north of the proposed development footprint), there is only one potential water course crossing within the northern corridor. However the southern corridor has a number of smaller feeder tributaries which would require several structures to accommodate these streams.
- The southern corridor would extend through a portion of Bonamanzi Game Reserve which would increase the chances of vehicular collisions with wildlife and negatively impact on the habitat and operations of the reserve.
- The development planning for the town of Hluhluwe will be severely curtailed should the realignment of the R22 pass directly through the primary development node as identified by the LAP.

Based on the evaluation of the two corridors, the advantages of the northern corridor made this the preferred routing for the realignment (i.e. the northern corridor is the preferred site alternative). The associated Layout Alternatives pertain specifically to this approach corridor.

Within the northern corridor, three alternative routes (i.e. layouts) for the realignment of the R22 were identified and investigated further.

5.2. Preferred Layout (Blue Alignment)

ROUTE LENGTH: 2.42km

ROUTE DESCRIPTION: The Preferred Layout (Figure 5-1) starts east of the N2/R22 interchange approximately at existing km marker post R22-1 KM1.2 with a left curve of 1500m radius as it crosses the agricultural farm lands to the west of Hluhluwe (Plates 5-1,5-2 and 5-3). The alignment then continues for 325m following with a right curve of 1500m radius crossing a drainage path at approximately chainage 1500. Following on this curve the alignment heads in an easterly direction on the northern Municipal boundary of the Big 5 Hlabisa Municipality. The alignment then passes to the north of the Hluhluwe Airfield (Runway 21) at chainage 2540. The road at this position is approximately 1m in fill i.e. 1m in height and is within the approach requirements of the South Africa Civil Aviation Authority. The Preferred Alignment will then tie into the approach alignment of the road-over-rail bridge.

Access to Hluhluwe Town from the west, will be via an intersection road which tees off from the bypass route approximately 338m into the realignment (Figure 5-1), at the following co-ordinates (28° 00' 37.76"S and 32°15' 25.82"E). The intersection road will be approximately 230m in length.

UNDERPASS CULVERT: An access underpass culvert is proposed to be constructed within the watercourse crossing. This will allow access for farm equipment under the proposed Preferred Layout. To facilitate this the structure will require cross sectional dimensions of 4.2m x 4m to accommodate the equipment utilised for farming in this region.

DRAINAGE STRUCTURES: It is expected that a total of 5 minor culvert structures will be required to facilitate the movement of stormwater through the road prism. These consist of three (3) 900mm diameter culverts and two (2) 1200mm diameter culvert. The culverts will be located at appropriate positions to facilitate effective stormwater control.

Side drains will be constructed along the R22 wherever the road is in cut.[6] On the intersection road and at the quarterlink[7] interchange, concrete kerb and channel combinations will be utilised to lead stormwater to appropriate drainage structures. Cross drains (culverts) will be 900mm – 1.2m in diameter. Inlet and outlet control structures to culverts will be in accordance with the SANRAL typical details. Subsoil drainage will be required to be installed along all sections of roadway in cut. The subsoil drainage details will be

[6] A cut or cutting is where soil or rock material from a hill or mountain is cut out to make way for a road.
[7] A quarterlink is an interchange with intersections on both roads and two ramps (which could be a two-lane two-way road) located in one quadrant. Because of its appearance, also known as a Jug Handle Interchange. In this instance, the quarterlink road will provide an offramp to allow the R22 bypass users with access to Hluhluwe town, from the east.

according to the SANRAL typical details with discharge into appropriate drainage channels. Table 5-1 lists the locations of the drainage structures that would be required to be built along the Preferred Layout.

Table 5-1: Approximate localities of the drainage structures along the Preferred Layout.

	Structure	Southerly co-ordinate	Easterly co-ordinate
1.	Pipe culvert, 900mm Ø	28° 00' 42.98"	32° 15' 28.17"
2.	Pipe culvert, 900mm Ø	28° 00' 38.54"	32° 15' 24.72"
3.	Pipe culvert, 900mm Ø	28° 00' 37.68"	32° 15' 28.03"
4.	Pipe culvert, 1.2m Ø	28° 00' 29.65"	32° 15' 55.37"
5.	Box culvert underpass, 4.2m x 4m	28° 00' 30.76"	32° 15' 57.71"
6.	Pipe culvert, 1.2m Ø	28° 00' 32.80"	32° 15' 20.80"

DESIGN SPEED: The design speed for the Preferred Layout alignment is 100 km/h as specified in the SANRAL G2 Geometric

VERTICAL AND HORIZONTAL ALIGNMENT STANDARDS: The geometric standards attained for the vertical and horizontal alignment are tabulated below.

Table 5-2: Vertical and Horizontal Alignment Standards.

	Specification	Actual
Design Speed	100km/h design guidelines SANRAL	Horizontal 100km/h Vertical ≥ 100km/h
Minimum Radius (Horizontal) 100 km/h	440m @ 6% Super elevation	550m
Minimum K – Crest 100km/h	100 for 0.15m Object Height 60 for 0.6m Object Height 53.2 minimum - formula	96
Minimum K – Sag 100km/h	50 preferred – headlight 25 minimum - Comfort	30-80km/h
Length vertical curve	110m – preferred 60 - minimum	160m
Minimum vertical grade	0.5%	0.5%
Maximum vertical grade	5.0% preferred 6.0% maximum	5.7%
Stopping sight distance	Preferred 200m Minimum 115m	120m

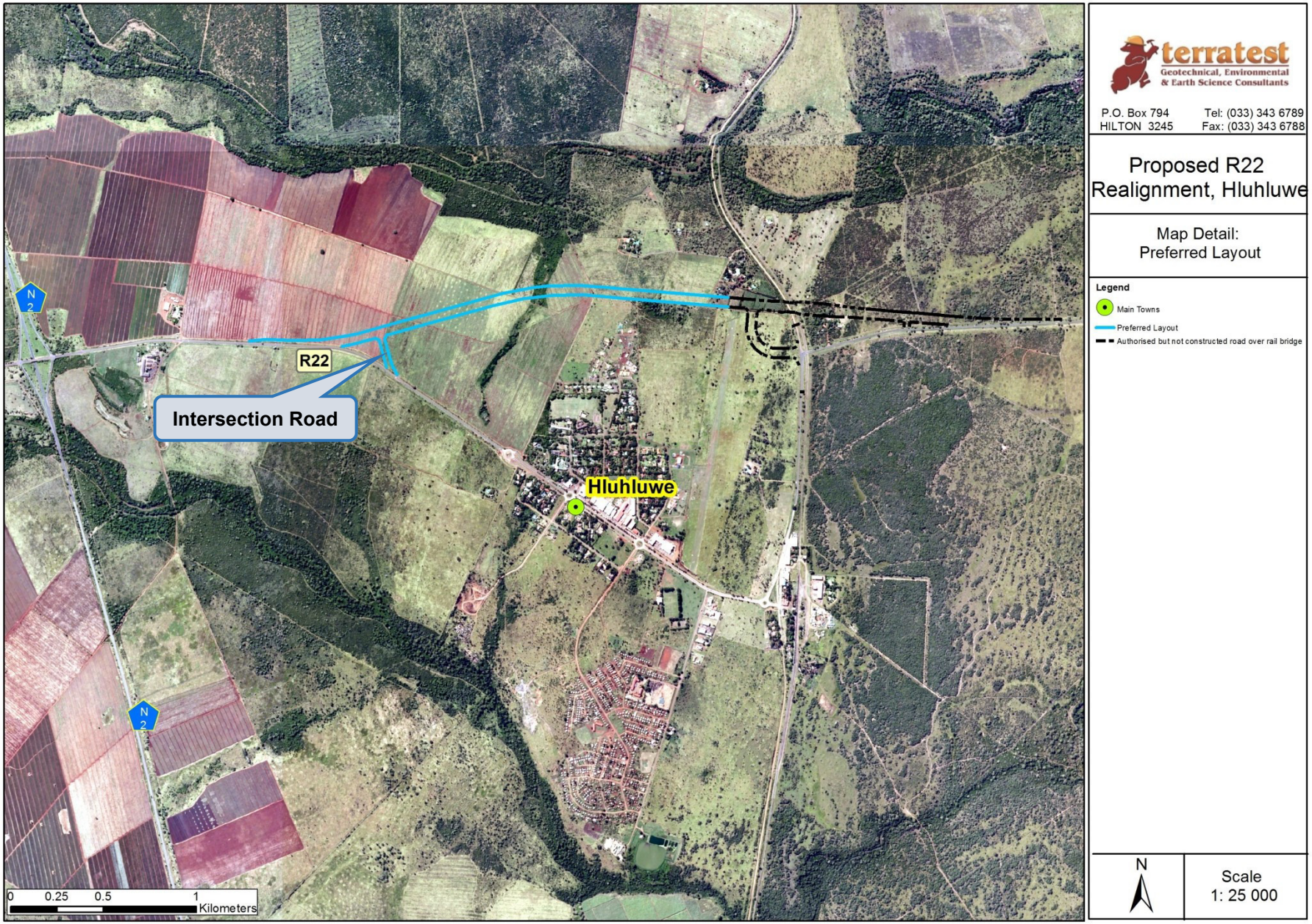


Figure 5-1: A view of the Preferred Layout (blue), to tie into Authorised Road-Over-Rail Alignment (black).

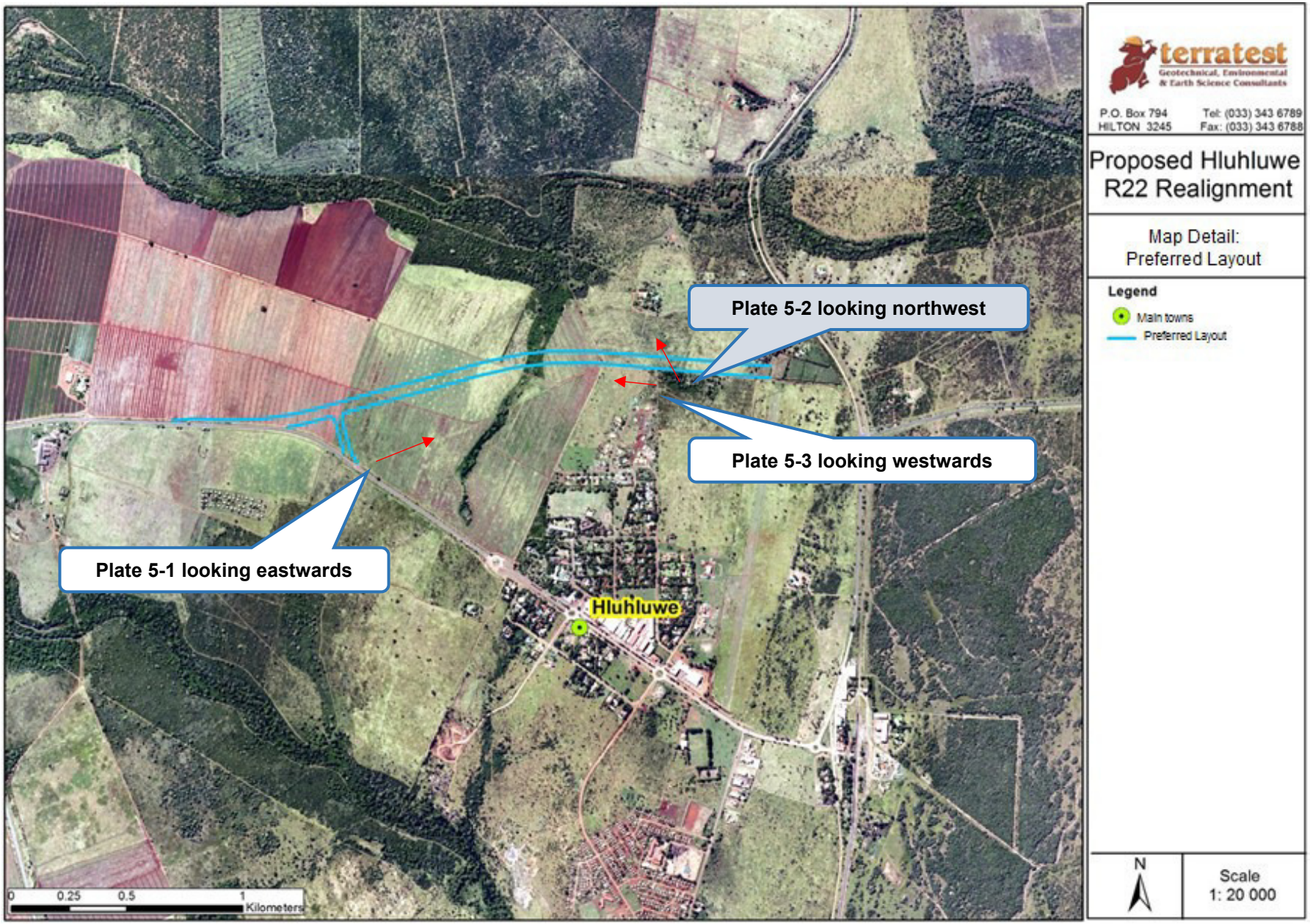


Figure 5-2: A view illustrating the location and direction of photos (Plates 5-1 to 5-3) taken.

Plate 5-1: A panoramic view of the topography and vegetation through which the western portion of the Preferred Layout passes.

Plate 5-2: A panoramic view of the lands through which the western portion of the Preferred Layout is proposed.

Plate 5-3: A panoramic view of the existing road along which the western portion of the Preferred Layout will partially run.

5.3. Alternative Layout 1 (Red Alignment)

ROUTE LENGTH: 2.55km

ROUTE DESCRIPTION: Alternative Layout 1 (Figure 5-3) starts and ends at the exact same point as the Preferred Layout (Plate 5-4). However, the associated intersection road which will connect the bypass with the existing R22 to allow access to Hluhluwe town from the west, tees off 435m into the bypass route (Figure 5-3), at the following co-ordinates (28° 00' 36.70"S and 32°15' 29.12"E). The Alternative Layout 1 intersection road will be approximately 360m in length and will tie into the existing R22 closer to Hluhluwe town than the Preferred Layout alignment will. Therefore, the difference between the Preferred Layout and Alternative Layout 1 is the location of the Intersection Road.

This alternative was investigated to provide closer access to Hluhluwe town for road users coming from the east and west approaches. The alignment also provides a greater line of site for drivers exiting off the R22 to Hluhluwe town. However, as this intersection road alignment is longer than the Preferred Layout intersection road, design and construction costs are greater. In addition, the Alternative Layout 1 Intersection Road will bisect a greater portion of agricultural land. Cumulatively, the benefits associated with the closer access to Hluhluwe town, and marginally increased line of site, do not outweigh the cost implications of a longer road. As such, this alternative is **not** considered a feasible or preferred alternative.

UNDERPASS CULVERT: An access underpass culvert is proposed to be constructed within the watercourse crossing. This will allow access for farm equipment under the proposed Alternative Layout 1. To facilitate this the structure will require cross sectional dimensions of 4.2m x 4m to accommodate the equipment utilised for farming in this region.

DRAINAGE STRUCTURES: It is expected that a total of 5 minor culvert structures will be required to facilitate the movement of stormwater through the road prism. These consist of three (3) 900mm diameter culverts and two (2) 1200mm diameter culvert. The culverts will be located at appropriate positions to facilitate effective stormwater control.

Side drains will be constructed along the R22 wherever the road is in cut. Cross drains (culverts) will be 600mm in diameter. Inlet and outlet control structures to culverts will be in accordance with the SANRAL typical details. Subsoil drainage will be required to be installed along all sections of roadway in cut. The subsoil drainage details will be according to the SANRAL typical details with discharge into appropriate drainage channels.

Table 5-3: Approximate localities of the drainage structures along the Alternative Layout 1.

	Structure	Southerly co-ordinate	Easterly co-ordinate
1.	Pipe culvert, 900mm Ø	28° 00' 42.66"	32° 15' 30.47"
2.	Pipe culvert, 900mm Ø	28° 00' 38.54"	32° 15' 24.72"
3.	Pipe culvert, 900mm Ø	28° 00' 37.68"	32° 15' 28.03"
4.	Pipe culvert, 1.2m Ø	28° 00' 29.65"	32° 15' 55.37"
5.	Box culvert underpass, 4.2m x 4m	28° 00' 30.76"	32° 15' 57.71"

6.	Pipe culvert, 1.2m Ø	28° 00’ 32.80”	32° 15’ 20.80”

DESIGN SPEED: The design speed for the proposed alternative alignments is 100 km/h as specified in the SANRAL G2 Geometric Guidelines manual for this class of road. The design speed for the quaterlink is 60km/h.

VERTICAL AND HORIZONTAL ALIGNMENT STANDARDS: The geometric standards attained for the vertical and horizontal alignment are tabulated below.

Table 5-4: Vertical and Horizontal Alignment Standards.

	Specification	**Actual**
Design Speed	100km/h design guidelines SANRAL	Horizontal 100km/h Vertical ≥ 100km/h
Minimum Radius (Horizonral) 100 km/h	440m @ 6% Superelevation	550m
Minimum K – Crest 100km/h	100 for 0.15m Object Height 60 for 0.6m Object Height 53.2 minimum - formula	96
Minimum K – Sag 100km/h	50 preferred – headlight 25 minimum - Comfort	30-80km/h
Length vertical curve	110m – preferred 60 - minimum	160m
Minimum vertical grade	0.5%	0.5%
Maximum vertical grade	5.0% preferred 6.0% maximum	5.7%
Stopping sight distance	Preferred 200m Minimum 115m	120m

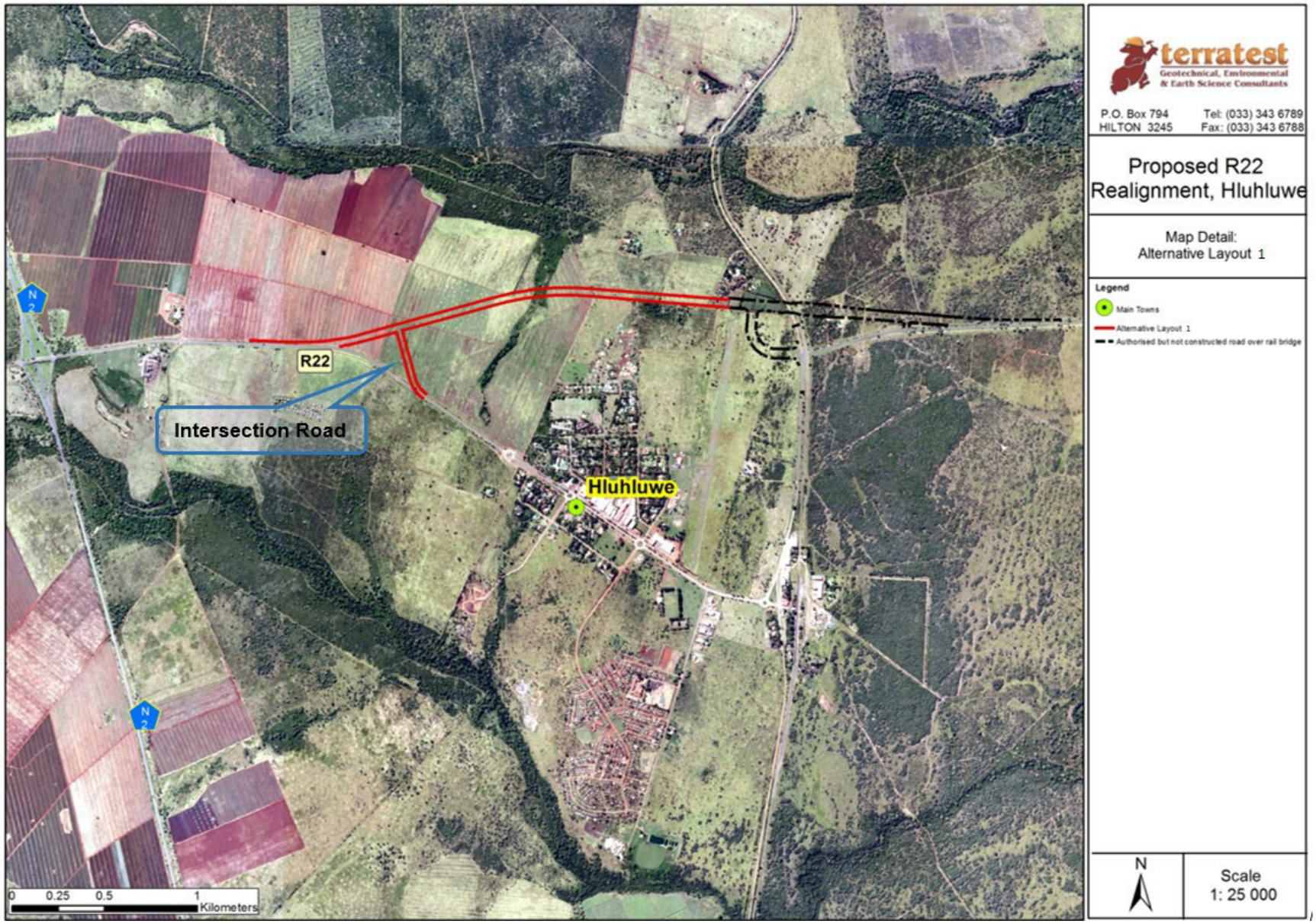


Figure 5-3: Alternative Layout 1 (red), which differs from the Preferred Layout alignment because of the location of the Intersection Road. Alternative Layout 1 will tie into the Authorised Road-Over-Rail Alignment (black).

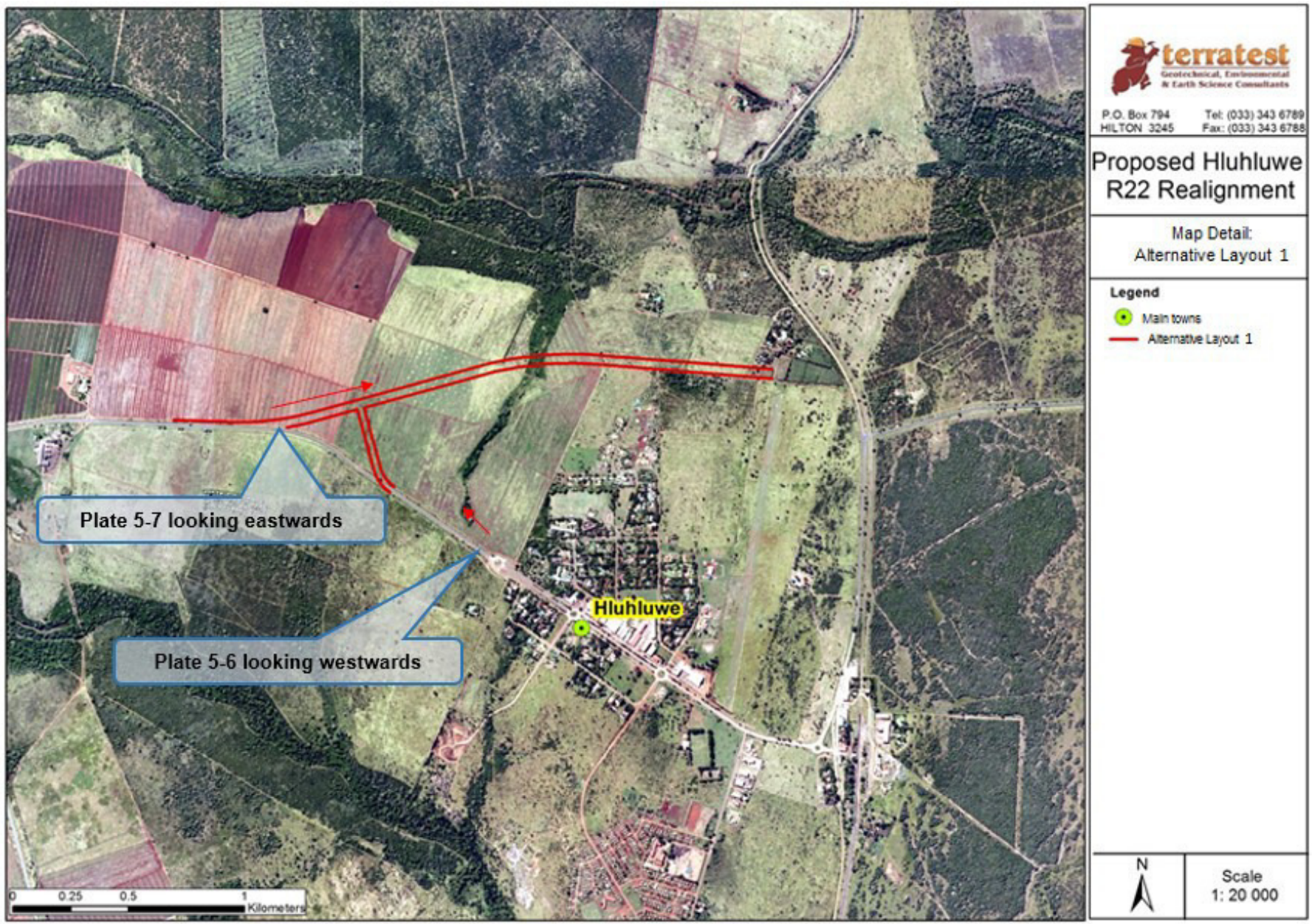


Figure 5-4: A view illustrating the location and direction of photos (Plates 5-4 and 5-5) taken.

Plate 5-4: The approximate tie-in point of the intersection road from the realigned R22, to the existing R22 (Ref: Google Earth 2016).

Plate 5-5: The exit point at which the realigned R22 will divert off the existing R22 (Ref: Google Earth 2016).

5.4. Alternative Layout 2 (Green Alignment)

ROUTE LENGTH: 1.55km

ROUTE DESCRIPTION: The Alternative Layout 2 alignment (Figure 5-5) commences at a new intersection tie in point (Plate 5-6) to the existing R22, on the western outskirts of Hluhluwe town. The alignment continues northwards for approximately 700m before a right hand curve with a radius of 440m takes the routing eastwards, along the periphery of the northern edge of the town. The alignment of Alternative Layout 2 then

ties in with and follows the alignment of the Preferred Layout which also ties into the already authorised approach alignment and road-over-rail bridge (yet to be constructed).

This alternative was investigated to reduce the loss of agricultural land and also as it provides a shorter route alternative. Access to Hluhluwe town will still be maintained from both the east and west approaches. However, as per the Big 5 False Bay SDF, the west of the town has been earmarked for the eventual expansion of the town (See Section 6.1.3 below and Figure 6-1). As such, if this alignment is developed, it will pass directly through this proposed development zone and will consequently hamper any future growth of the town to the west. If the town does expand to the west around the Alternative Layout 2 alignment, it will bisect the town creating the same concerns that the presently routed R22 is in. As such, this alternative is **not** considered a feasible or preferred alternative.

DRAINAGE STRUCTURES: Side drains will be constructed along the R22 wherever the road is in cut. A cross drain (culverts) 1.2m in diameter is proposed along the alignment. The culvert inlet and outlet control structures will be in accordance with the SANRAL typical details. Subsoil drainage will be required to be installed along all sections of roadway in cut. The subsoil drainage details will be according to the SANRAL typical details with discharge into appropriate drainage channels.

Table 5-5: Approximate localities of the drainage structures along the Alternative Layout 2.

	Structure	Southerly co-ordinate	Easterly co-ordinate
1.	Pipe culvert, 1.2m Ø	28° 00’ 32.80”	32° 15’ 20.80”

DESIGN SPEED: The design speed for the proposed alternative alignment is 100 km/h as specified in the SANRAL G2 Geometric Guidelines manual for this class of road.

VERTICAL AND HORIZONTAL ALIGNMENT STANDARDS: The geometric standards attained for the vertical and horizontal alignment are tabulated below.

Table 5-6: Vertical and Horizontal Alignment Standards.

	Specification	Actual
Design Speed	100km/h design guidelines SANRAL	Horizontal 100km/h Vertical ≥ 100km/h
Minimum Radius (Horizonral) 100 km/h	440m @ 6% Superelevation	550m
Minimum K – Crest 100km/h	100 for 0.15m Object Height 60 for 0.6m Object Height 53.2 minimum - formula	96
Minimum K – Sag 100km/h	50 preferred – headlight 25 minimum - Comfort	30-80km/h
Length vertical curve	110m – preferred	160m

	60 - minimum	
Minimum vertical grade	0.5%	0.5%
Maximum vertical grade	5.0% preferred 6.0% maximum	5.7%
Stopping sight distance	Preferred 200m Minimum 115m	120m

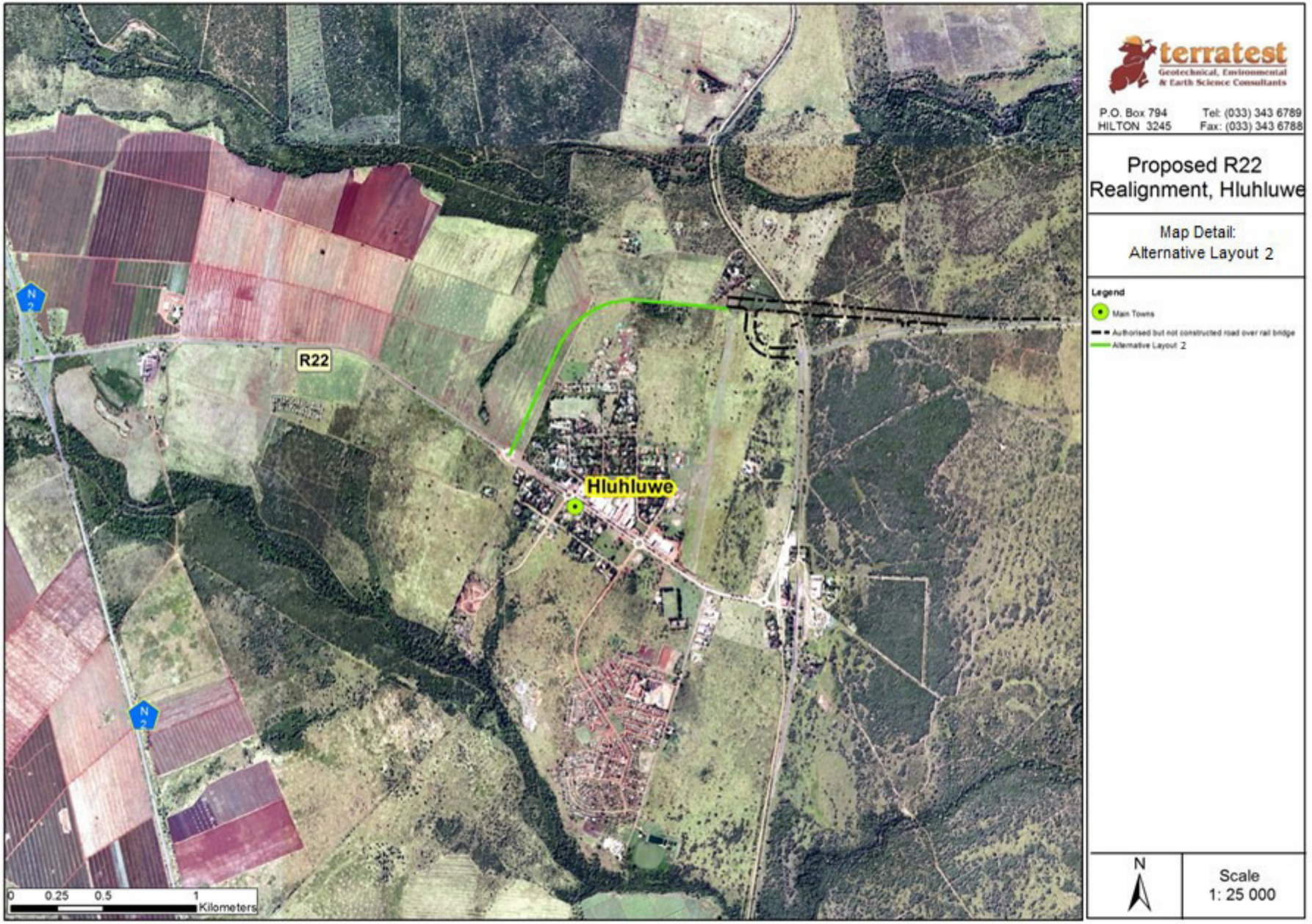


Figure 5-5: Alternative Layout 2 (green), which passes around the periphery of Hluhluwe town and ties into Authorised Road-Over-Rail Alignment (black).

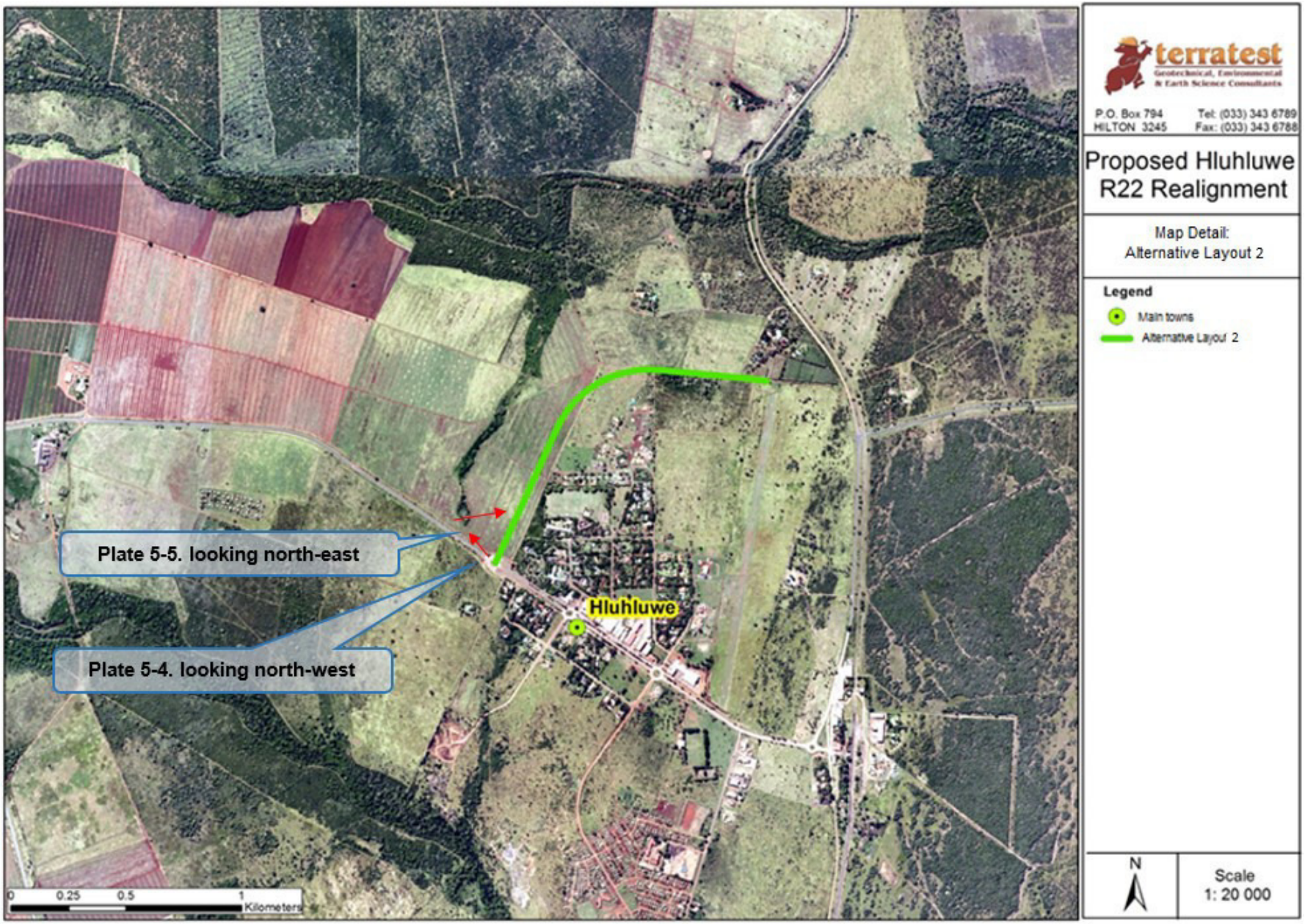


Figure 5-6: A view illustrating the location and direction of photos (Plates 5-4 and 5-5) taken.

Plate 5-6: The proposed tie in point of the Alternative Layout 2 to the existing R22, at the circle intersection to the west of Hluhluwe town.

Plate 5-7: The agricultural land through which a portion of the Alternative Layout 2 is proposed to run.

5.5. No-go Alternative

The No-go Alternative has to be investigated as per the requirements of the EIA Regulations (2014), as amended. This alternative essentially investigates the option of not implementing the proposed development i.e. not rerouting the existing National Route 22 (R22) around Hluhluwe town.

Should the route not be realigned, the current state of traffic through the town of Hluhluwe shall continue, and will most likely increase in the future. This will result in the increased deterioration of the road, increased traffic congestion and pedestrian/vehicle interactions. In addition, travel times through Hluhluwe town will not be improved, and it will not provide a more direct and efficient travel route to / from Sodwana, Mbazwana, Mozambique etc.

Should the No-go Alternative proceed, spending at local fuel filling stations, convenience stores and through the informal market will continue as it does at present.

Ultimately, however, should the R22 road not be rerouted around the town of Hluhluwe, the proposed road-over-rail interchange will not be constructed thus severely limiting road user's safety with regards to the at-grade railway crossing, as well as future expansion of the railway line and the economic benefits associated with it.

6. DESCRIPTION OF THE BASELINE ENVIRONMENT

The receiving environment in which the layouts are located, are discussed in this Section, in terms of the social, economic and the biophysical environment.

6.1. Potential Impacts on the social and economic environments

6.1.1. Local economy and employment opportunities

DESCRIPTION

Hluhluwe town, is located in the Big 5 Hlabisa Local Municipality within the Umkhanyakude district, regarded as one of the poorest district municipalities in KwaZulu-Natal. Hluhluwe town is easily accessible off the N2 national route. It lies adjacent to the False Bay (western) side of the Isimangaliso Wetland Park and is the starting point of the R22 LSDI Corridor which links Hluhluwe to Mozambique.

Hluhluwe Town is an administrative economic and social hub servicing the entire Big 5 Hlabisa Local Municipality. It is identified as the Primary Economic Development Node for social and economic goods and services for the entire municipal area. The business district in the town is made up of both formal and informal businesses. Hluhluwe Town Centre is a small town known for its cultural heritage. The area is of growing interest to international tourism and overland travellers. Hluhluwe therefore acts as a service centre for the wider region and a focus area for employment opportunities, shopping and recreational facilities. The majority of the Municipality's population do their monthly shopping in Hluhluwe Town. The town functions as the service centre to the informal market and the commercial farming business community.

Hluhluwe is considered the tourism hub of the greater region, and considering its location it serves as a gateway to large parts of the Zululand region. One of the strategic focus points of the Big Five False Bay Spatial Development Framework is to pursue social and economic development. Hluhluwe Town has been identified as a major development area.

One of the key challenges within the Umkhanyakude District Municipality includes high rates of unemployment and infrastructure backlogs. The Municipality has commited itself to reducing backlogs by 2030.[8] It is also anticipated that infrastructure development will assist in providing jobs and improving the local unemployment rate.[9]

The 2011 Census data listed in the 2015-2016 IDP Review notes that of the total population of 35 258 people found in the Big 5 False Bay Local Municipality, 2 529 people have had no schooling, 4 168 have passed matric, and 828 have completed a higher education degree of some form. Based on the 2011 statistics, the Big 5 False Bay Municipality has a workforce of nearly 20 500 people. On a municipal level only 26% of the population of the municipality is employed (formal and informal sector). In real terms this then indicates that the 35,000 people in the municipality are dependent on salaries or wages earned by only approximately 5000 people. The average annual income of inhabitants of the Big 5 False Bay Local Municipality is R 57 218/year, which equates to an average monthly income of R 4 700. Private households and the informal sector together are also responsible for nearly 40% of the jobs available. Despite this, the formal sector still dominates employment.[10]

IMPLICATIONS

The proposed route realignment will provide employment to a range of the skilled, semi-skilled and unskilled workforce. SANRAL will be encouraged to utilise labour from the surrounding area. The construction phase will provide an opportunity for local construction contractors and associated local community enterprises to gain economic benefits from the construction activities. The development has the potential to create short-term, skilled and unskilled employment opportunities. The proposed development will not only provide employment opportunities to the local population, but will also allow for skills and knowledge transfer. Local employment opportunities created during the construction phase of the development, however, will not be permanent and will very likely be terminated once the realignment is constructed i.e. short-term employment.

6.1.2. Transport routes

DESCRIPTION

The R22 forms a key link between Northern KwaZulu-Natal in South Africa and southern Mozambique as well as providing access to the eastern coastline of northern KwaZulu-Natal. Both local, cross border and tourism traffic use this route as a main access both to and from the N2 in northern KwaZulu-Natal. The R22 also forms an integral economic and social connector between South Africa and neighbouring

[8] Office of the Municipal Manager, IDP/PMS unit: *IDP 2012/2013 – 2016/2017, 3rd Review 2015/2016*, Hluhluwe.
[9] Udidi, 2013: *First Draft Comprehensive Report: Big 5 False Bay Spatial Development Framework*.
[10] Office of the Municipal Manager, IDP/PMS unit: *IDP 2012/2013 – 2016/2017, 3rd Review 2015/2016*, Hluhluwe.

countries.[11] To this end, the construction of the realignment falls within a number of other planning initiatives which have been implemented but also proposed, for the greater region.

The first of these is the existing Lubombo Spatial Development Initiative (LSDI) route which was upgraded to asphalt in the 1990's and is prioritised as an SDI of national significance. Hluhluwe is the starting point of the LSDI, which links the N2 with Sodwana, Kosi Bay and Mozambique. It has greatly improved access to large parts of the Zululand Region to the north of Hluhluwe. The route extends from Hluhluwe, on the R22, through to Mbazwana to join the only other asphalt road in the region at Pelindaba, before heading north east through KwaNgwanase to the Mozambique border at Farazel.[12]

The second planning initiative is the proposed Transnet Swaziland Rail Project (SRL) which aims to divert traffic from road to rail, optimising capacity on the Coal Line, through alternative accommodation of General Freight (GF) traffic, creating a logistics corridor linking the hinterland to the eastern seaboard ports. This entails the doubling and electrification of the railway line and provides a viable connection for rail freight from western Swaziland to markets in South Africa, Mozambique, and overseas.[13] The upgrading and proposed expansion of the railway line will have a direct impact on the safety of road users at the present at-grade railway crossing, hence the need for the establishment of the proposed road-over-rail bridge. The proposed road-over-rail bridge has therefore taken into consideration the future expansion of the railway line. As the proposed road-over-rail bridge has been authorised, the proposed realignment of the R22 around Hluhluwe town directly ties into this proposed development.

The LED2009 SWOT analysis confirmed the strategic location of the municipality and this remains one of its most important strengths. Good connectivity due to the road systems, the airfield and railway line, as well as the existence of a diversified economy were further identified as strengths for the future development of the local economy.[14]

IMPLICATIONS

The proposed realignment will provide a more efficient transportation medium between the N2 and R22 (Sodwana / Mbazwana bound). The realignment is key to the successful implementation of other transport planning and expansions, improve efficiency in the transportation system and will complement the R22 LSDI Corridor which links Hluhluwe to the greater Sodwana, Kosi Bay and Mozambique areas.[15] The proposed development will assist in the upgrading of transport routes which link tourism centres.

Negative implications of the proposed realignment include possible decreased spending within the town of Hluhluwe, as people are bypassed around the town, and the potential loss of a small portion of

[11] Mothilal, A. & Bradley, C., 2015: *Route Determination Report*, Hatch Goba, Umhlanga.

[12] Venter, V., 2015: *SANRAL Elimination of At-grade Railway Crossing on National Route R22 Traffic Study*. Hatch Goba, Umhlanga.

[13] TFR - RCE Consultants –SANRAL Liaison Meeting R22 Upgrade at Hluluwe and other KZN Projects- *Liaison Meeting*, 28 April 15.

[14] Udidi, 2013: *First Draft Comprehensive Report: Big 5 False Bay Spatial Development Framework*.

[15] Office of the Municipal Manager, IDP/PMS unit: *IDP 2012/2013 – 2016/2017, 3rd Review 2015/2016*, Hluhluwe.

agricultural land, if the Preferred Layout t is authorised.

6.1.3. Local spatial development planning initiatives

From the relevant planning documentation assessed, it is clear that the proposed future developments within Hluhluwe are to occur mainly to the south west (Figure 6-1) of the existing R22, where various residential areas are planned for development. An agricultural industrial area is also planned to the south east of the town with various mixed use developments planned adjacent to the airfield. Infilling and densification is planned for Hluhluwe town itself, which will prevent urban sprawl. Future development has not been planned along the northern portion of Hluhluwe town and as such the proposed realignment will not compromise the urban edge of Hluhluwe town.

National Development Plan 2030

The National Development Plan aims to eliminate poverty and reduce inequality by 2030. It provides a broad strategic framework to guide key choices and actions. While the achievement of the objectives of the National Development Plan requires progress on a broad front, three priorities stand out:

- Raising employment through faster economic growth;
- Improving the quality of education, skills development and innovation; and
- Building the capability of the state to play a developmental, transformative role.

A critical action within the National Development Plan for 2030 is as follows: “Public infrastructure investment at 10 percent of gross domestic product (GDP), financed through tariffs, public-private partnerships, taxes and loans and focused on transport, energy and water.”[16] The proposed development seeks to pursue this vision by continued provision of access to a better standard of road for transport.

Integrated Development Plan (IDP)

In terms of the Municipal Systems Act (Act 32 of 2000), every municipality in South Africa is obliged to develop an IDP to realise the constitutional mandate of local government. The IDP is a strategic management tool, which aims to guide and align all planning, budgeting and operational decisions of the municipality and other spheres of governments. It is a legally binding document and replaces all other plans that guide development at local government level.

An IDP’s core components consist of the following:

- The Municipal Council’s long term development and internal transformation needs;
- An assessment of the level of development and needs to determine community access to basic services;
- The Council’s development priorities and objectives for its term of office, including its Local Economic Development (LED) aims;
- The Council’s development and operational strategies accordingly aligned with national and / or provincial sector plans and legislated planning requirements;

[16] National Planning Commission, 2012: National Development Plan 2030: *Executive Summary.*

- An identification of specific projects which will satisfy service delivery needs and general economic development;
- The Spatial Development Framework (SDF), which includes the provision of basic guidelines for a Land Use Management System (LUMS) for the Municipality;
- The applicable disaster management plans;
- A financial plan, including budget projections covering, at least, the next three years; and
- Key performance indicators and performance targets.

The Municipal Council must review and amend its IDP on an annual basis in accordance with an assessment of its performance measurements and in line with changing circumstances.

The main focus of the Big 5 False Bay Municipality's IDP Review[17] is around development goals as articulated in the NDP. Further to this the province of KwaZulu-Natal has committed itself to being a gateway to South and Southern Africa. To realise the above statement the Provincial Growth and Development Plan (PDGS) identified that each District Municipality and the Metro need to develop a District Growth and Development Plan (DGDP) that will extract all issues of execution from the PGDP in their jurisdiction According to the KwaZulu-Natal Provincial Growth and Development Strategy (PGDS),[18] the upgrading in capacity of existing linkages is an important factor in the principle of accessibility and thus forms a key component of the IDP.

The Municipal Development Goals as stated in the IDP Review are as follows:

- Capacity building;
- Employee wellness;
- Sustainable infrastructure;
- Conducive environment for job creation;
- Poverty alleviation & social welfare;
- Sustainable health and wellness;
- Improved safety & security; and
- Governance excellence & leadership.

The proposed realignment of the R22 contributes to a variety of these goals, including sustainable infrastructure, short term job creation and consequent poverty alleviation and improved safety.

Big 5 False Bay Spatial Development Framework (SDF)

The main aim of the SDF is to guide the spatial form and location of future spatial development initiatives within the municipality. The Big 5 False Bay's aims are as follows:

- Balance between urban and rural land development;
- Urban and rural areas should be developed in support of each other;

[17] Big 5 False Bay IDP 2012/2013 – 2016/2017: 3rd Review 201/2016.
[18] Kwazulu-Natal Provincial Planning Commission, 2011: *Provincial Spatial Development Framework Strategy Draft 2-2011/08/08.*

- The discouragement of urban sprawl by encouraging settlement on serviced land within existing nodes;
- The direction of new development towards logical infill areas;
- Rural settlements should be developed to an acceptable standard of services and infrastructure;
- Compact urban form is desirable;
- Development should integrate social, economic, institutional and environmental aspects;
- Sensitive, vulnerable, highly dynamic or stressed ecosystems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure;
- Development should be within limited resources (financial, institutional and physical);
- Stimulate and reinforce cross boundary linkages, i.e. between the Municipality, conservation areas and the Isimangaliso Wetland Park;
- A Spatial Development Framework (SDF) should indicate areas where strategic intervention is required and should act as marketing tool to indicate where development can be promoted.

The SDF is essentially a forward planning document that should not only reflect the current reality but also future development options and should guide decision making within the municipality. The SDF is a primary spatial response to the development context, needs and development vision of the municipality. It is a key land use management tool of the Municipality as it has an important role to play in guiding and managing Municipal decisions relating to the use, development and planning of land.

As a planning document, the Big 5 False Bay SDF designates the region to the west of the town as future expansion indicating that the growth of the town will be to the west. Furthermore, the SDF notes that the aim of the proposed urban edge is primarily to attain effective and efficient functionality of the town within the vacant areas to achieve town compaction before expansion of the urban edge. This will be achieved by concentrating on potential areas for infill in relation to the existing settlements in order to achieve urban spatial growth. The Hluhluwe urban edge is proposed to concentrate development within mobility routes, namely the N2 and R22 mobility routes. Growth within settlements not located within a mobility route needs to be limited to the boundary of the urban area.[19] From the SDF LAP it is clear that the proposed future developments within Hluhluwe are to occur mainly to the south of the existing R22 where various residential areas are planned for development. An agricultural industrial area is also planned to the south east of the town with various mixed use developments planned adjacent to the airfield.

IMPLICATIONS

The proposed realignment would satisfy many of the economic aspects of the relevant planning documents, as listed below:

[19] Office of the Municipal Manager, IDP/PMS unit: *IDP 2012/2013 – 2016/2017, 3rd Review 2015/2016*, Hluhluwe.

- It will promote skills development through the employment of local labour;
- The employment of local labour will assist in alleviating poverty, if only on a temporary basis through short-term employment opportunities;
- It will potentially create additional business opportunities associated with the construction, and possibly operational phases, thus creating new local business;
- It will contribute to service infrastructure; and
- Would enable and enhance the implementation of the various transport initiatives such as the LSDI and Transnet Swaziland Rail Project.

Conversely, however, the realignment may also inhibit some of the economic goals of the IDP as traffic will no longer be channelled through Hluhluwe town. Spending in the town may consequently decrease, and it is anticipated that it may affect the filling station, convenience stores and the informal market.

On the whole, the approval of the Preferred Layout would not compromise the integrity of the approved Integrated Development Plan or Spatial Development Plan and is in line with certain aims and objectives included in these documents. The IDP and SDF indicate that future expansion for Hluhluwe town is earmarked towards the south and west of the town. The Preferred Layout is situated is to the north of the town, outside the built environment and will not affect the proposed development nor encroach into designated future area plans (Figure 6-1). However, the approval of the Alternative Layout 2 would result in a portion of the proposed development traversing the urban edge to the west of the town. This would limit any future expansion of the town to the west (as is proposed in the planning documentation) and could eventually cause the bisection of the town, as is presently the case with the existing R22.

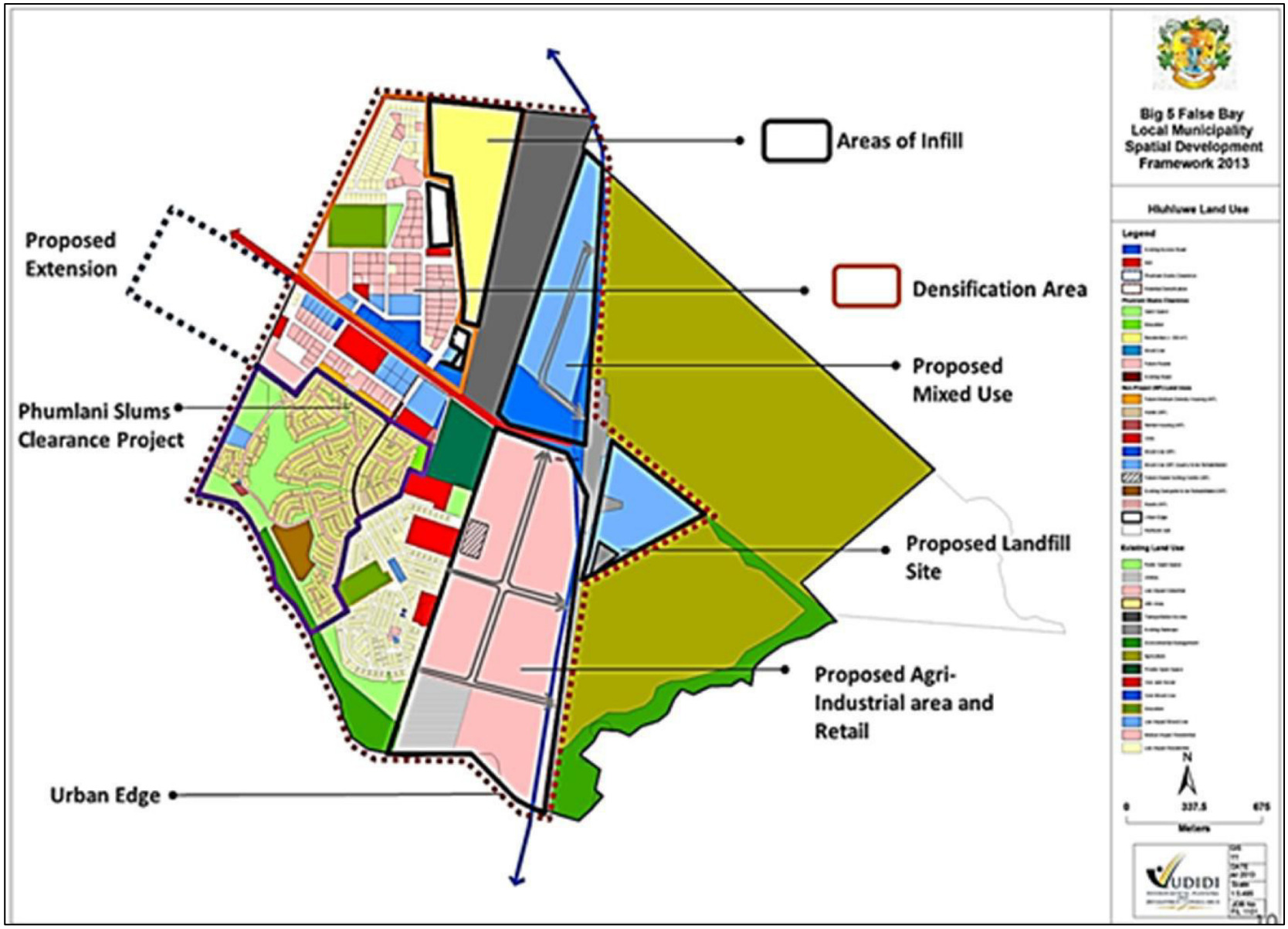


Figure 6-1: Hluhluwe Town Urban Edge and Development Designations as per the Big 5 False Bay SDF.

6.1.4. Cultural, Historical and Archaeological Resources

DESCRIPTION

Correspondence from Amafa aKwaZulu-Natali[20] notes that the general area of development is sensitive in terms of heritage values. Its location in close proximity to a World Heritage site and known archaeological zone renders it sensitive. The area proposed for the development is underlain by sediments that range from a low to very high fossil sensitivity. Heritage resources likely to occur in the area include fossils as well as archaeological artefacts and informal burials.

IMPLICATIONS

Heritage resources are likely to occur in the area and include fossils, as well as archaeological artefacts and informal burials. It is likely that fossils may be impacted by the proposed development. However, it is unlikely that significant heritage resources will be impacted due to the limited extent and disturbed nature of the larger sections of this development. The extent and significance of this is not clearly understood and is to be addressed in the EIR. Please see the PoS for details on the study to be conducted.

6.1.5. Surrounding Landuse and Aesthetics

DESCRIPTION

The properties through which the realignment passes are zoned as commercial agriculture and are used predominantly for the growing of pineapples. Although a portion of the land will be transformed, the entire extent of agricultural land will not be lost, and will be limited to the realignment reserve.

A farming homestead is found approximately 220m to the north of the proposed route alignment. A house has been built approximately 30m to the south of the periphery of the proposed alignment, outside of the Hluhluwe town border and zoning. A portion of the alignment will be constructed on fill, increasing the height of the road and the associated aesthetic impacts, particularly on the house to the south of the proposed alignment.

IMPLICATIONS

The realignment of the R22 will change the sense of place associated with the area as it will be a visual intrusion, which will also contribute to noise and possibly light pollution. The hard surfaces associated with the proposed realignment will increase stormwater run-off quantities and velocities, which has the potential to create erosion problems.

The rights of landowners will be negatively affected if the consultation process is not transparent, and if landowners are not provided with suitable input and compensation. A designated SANRAL official is responsible for liaising with all affected landowners with regards to compensation. All landowners have been consulted and registered within this process. Further consultation with directly affected

[20] Amafa aKwaZulu-Natali submitted correspondence on the draft Basic Assessment Report, for the Road-Over-Rail Bridge and Approach Alignment (ref: 14/12/16/3/3/1/1502). Section 6.1.4 is based on this correspondence as the information provided therein is applicable to the general region, not specifically the road-over-rail bridge site.

landowners through the land acquisition process will be undertaken as a separate process to the Environmental Impact Assessment process.

The realignment will not directly impact on the physical housing structures, but could potentially create a nuisance to surrounding households located in close proximity to the road in terms of vibration and noise. Portions of land parcels and / or farms will become fragmented.

6.1.6. Agricultural resources

DESCRIPTION

The predominant land use to the north of the town is agriculture, and in particular, pineapple farming. Hluhluwe is the heart of pineapple farming in the region, with a significant portion of the pineapple product being exported. All three of the alignments proposed, will pass through land which is presently used for pineapple cultivation. The loss of agricultural land for each alignment is provided in Table 6-1 below.

Table 6-1: Loss of agricultural land associated with each alignment.

Alignment	Road width	Road length	~Loss of agriculture land
Preferred Layout	13m	2.42km	31 460m²
Alternative Layout 1	13m	2.55km	33 150m²
Alternative Layout 2	13m	1.55km	20 150m²

IMPLICATIONS

The realignment of the R22 around Hluhluwe town will result in the loss of viable agricultural land. The fragmentation of agricultural land would result in an irreplaceable loss of agricultural land. However, an underpass is proposed along the Preferred Layout to allow the farm owner access to the dissected portion of land, allowing farming activities to continue, minimising the cumulative loss of agricultural land.

6.1.7. Traffic, Roads and Access

DESCRIPTION

Presently, the R22 runs off the N2 to the town of Hluhluwe and is the primary linkage between South Africa and Mozambique. According to the Big Five False Bay Municipality's IDP Review, the R22 forms part of the Lubombo Spatial Development Initiative (LSDI) Corridor which links the N2 with Sodwana, Kosi Bay and Mozambique.

As per the Traffic Study[21] undertaken (Appendix 3), the 11% of heavy vehicles identified which are not destined for the town centre will no longer pass through the town centre. This will provide a faster, more direct link to the R22 LSDI, providing a travel time saving for through traffic.

[21] Venter, V., 2015: *SANRAL Elimination of At-grade Railway Crossing on National Route R22 Traffic Study*. Hatch Goba, Umhlanga.

Full access to and from Hluhluwe town, off the realigned R22, will be available at the road-over-rail bridge interchange to the east of the town, and the proposed T-junction intersection to the west of the town. As such full access will be available for commuters wanting to access Hluhluwe town.

The section of the proposed realignment, to the north of the town, partially follows a fence line, ensuring that the extent of the disturbance will be slightly minimised due to the existing disturbance.

With regards to the proposed development setting a precedent for similar activities in the area; the Application is one being undertaken by a national parastatal and is not the responsibility of the local municipality. As such it is considered that this activity will not set a precedent for activities of a similar nature in the greater area surrounding Hluhluwe town.

IMPLICATIONS

Benefits to the town include improved safety of pedestrians within town as the bypass removes all through traffic (except those wishing to stop in town). Other benefits include the reduction of large truck traffic through the town which also reduces noise and vehicle emissions within the town. Traffic which will no longer need to pass through the town centre will increase the lifespan of the road pavement of the R22.

6.2. Potential impacts on the biophysical environment

6.2.1. Topography

DESCRIPTION

The realignment will traverse relatively flat topography at an elevation of approximately 65m above mean sea level, with only one area where there are steeper grades descending into a moderate valley line, located at approximately chainage 1950.

IMPLICATIONS

Efficient storm water management is important in preventing erosion of the surrounding agricultural lands and road infrastructure to be developed, as well as maintaining safety standards for road users.

6.2.2. Climate

DESCRIPTION

The Hluhluwe area is situated within the Coastal Summer Rainfall region with an average annual rainfall of between 800mm and 1000mm (Fig 3.7 page 3-21, SANRAL Drainage Manual 6th Edition)[22]. The area is characterised by a rainy summer season and experiences intermittent rain in winter. Much of the summer rain falls in thunderstorm events. The area is generally frost-free with a climate that ranges in temperature from a minimum of 7.8°C to a maximum 38.5°C.[23]

IMPLICATIONS

[22] Mothilal, A. & Bradley, C., 2015: *Route Determination Report,* Hatch Goba, Umhlanga.
[23] Mucina, L. & Rutherford, M.C. (eds) 2006: The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

Potential exists for high intensity rainstorm events to cause severe erosion along the identified construction route if suitable measures are not implemented. Little to no rain during winter may impede any re-vegetation and rehabilitation efforts. Dry winters may pose a potential threat in terms of veld fires.

6.2.3. Air Quality & Surface Wind

DESCRIPTION

The prevailing wind direction varies but can be strong at times and can contribute to wind-blown dust and increase the fire hazard probability.

No ambient air quality monitoring stations are available to provide data however, due to the lack of noxious emitters the air quality is likely to be good.

IMPLICATIONS

Potential exists for dust to be created along the identified route during the construction phase, particularly during soil and vegetation stripping activities and through the exposure of soil stockpiles. The impact of wind-blown dust from the site during the construction phase also has the potential to impact negatively on surrounding landowners.

Wind may also aid in the spread of fires, especially during the dry winter season. This could have implications for surrounding farmlands and reserves and would pose health and safety concerns.

6.2.4. Geology and Soils

DESCRIPTION

The site is located on basalt. Figure 6-2 provides a map of the surrounding geology evident in the area. The basalt in this area is known to be deeply weathered and generally very closely jointed (blocky) through its upper weathered zone.[24]

Whilst a Geotechnical Assessment will be undertaken, it will relate specifically to the design and consequent construction component of the project. As such, the report will be technical in nature and will not be included in the S&EIR as the information will not apply to the Listed Activities. However, the report will be included as part of the WULA submission.

IMPLICATIONS

Construction in areas of instability, the use of inappropriate materials and poor design and construction methods could result in the cracking and collapse of the proposed realignment, which could create serious financial, as well as health and safety implications.

[24] Mothilal, A. & Bradley, C., 2015: *Route Determination Report*, Hatch Goba, Umhlanga.

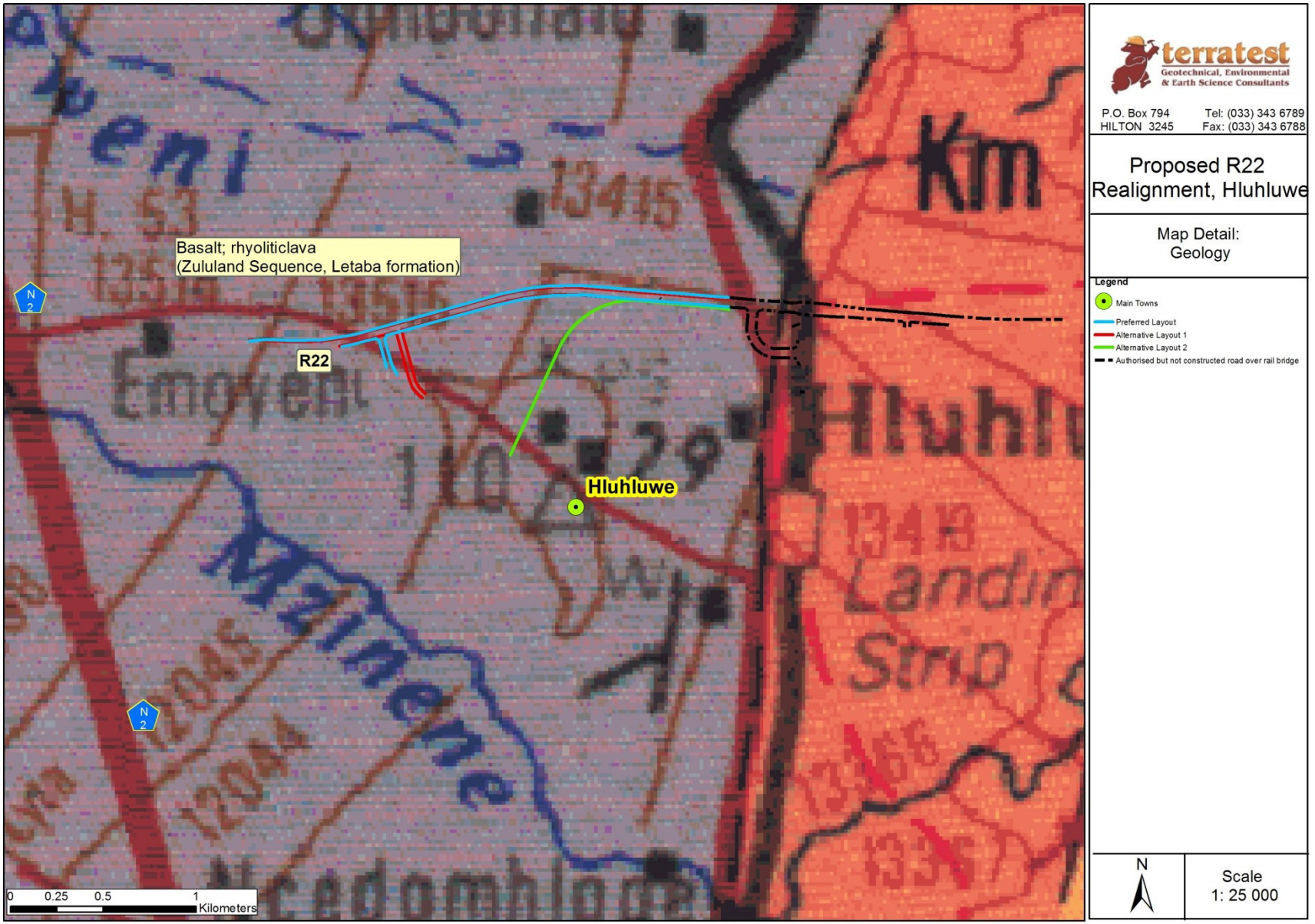


Figure 6-2: Geological mapping of the receiving environment.

6.2.5. Hydrology

DESCRIPTION

The area lies within the 27 Drainage Flood Basin (fig 3.30 page 3-44, SANRAL Drainage Manual 6th Edition). The most significant watercourses in close proximity to Hluhluwe town include the Ngweni River to the north. The Ngweni River and its tributaries eventually flow into the Mzinene River. The Mzinene River meanders for in excess of 15km before it eventually becomes the headwaters for the north-western shores of Lake St Lucia.

IMPLICATIONS

The increase in hardened surfaces of the realigned route layout will result in increased stormwater flows and flow velocities. Increased erosion and sedimentation adjacent to the route, and further afield, can occur if stormwater is channelled and discharged into areas sensitive to erosion and prone to flooding. During the construction phase, hazardous substances (such as paints and petrochemicals) are likely to be used. Should any hazardous substance enter a watercourse or water resource, it will result in contamination, which will have serious implications on fauna, flora, agriculture and downstream users.Further, the potential exists for construction operations and materials to contaminate groundwater resources e.g. hydrocarbons from construction plant / machinery, if managed incorrectly.

6.2.6. Sensitive Areas

DESCRIPTION

Any development has the potential to negatively impact upon the local fauna, given the intrusion of an unnatural object in a natural environment, or artificial environment.

Ezemvelo KZN Wildlife's Minset planning tool indicates the site is set within two planning units. The first being 100% transformed land and Irreplaceable Critical Biodiversity areas.

As per Table 6-2, the database has highlighted conservation significant faunal and floral species as potentially occurring, or being modelled to occur, within the two planning units.

Table 6-2: Species modelled as per MINSET, to potentially occur within the development footprint.

Form	Species	Common Name
Mammal	*Diceros bicornis minor*	Black Rhino
Millipede	*Centrobolus fulgidus*	Red Millipede
Mollusc	*Edouardia conulus*	Conical Bark Snail
Millipede	*Zinophora laminata*	Laminate large spined millipede
Millipede	*Orthoporoides corrugatus*	Corrugated black millipede

Three protected areas are found in the greater Hluhluwe area and include Bonamanzi Game Park, Isimangaliso Wetland Park and Hluhluwe-Imfolozi Park (HIP). Bonamanzi Game Park is situated <500m to the south-east of the proposed realignment, Isimangaliso Wetland Park is situated approximately 7 kilometres to the east of the site, and HIP is situated to the south-west of the site.

The False Bay Ecological Corridor (Figure 6-5) is an unfenced corridor of undeveloped land which connects the Isimangaliso Wetland Park, Bonamanzi Game Park and HIP, providing an important ecological connector between these protected areas.

IMPLICATIONS

Although Minset designates certain portions of the realignment as Irreplaceable Biodiversity Areas, an analysis of their Transformation Landcover (See Figure 6-4) indicates that the site is in actual fact completely transformed. This was confirmed during the site inspection undertaken by the EAP, in which it was noted that the realignment passes through lands which have been transformed to agricultural lands, resulting in a monoculture receiving environment. As such, the approval of this application will not compromise the integrity of the existing environmental management priorities for the area.

The Preferred Site Locality of the site to the north of Hluhluwe town ensures that the False Bay Ecological Corridor and Bonamanzi Game Park will in no way be impacted upon. In addition, it is not anticipated that the construction or operation phases will negatively impact upon the sensitive areas listed.

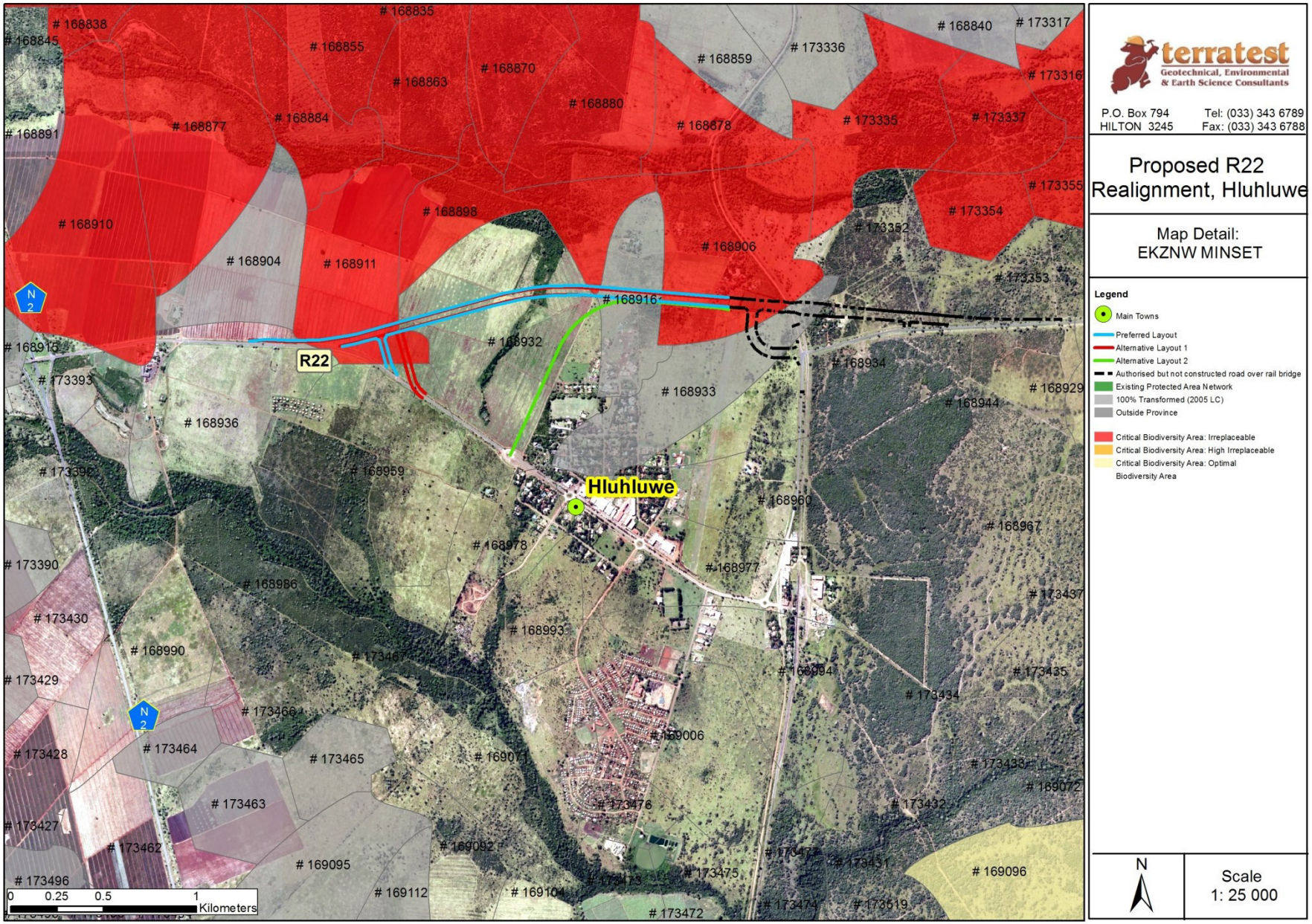


Figure 6-3: Minset designation for the greater Hluhluwe area.

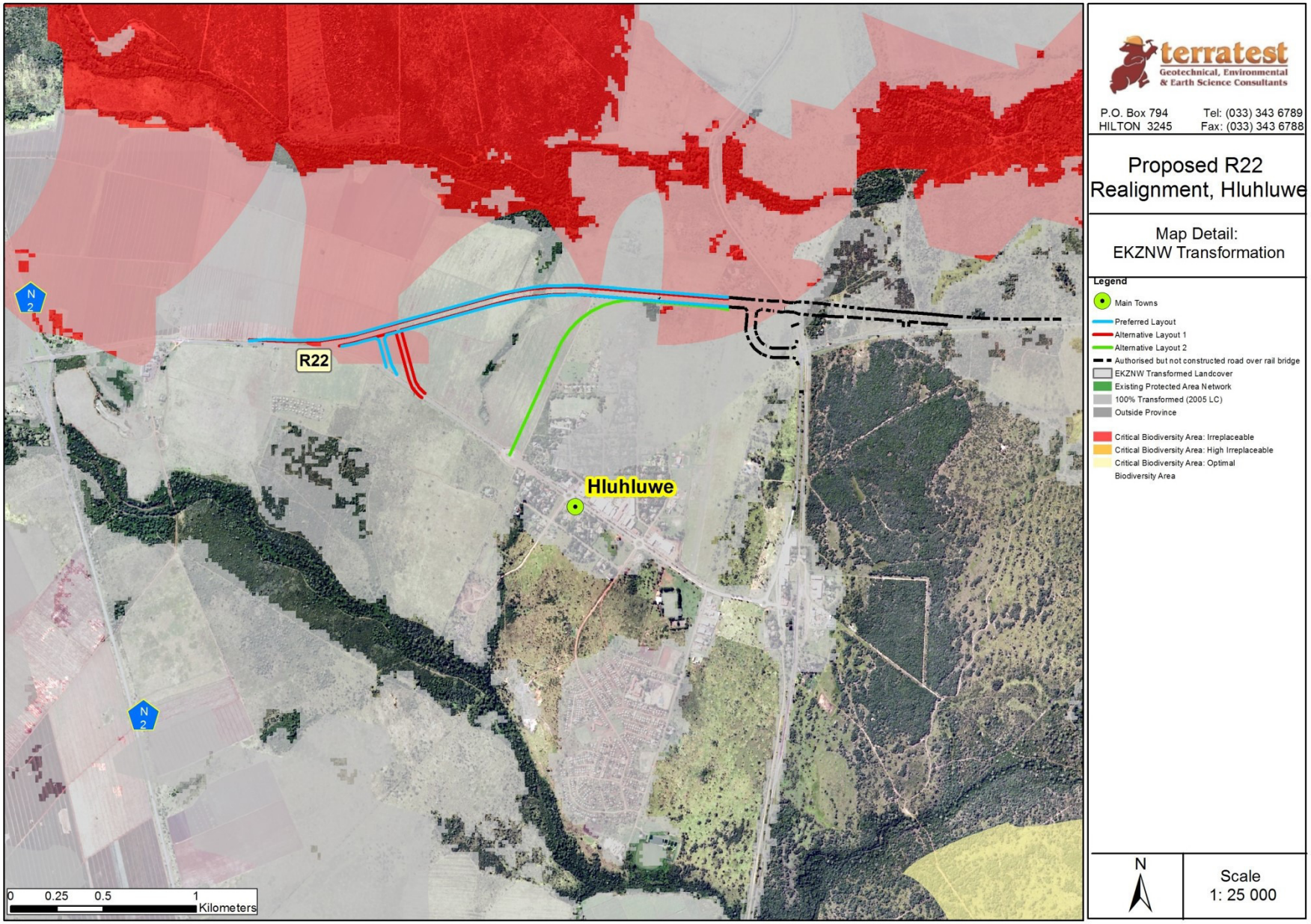


Figure 6-4: The EKZNW Transformation layer superimposed over the Minset designations (note what appears to be lightly shaded red is where the 100% Transformed layer is superimposed over the Irreplaceable layer).

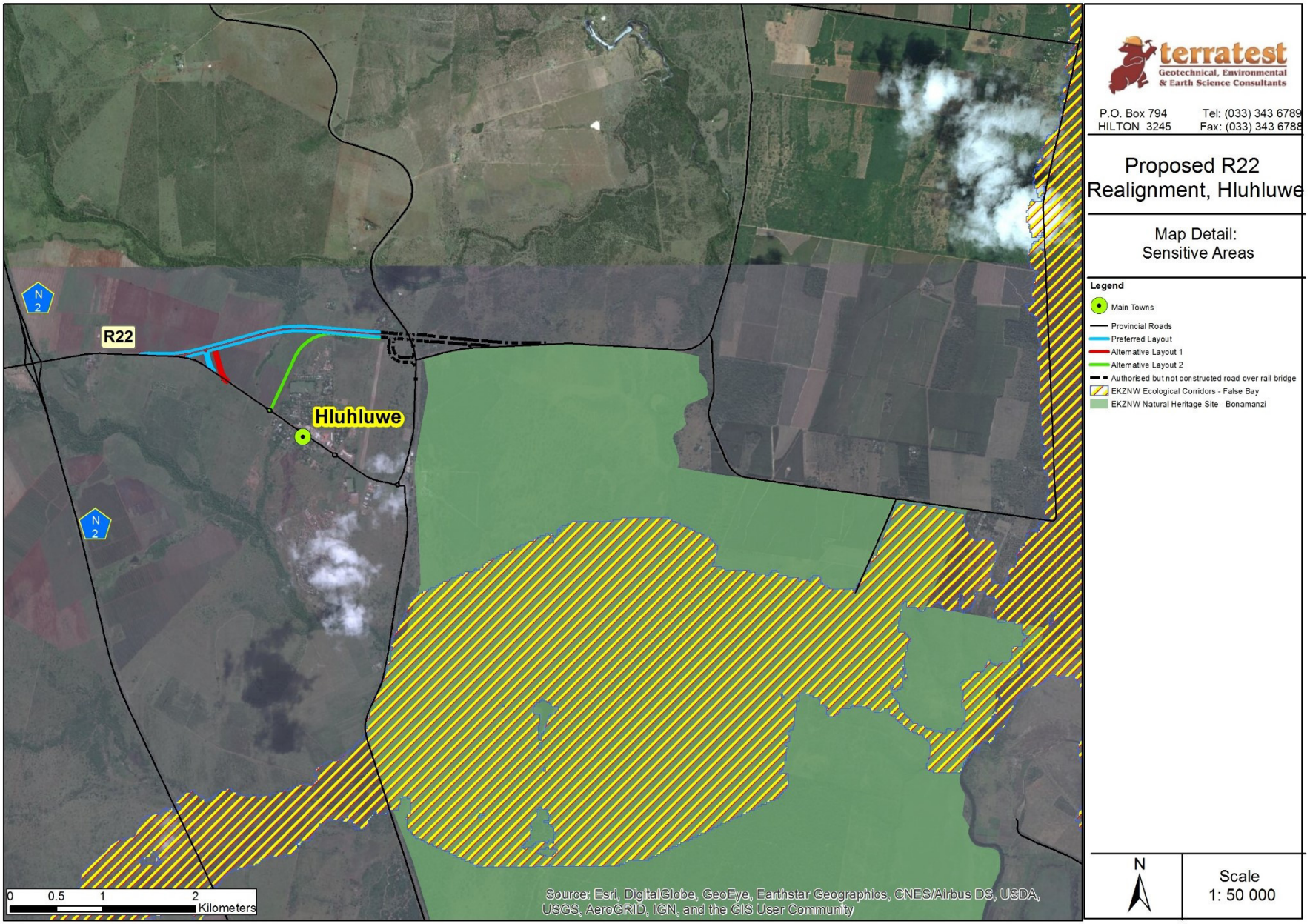


Figure 6-5: Sensitive areas in close proximity to the Preferred and Alternative Layouts.

6.2.7. Flora

DESCRIPTION

The area is categorised by Mucina and Rutherford (2006)[25] as Zululand Lowveld throughout the alignment, bar the drainage line, which is designated as Subtropical Alluvial Vegetation (See Figure 6-6). Zululand Lowveld is most commonly found on flat or slightly undulating landscapes and supports tall grassvelds with sparsely scattered solitary trees and shrubs which form a mosaic with the typical savanna thornveld, bushveld and thicket patches. The vegetation distribution extends from KwaZulu-Natal to Swaziland and Mpumalanga, with the main extent around Big Bend, Hluhluwe, Mkhuze, Ulundi and Ongoye Forest. Subtropical Alluvial Vegetation is characterised by flat riverine terraces supporting a complex of macrophytic vegetation, marginal reed belts, flooded grasslands and riverine thickets. The distribution of Subtropical Alluvial Vegetation extends through Limpopo, Mpumalanga and KwaZulu-Natal into Swaziland.

IMPLICATIONS

Whilst the site is predominantly designated as Zululand Lowveld, the majority of the footprint has been completely transformed through agricultural practices. However, it is to be noted that the drainage line (designated as Subtropical Alluvial Vegetation) over which the Preferred Layout will pass is relatively untransformed. For this reason, a Vegetation Assessment will be conducted during the EIA Phase to determine the presence / absence of any threatened / endangered plant species.

[25] Mucina, L. & Rutherford, M.C. (eds) 2006: The vegetation of South Africa, Lesotho and Swaziland. *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

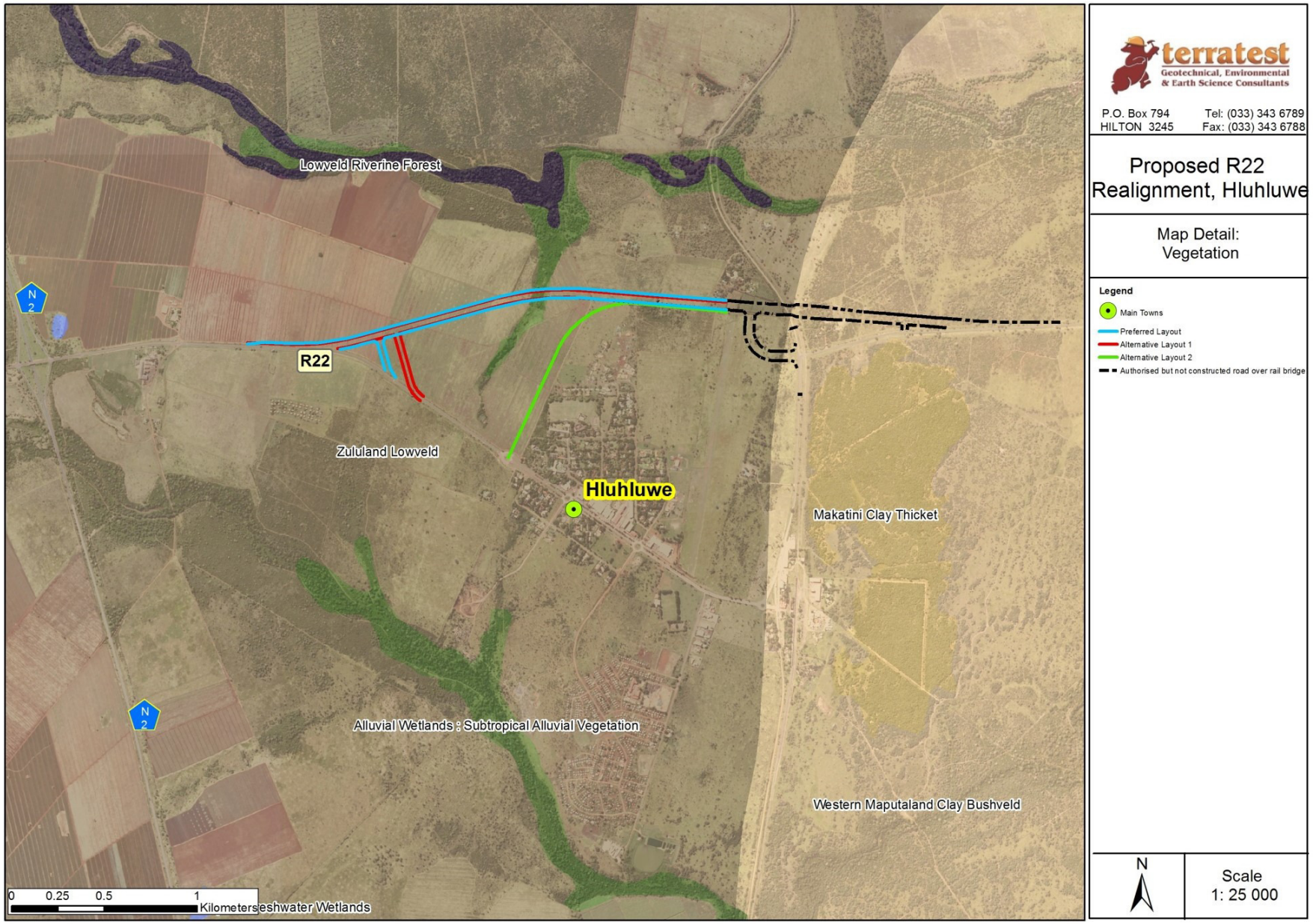


Figure 6-6: Vegetation designations for Hluhluwe town and surrounds (Mucina and Rutherford, 2006).

6.2.8. Wetlands and Watercourses

DESCRIPTION

At approximately km1 the realignment passes through what has been designated by the Ezemvelo KZN Wildlife and the Council for Scientific and Industrial Research (CSIR) National Freshwater Ecosystem Priority Areas (NFEPA) rivers and wetlands coverage (2011) data layers, as a wetland system (See Figure 6-7). This is the reason for the presence of the Subtropical Alluvial Vegetation. The data layers indicate that the wetland systems are natural systems with an endangered conservation status.

IMPLICATIONS

Wetland systems perform an integral and important function in terms of ecosystem services. As the realignment passes through an NFEPA and EKZNW designated wetland system, a Wetland Assessment will be undertaken during the EIA Phase to determine the health, extent and sensitivity of the wetland system.

6.2.9. Fire Management

DESCRIPTION

The greater Hluhluwe area experiences moderate rainfall, occasional droughts, and dry winter months. As such, the threat of fire is a reality. Given that the route is surrounded by agricultural lands to the north, Hluhluwe town to the south-east and is in close proximity to reserves, the threat of veld fires is even more significant.

IMPLICATIONS

Accidental fires could cause damage to the infrastructure on-site, both during construction and operation, as well as to neighbouring properties and agricultural activities. The prevention of fire is therefore of critical importance as a fire could have serious environmental and financial implications on site and for the surrounding region, as well as pose a threat to life.

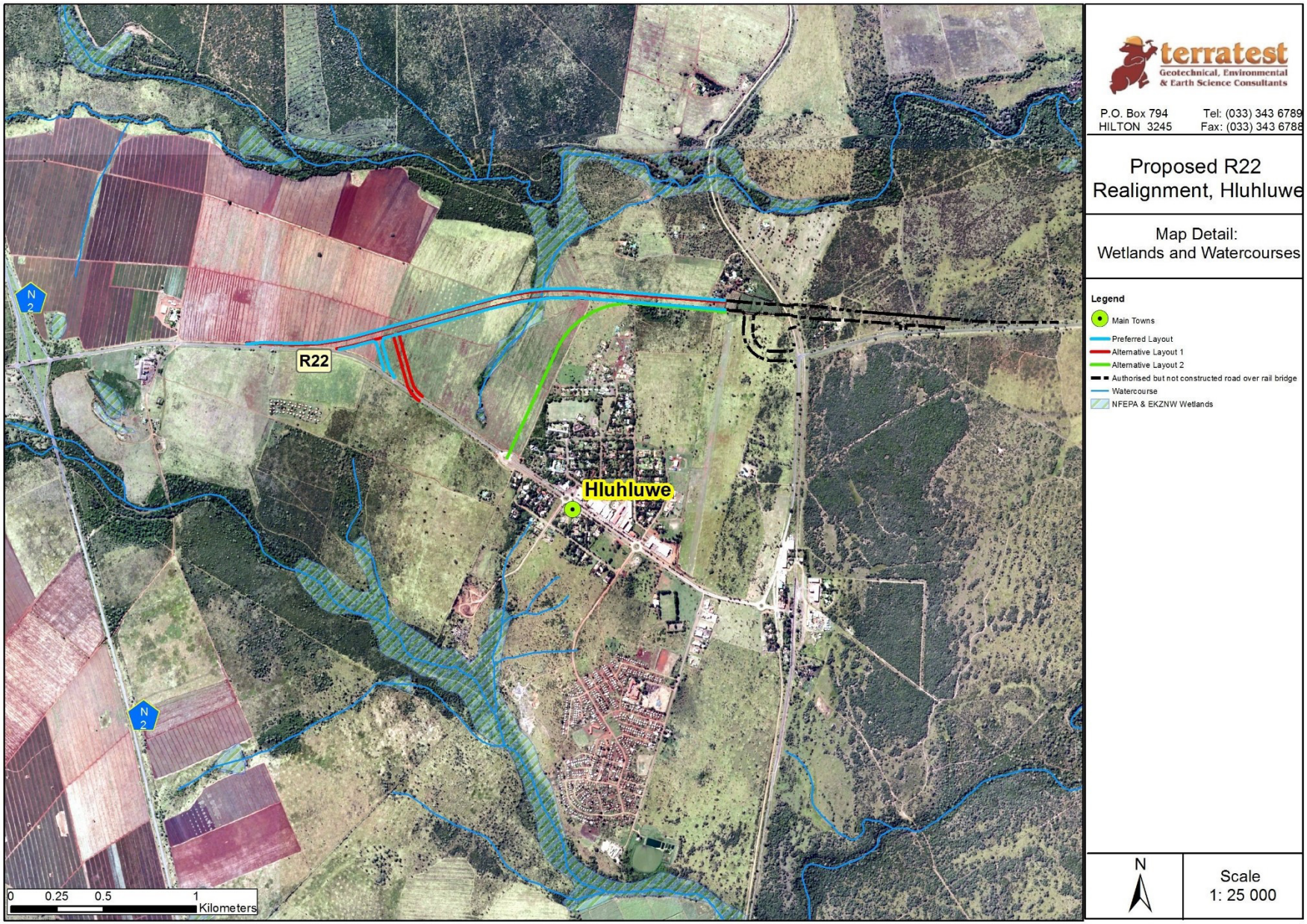


Figure 6-7: NFEPA and EKZNW designated wetland systems.

7. EXISTING TECHNCIAL FEASIBILITY STUDIES

A feasibility study was undertaken by / on behalf of SANRAL to determine the optimal route alignment for the regional transport system / corridor. This comprised of a Traffic Impact Assessment and a Route Determination Report (See Appendix 3). The primary objective of these two reports was to determine if there are any planning or design limitations which result in any of the layout options having any fatal flaws. The preferred alignment was identified through this process.

7.1. Corridor Alternatives Investigated

During the initial route location process, two corridors were identified for the potential realignment of the R22. These were a southern corridor located to the south of the existing R22 passing thorough the southern portion of Hluhluwe and a northern corridor passing through mainly agricultural land, located to the north of Hluhluwe.

7.2. Layout Alternatives Investigated

- A Traffic Analysis, Economic Analysis and Route Determination Report were conducted (See Appendix 3 for copies thereof).
- Based on the Route Location identification process for this project it was recommended that Preferred Layout be selected as it offers the greatest benefit to all road users in terms of total travel time, reducing delay, capacity and road safety benefits.
- The Preferred Layout has the most favourable horizontal geometry particularly in the proximity of the airfield and new road-over-rail bridge and provides the most acceptable sight distances along the route for the desired design speed.
- Based on the outcome of the traffic analysis which took into account travel time, capacity constraints, traffic volumes and intersection delays, the Preferred Layout is the most feasible.
- From both a geometric and technical perspective, the three proposed layouts are all feasible and allow for full National Route standards for a design speed of 100km/h to be achieved.
- All layout alternatives showed improved travel time than the existing scenario, confirming that the realignment would be beneficial from a traffic and transport point of view.
- The number plate survey undertaken as part of the Traffic Impact Assessment noted that almost 70% of traffic coming from the west of Hluhluwe went to Hluhluwe town area or areas to the east of Hluhluwe, and returned again during the 12-hour survey period. This suggested that the impact of the realignment would not have a big impact on local business as people that were spending at local businesses had planned their trip into Hluhluwe town, rather than simply being passers-by / through traffic.

Please note: The Preferred Layout reviewed in this Scoping Report is a hybrid of what the Traffic Impact Assessment and Route Determination Report referred to as Alternative 1 and 3 as it takes into consideration the best components of both alignments, but does not need to take into consideration the road-over-rail bridge (and associated expropriations) as this has already been authorised. As such the crucial factors which defined the Preferred Layout (as reviewed in this Scoping Report) included the most direct route to tie into the authorised road-over-rail bridge,

safe intersections off/onto the R22, horizontal geometry, site distances for design speed and road curvature.

8. PUBLIC PARTICIPATION PROCESS (PPP)

8.1. Objectives

The objectives of the PPP are to identify and inform potential IAPs of the proposed development, to provide them with the opportunity to register any issues or concerns regarding the proposal and to identify mitigation and management options to address issues and concerns raised where appropriate.

8.2. Landowners

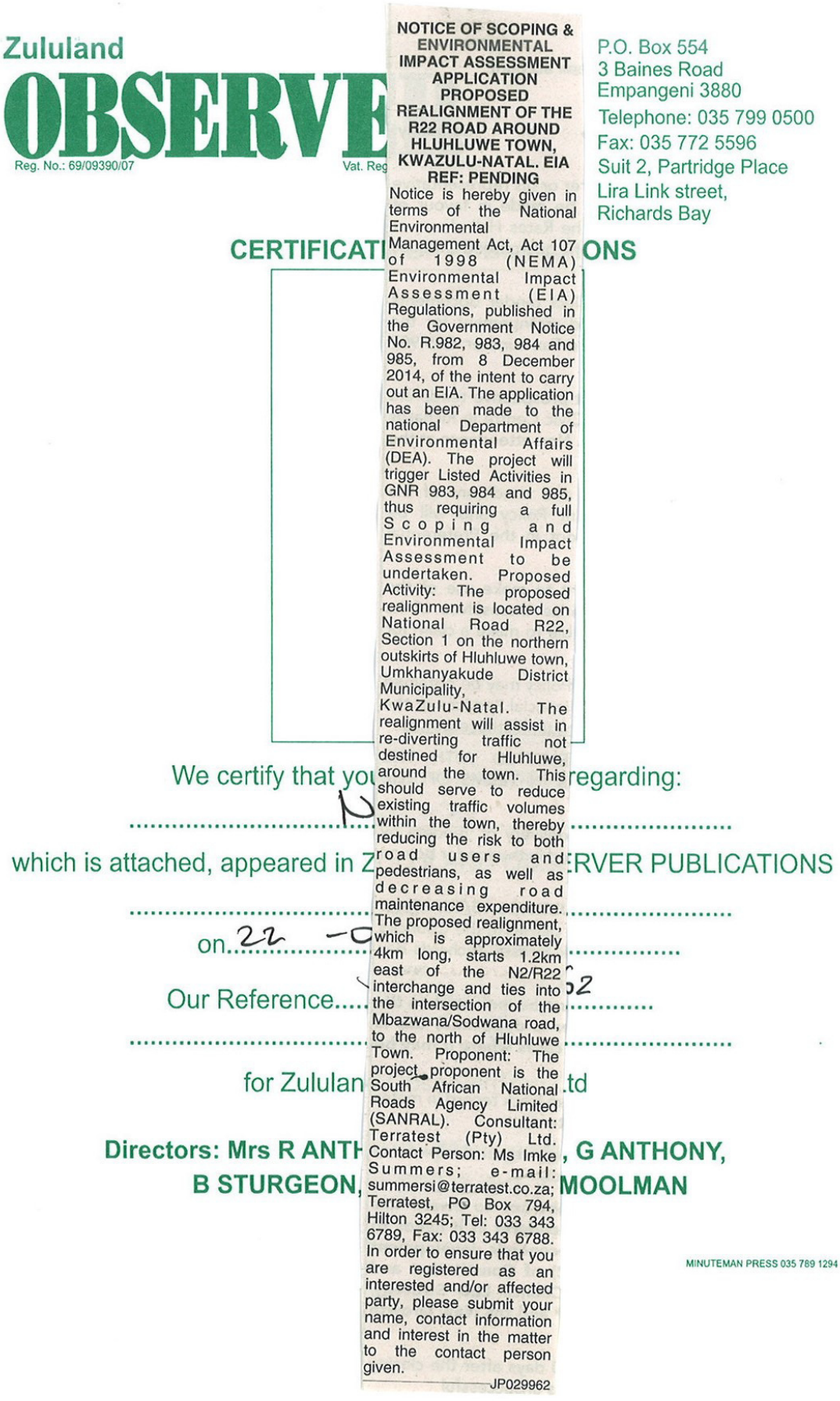
Landowners were notified via the Notification Document, and telephonic and email correspondence. In addition, SANRAL has commenced with the relevant notification of landowners through their mandated processes. However, as land acquisition discussions between the applicant and the relevant landowners are deemed a separate process, they have not been included in this EIA process.

8.3. Approach

In undertaking the PPP the proposed project description was made available to registered and identified IAPs so that they could participate in a meaningful manner. The approach included:

- Liaison with relevant local municipal officials regarding the proposed development;
- Liaison with impacted landowners;
- Identifying potential IAPs;
- Preparing a Notification Document for circulation to IAPs and to Organs of the State / Stakeholders having jurisdiction over the proposed development;
- Giving written notice to NGO's etc. who might have an interest in the proposal;
- A newspaper advertisement was placed in The Zululand Observer in English on 22 April 2016 (See Figure 8-1 below);
- Posters were placed alongside the existing alignment on 3 November 2016 (See Figure 8-2 for a copy of the poster and Figure 8-3 for the locations of the posters placed. Plates 8-1 to 8-4 provides photos of the posters placed); and
- Maintaining an IAP database of all registered IAPs and collating all comment received on the proposed development. See Table 8-1 below for comments submitted.

A number of IAPs were identified and notified of the proposed development. A database of registered IAPs and comments received from IAP's are all contained in Appendix 2 (Public Participation Process) of this document.



Zululand
OBSERVE
Reg. No.: 69/09390/07 Vat. Reg

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Telephone: 035 799 0500
Fax: 035 772 5596
Suit 2, Partridge Place
Lira Link street,
Richards Bay

CERTIFICATI ONS

We certify that you regarding:

which is attached, appeared in Z RVER PUBLICATIONS

on 22 -0

Our Reference 02

for Zululan td

Directors: Mrs R ANTH , G ANTHONY,
B STURGEON, MOOLMAN

MINUTEMAN PRESS 035 789 1294

NOTICE OF SCOPING & ENVIRONMENTAL IMPACT ASSESSMENT APPLICATION PROPOSED REALIGNMENT OF THE R22 ROAD AROUND HLUHLUWE TOWN, KWAZULU-NATAL. EIA REF: PENDING

Notice is hereby given in terms of the National Environmental Management Act, Act 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations, published in the Government Notice No. R.982, 983, 984 and 985, from 8 December 2014, of the intent to carry out an EIA. The application has been made to the national Department of Environmental Affairs (DEA). The project will trigger Listed Activities in GNR 983, 984 and 985, thus requiring a full Scoping and Environmental Impact Assessment to be undertaken. Proposed Activity: The proposed realignment is located on National Road R22, Section 1 on the northern outskirts of Hluhluwe town, Umkhanyakude District Municipality, KwaZulu-Natal. The realignment will assist in re-diverting traffic not destined for Hluhluwe, around the town. This should serve to reduce existing traffic volumes within the town, thereby reducing the risk to both road users and pedestrians, as well as decreasing road maintenance expenditure. The proposed realignment, which is approximately 4km long, starts 1.2km east of the N2/R22 interchange and ties into the intersection of the Mbazwana/Sodwana road, to the north of Hluhluwe Town. Proponent: The project proponent is the South African National Roads Agency Limited (SANRAL). Consultant: Terratest (Pty) Ltd. Contact Person: Ms Imke Summers; e-mail: summersi@terratest.co.za; Terratest, PO Box 794, Hilton 3245; Tel: 033 343 6789, Fax: 033 343 6788. In order to ensure that you are registered as an interested and/or affected party, please submit your name, contact information and interest in the matter to the contact person given.

JP029962

Figure 8-1: A copy of the newspaper advertisement placed in the Zululand Observer on the 22nd April 2016.

NOTICE OF ENVIRONMENTAL IMPACT ASSESSMENT APPLICATION (BASIC ASSESSMENT) and WATER USE LICENCE APPLICATION

DEA REFERENCE: Pending

DWS REFERENCE: Pending

Notice is hereby given in terms of Regulation 41 of the new National Environmental Management Act, Act 107 of 1998 (NEMA) Regulations, published in the Government Notice No. R.982, 983, 984 and 985, from 8 December 2014 of the intent to carry out a Scoping and Environmental Impact Assessment. The Application will be lodged with the national Department of Environmental Affairs. Notice is also given in terms of Section 21 of the National Water Act, Act 36 of 1998 of the intent to undertake a Water Use Licence Application.

LOCATION: The site is located on the northern and western outskirts of the town of Hluhluwe, along the Regional Road 22 (R22), within the Big Five False Bay Local Municipality, Umkhanyakude District Municipality.

SCOPE OF WORKS: The proposed development will entail the realignment, in effect a bypass, of the existing R22 around Hluhluwe Town. The realignment will assist in re-diverting traffic not destined for Hluhluwe, around the town where it will tie into the Authorised Road-Over-Rail-Bridge alignment. Three alignment alternatives have been provided. However as per the map below, a Preferred Route Alignment has been determined. As part of the route alignment construction activities, works will be undertaken within a watercourse, which will entail the undertaking of a Water Use Licence Application, in addition to the Scoping and Environmental Impact Assessment.

PROPONENT: South African National Roads Agency Limited (SANRAL)

CONTACT: Imke Summers
Terratest (Pty) Ltd
P.O. Box 794, Hilton, 3245
Phone: 033 343 6789
Fax: 033 343 6701
E-mail: summersi@terratest.co.za

In order to ensure that you are identified as an interested and/ or affected party please submit your name, email address, and other contact information and interest in the matter, in writing, to the contact person given above.

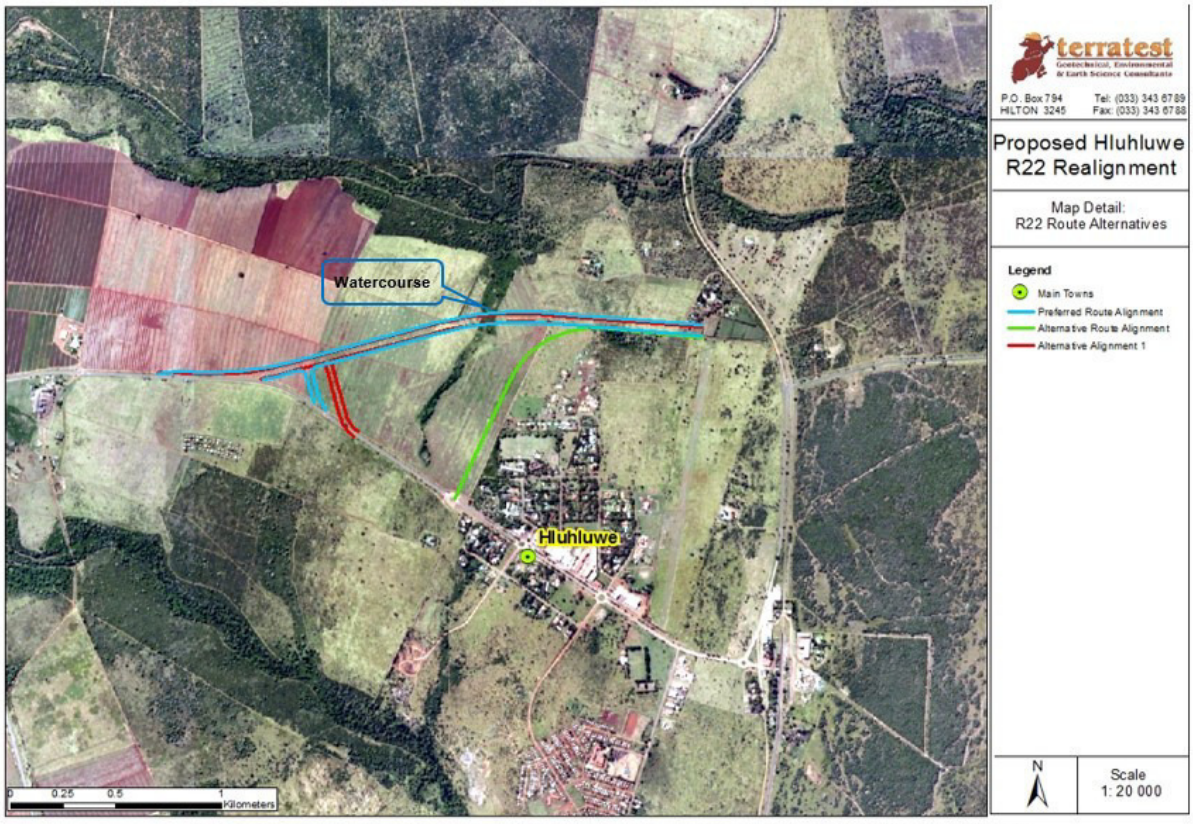

Figure 1. The Preferred and Alternative Route Alignments for the realignment of the R22 around Hluhluwe town.

Figure 8-2: The notification poster placed at various points along the existing R22.

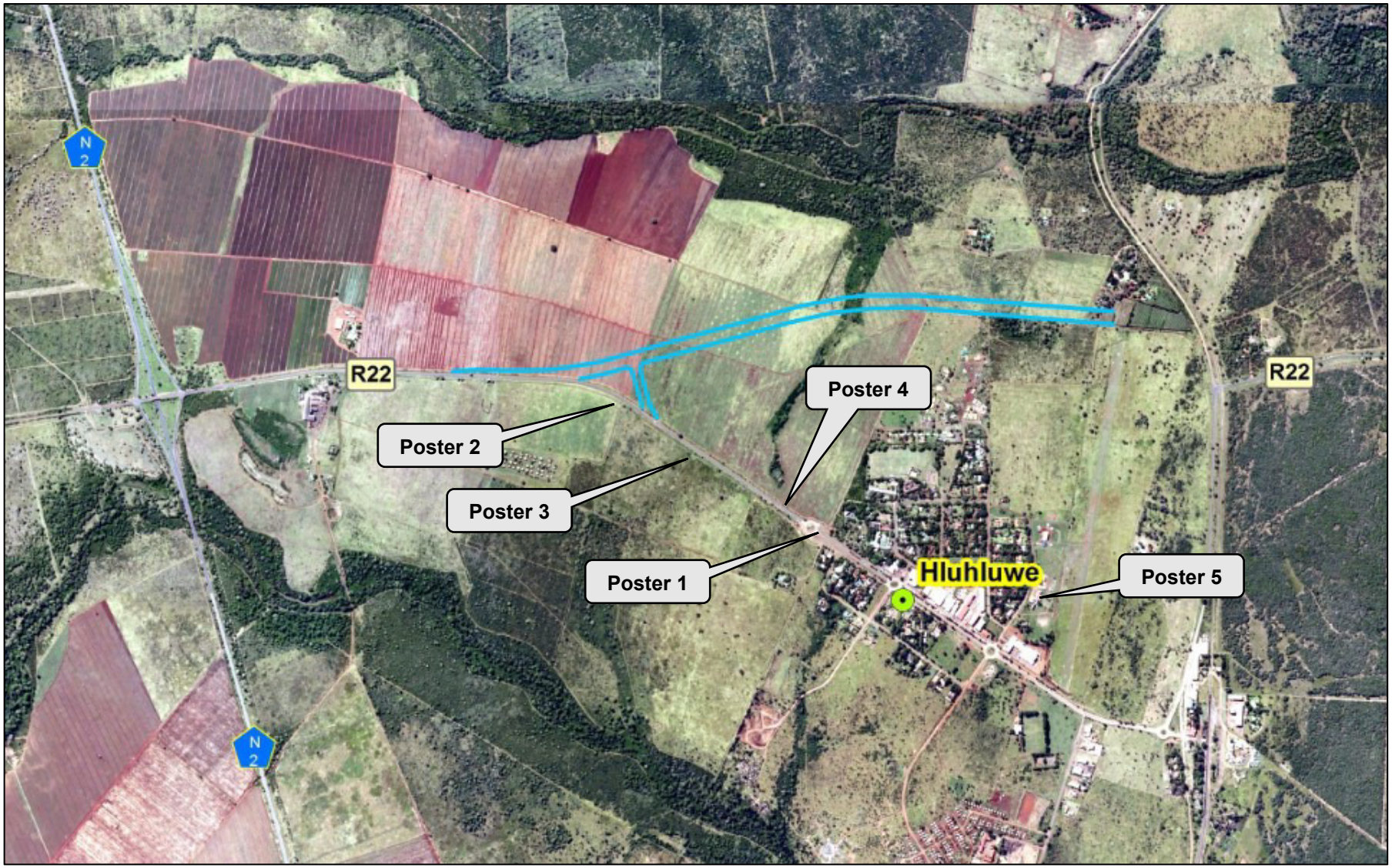

Figure 8-3. Locations of the posters placed around the site. Note, Poster 5 was placed on the general notice board within the Big 5 Hlabisa Local Municipality; however, a photo was not taken thereof.

Plate 8-1: Poster 1 placed adjacent to the perimeter of the Protea Hotel fence line.

Plate 8-2: Poster 2 placed along the fenceline adjacent to the R22 when heading towards Hluhluwe town. Note the poster was placed in close proximity to the point at which the realigned R22 will cut back onto the existing R22 to allow access to the town.

Plate 8-3: Poster 3 placed along the existing R22 when heading towards Hluhluwe town.

Plate 8-4: Poster 4 placed along the R22 in close proximity to Hluhluwe town.

8.4. Key issues from IAPs

Table 8-1 provides a summary of comment received to-date, as well as response from the EAP. The original comment is attached as Appendix 2(d)

TABLE 8-1: Comments received from the Notification Sheet, advertisements and on-site notices

IAP	IAP Comment	EAP response
Raymond Couch Telkom SA SOC Ltd: Network Infrastructure Provisioning Wayleave Management, Eastern Region 05/12/2016	Ref EWIP_NHLW2532_16 Your notification dated 29 November 2016 refers: In reference to the Electronic Communications Act no.36 of 2005. Telkom SA SOC Ltd has no objection to this application for proposed R22 Realignment around Hluhluwe Town. 1. Detailed scaled plans are to be provided, once this proposal is approved. 2. Telkom will require timeous notification to plan any relocation project affected by this proposal. Approval of this proposed is valid for six months. If construction has not yet commenced within this time period, then the file must be resubmitted for approval. Any changes /deviations from the original planning construction must be immediately communicated to this office.	Noted. This correspondence has been forwarded on to the design team to ensure that these requirements are implemented should any relocation of Telkom infrastructure be required.
Elaine Louw Hluhluwe Superspar 13/01/2017	Environmental impact on our business due to the realignment of the R22 that will bypass our business. We would like to take part in the consultation process.	As per the number plate survey undertaken as part of the Traffic Impact Assessment (Appendix 3), almost 70% of traffic coming from the west of Hluhluwe went to Hluhluwe town area or areas to the east of Hluhluwe, and returned again during the 12-hour survey period. This suggested that the impact of the realignment would not have a big impact on local business. You have been registered on the IAP database and will be informed of any project related developments.
Thembalakhe Sibozana	The information provided on the Notification Document is not sufficient for the Department to provide informed comments. According to	As per the ToR included in the draft Scoping Report, a Vegetation Assessment will be conducted in which the presence / absence of

DAFF 10/02/2017	provisions of the NFA with regards to natural forests or protected trees affected as per sections 7 and 15 respectively; scoping report must therefore fully address how natural forests and protected trees will be potentially affected by the proposed development and the department (DAFF) will comment further upon receipt and review of the Draft Scoping Assessment Report including the Vegetation Assessment Report.	natural forests and protected trees will be reported on. This will further confirm whether any additional permits will be required. DAFF will be notified of the availability of the draft Scoping Report for further information and comment.

9. IMPACT ASSESSMENT AND MITIGATION MEASURES

This section of the Report highlights and evaluates potential impacts that are likely to be associated with the proposed road realignment.

9.1. Assessment of the significance of the potential impacts

A Scoping and EIA Application in line with the requirements of the EIA Regulations, 2014, has been undertaken and the results thereof provided below. The impacts on all elements of the receiving environment have been considered, however, only the significant impacts identified have been rated in order to determine the Impact Risk. The Impact Assessment was undertaken by using the methodology provided for in Section 9.2.

9.2. Impact assessment methodology

The EIA Regulations prescribe requirements to be adhered to when undertaking Impact Assessments. These are noted in the following sections contained within the EIA Regulations:

- Regulation 326, Appendix 1 – Basic Assessment Impact Requirements; and
- Regulation 326, Appendix 2 & 3– Environmental Impact Assessment Requirements.

In terms of these Regulations, the following should be considered when undertaking an Impact Assessment:

A description and assessment of the significance of any environmental impact including:

a) Cumulative impacts that may occur as a result of the undertaking of the activity during the project life cycle;
b) Nature of the impact;
c) Extent and duration of the impact;
d) The probability of the impact occurring;
e) The degree to which the impact can be reversed;
f) The degree to which the impact may cause irreplaceable loss of resources; and
g) The degree to which the impact can be mitigated.

A description of the method for assessing the above criteria, as well as the method for determining impact risks, is provided for in Section 9.3.

9.3. Determination of identified impact significance

The overall significance of an impact / effect has been ascertained by attributing numerical ratings to each identified impact. The numerical scores obtained for each identified impact have been multiplied by the probability of the impact occurring before and after mitigation. High values suggest that a predicted impact

/ effect is more significant, whilst low values suggest that a predicted impact / effect is less significant. The interpretation of the overall significance of impacts is presented in Table 9-1.

TABLE 9-1: Interpretation of the significance scoring of a negative impact / effect.

SCORING VALUE	SIGNIFICANCE
>35	**High - The impact is total / consuming / eliminating** - In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time-consuming or some combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt. Mitigation may not be possible / practical. Consider a potential fatal flaw in the project.
25 - 35	**High - The impact is profound** - In the case of adverse impacts, there are few opportunities for mitigation that could offset the impact, or mitigation has a limited effect on the impact. Social, cultural and economic activities of communities are disrupted to such an extent that their operation is severely impeded. Mitigation may not be possible / practical. Consider a potential fatal flaw in the project.
20 – 25	**Medium - The impact is considerable / substantial** - The impact is of great importance. Failure to mitigate with the objective of reducing the impact to acceptable levels could render the entire project option or entire project proposal unacceptable. Mitigation is therefore essential.
7 – 20	**Medium - The impact is material / important to investigate** - The impact is of importance and is therefore considered to have a substantial impact. Mitigation is required to reduce the negative impacts and such impacts need to be evaluated carefully.
4 – 7	**Low - The impact is marginal / slight / minor** - The impact is of little importance, but may require limited mitigation; or it may be rendered acceptable in light of proposed mitigation.
0 – 4	**Low - The impact is unimportant / inconsequential / indiscernible** – no mitigation required, or it may be rendered acceptable in light of proposed mitigation.

The significance rating of each identified impact / effect was further reviewed by the EAP by applying professional judgement.

For the purpose of this assessment, the impact significance for each identified impact was evaluated according to the following key criteria outlined in the sub-sections below.

9.3.1. Nature of impact

The environmental impacts of a project are those resultant changes in environmental parameters, in space and time, compared with what would have happened had the project not been undertaken. It is an appraisal of the type of effect the activity would have on the affected environmental parameter. Its description includes what is being affected and how.

9.3.2. Spatial extent

This addresses the physical and spatial scale of the impact. A series of standard terms and ratings used in this assessment relating to the spatial extent of an impact / effect are outlined in Table 9-2.

TABLE 9-2: Rating scale for the assessment of the spatial extent of a predicted effect / impact

RATING	SPATIAL DESCRIPTOR
7	**International** - The impacted area extends beyond national boundaries.
6	**National** - The impacted area extends beyond provincial boundaries.
5	**Ecosystem** - The impact could affect areas essentially linked to the site in terms of significantly impacting ecosystem functioning.
4	**Regional** - The impact could affect the site including the neighbouring areas, transport routes and surrounding towns etc.
3	**Landscape** - The impact could affect all areas generally visible to the naked eye, as well as those areas essentially linked to the site in terms of ecosystem functioning.
2	**Local** - The impacted area extends slightly further than the actual physical disturbance footprint and could affect the whole, or a measurable portion of adjacent areas.
1	**Site Related** - The impacted area extends only as far as the activity e.g. the footprint; the loss is considered inconsequential in terms of the spatial context of the relevant environmental or social aspect.

9.3.3. Severity / intensity / magnitude

This provides a qualitative assessment of the severity of a predicted impact / effect. A series of standard terms and ratings used in this assessment which relate to the magnitude of an impact / effect are outlined in Table 9-3.

TABLE 9-3: Rating scale for the assessment of the severity / magnitude of a predicted effect / impact[26]

RATING	MAGNITUDE DESCRIPTOR
7	**Total / consuming / eliminating** - Function or process of the affected environment is altered to the extent that it is permanently changed.
6	**Profound / considerable / substantial** - Function or process of the affected environment is altered to the extent where it is permanently modified to a sub-optimal state.
5	**Material / important** - The affected environment is altered, but function and process continue, albeit in a modified way.
4	**Discernible / noticeable** - Function or process of the affected environment is altered to the extent where it is temporarily altered, be it in a positive or negative manner.
3	**Marginal / slight / minor** - The affected environment is altered, but natural function and process continue.
2	**Unimportant / inconsequential / indiscernible** - The impact temporarily alters the affected environment in such a way that the natural processes or functions are negligibly affected.
1	**No effect / not applicable**

9.3.4. Duration

This describes the predicted lifetime / temporal scale of the predicted impact. A series of standard terms and ratings used in this assessment are included in Table 9-4.

[26] **Source:** adapted from Glasson J, Therivel R & Chadwick A. Introduction to Environmental Impact Assessment, 2nd Edition. 1999. pp 258. Spoon Press, United Kingdom.

TABLE 9-4: Rating scale for the assessment of the temporal scale of a predicted effect / impact.

RATING	TEMPORAL DESCRIPTOR
7	**Long term** – Permanent or more than 15 years post decommissioning. The impact remains beyond decommissioning and cannot be negated.
3	**Medium term** – Lifespan of the project. Reversible between 5 to 15 years post decommissioning.
1	**Short term** – Quickly reversible. Less than the project lifespan. The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the project phases or within 0 -5 years.

9.3.5. Irreplaceable loss of resources

Environmental resources cannot always be replaced; once destroyed, some may be lost forever. It may be possible to replace, compensate for or reconstruct a lost resource in some cases, but substitutions are rarely ideal. The loss of a resource may become more serious later, and the assessment must take this into account. A series of standard terms and ratings used in this assessment are included in Table 9-5.

TABLE 9-5: Rating scale for the assessment of loss of resources due to a predicted effect / impact.

RATING	RESOURCE LOSS DESCRIPTOR
7	**Permanent** – The loss of a non-renewable / threatened resource which cannot be renewed / recovered with, or through, natural process in a time span of over 15 years, or by artificial means.
5	**Long term** – The loss of a non-renewable / threatened resource which cannot be renewed / recovered with, or through, natural process in a time span of over 15 years, but can be mitigated by other means.
4	**Loss of an 'at risk' resource** - one that is not deemed critical for biodiversity targets, planning goals, community welfare, agricultural production, or other criteria, but cumulative effects may render such loss as significant.
3	**Medium term** – The resource can be recovered within the lifespan of the project. The resource can be renewed / recovered with mitigation or will be mitigated through natural process in a span between 5 and 15 years.
2	**Loss of an 'expendable' resource** - one that is not deemed critical for biodiversity targets, planning goals, community welfare, agricultural production, or other criteria.
1	**Short-term** – Quickly recoverable. Less than the project lifespan. The resource can be renewed / recovered with mitigation or will be mitigated through natural process in a span shorter than any of the project phases, or in a time span of 0 to 5 years.

9.3.6. Reversibility / potential for rehabilitation

The distinction between reversible and irreversible impacts is a very important one and the irreversible impacts not susceptible to mitigation can constitute significant impacts in an EIA (Glasson et al, 1999). The potential for rehabilitation is the major determinant factor when considering the temporal scale of most predicted impacts. A series of standard terms and ratings used in this assessment are included in Table 9-6.

TABLE 9-6: Rating scale for the assessment of reversibility of a predicted effect / impact.

RATING	REVERSIBILITY DESCRIPTOR
7	**Long term** – The impact / effect will never be returned to its benchmark state.
3	**Medium term** – The impact / effect will be returned to its benchmark state through mitigation or natural processes in a span shorter than the lifetime of the project, or in a time span between 5 and 15 years.
1	**Short term** – The impact / effect will be returned to its benchmark state through mitigation or natural processes in a span shorter than any of the phases of the project, or in a time span of 0 to 5 years.

9.3.7. Probability

The assessment of the probability / likelihood of an impact / effect has been undertaken in accordance with ratings and descriptors provided in Table 9-7.

TABLE 9-7: Rating scale for the assessment of the probability of a predicted effect / impact[27]

RATING	PROBABILITY DESCRIPTOR
1.0	Absolute certainty / will occur
0.9	Near certainty / very high probability
0.7 – 0.8	High probability / to be expected
0.4 - 0.6	Medium probability / strongly anticipated
0.3	Low probability / anticipated
0.2	Possibility
0.0 - 0.1	Remote possibility / unlikely

9.3.8. Mitigation

In terms of the assessment process, the potential to mitigate the negative impacts is determined and rated for each identified impact. The mitigation objective is to create a measurable reduction or to enhance the impacts which are identified (positive). The significance of environmental impacts has therefore been assessed taking into account any proposed mitigation measures. The significance of the impact "without mitigation" is therefore the prime determinant of the nature and degree of mitigation required.

9.3.9. Impact assessment

A preliminary list of potential issues and concerns has been generated as per Table 9-8, divided into the Construction and Operational Phases. This is based on the initial scoping work conducted with regard to the receiving environment and does not take into account any IAP consultation. It is thus expected that the issues and concerns raised at this Phase of the EIA Process may increase as consultation with Stakeholders and IAPs is undertaken.

[27] **Source:** adapted from Glasson J, Therivel R & Chadwick A. *Introduction to Environmental Impact Assessment, 2nd Edition*. 1999. pp 258. Spoon Press, United Kingdom.

TABLE 9-8: Potential construction and operational impacts

CONSTRUCTION PHASE IMPACTS	OPERATIONAL PHASE IMPACTS
Employment opportunities	Alignment with IDP and LSDI
Skills development	Improved efficiency of travel
Alignment with IDP and LSDI	Fragmentation of land
Loss of agricultural land	Loss of agricultural land
Fragmentation of land	Change in sense of place
Disturbance to watercourse	Stormwater implications e.g. erosion
Stormwater implications e.g. erosion	Reduced traffic through Hluhluwe
Construction traffic impacts	Road and pedestrian safety
Construction nuisance from noise, dust	Operational nuisance from noise, vibration
Security issues	Fauna disturbance
Fire hazard during construction	Flora disturbance
Fauna disturbance	Potential loss of income to business in Hluhluwe town
Flora disturbance / loss	Change to land values
	Potential changes to settlement pattern

The potential issues identified in Table 9-8 above are addressed in more detail in Table 9-9 below, and include the potential impact, the anticipated significance of the impact, and mitigation measures proposed. Please note that only the Preferred Route Layout Alignment has been assessed within this table, as it is considered the only feasible option going forwards.

TABLE 9-9: The proposed impacts identified regarding the planning and design, construction and operational phases of the proposed Preferred Route Layout Alignment development.

Impact	Impact summary	Significance	Proposed mitigation
PLANNING & DESIGN PHASE			
Direct impacts			
Ecology **Health and safety** **Stakeholder participation**	• Disturbance of flora and / or agricultural land may be created through activity on-site, such as the site inspection or surveys; • If not properly designed, with adequate construction planning and safety measures taken into account, the proposed realignment could pose a health and safety risk to road users, as well as impacting negatively on the surrounding receiving environment; • If not adequately designed, the realignment will not retain the proposed and required design life time and structural integrity; • Identification and acknowledgement of concerns raised by landowners, stakeholders and IAP's; • Discussions established with landowners regarding the loss of land etc.	Low negative impact; may be rendered acceptable in light of proposed mitigation measures and through consultation with the relevant landowners.	• Disturbance to potentially sensitive flora and fauna during site assessments must be avoided; • Measures must be taken to mitigate concerns raised by IAPs, including notification, consultation and interaction; • Consultation and discussion with relevant SANRAL personnel and landowners, regarding the land on which the realignment falls; • All relevant planning, acquisition, environmental and design parties are to maintain contact with one another and the land owner to ensure a co-operative and transparent process.
Indirect Impacts			
Job creation **Social anxiety**	• Creation of job opportunities for skilled personnel (e.g. specialists, engineers, etc.); and • Social anxiety in respect of concerned IAPs i.e. Movement on-site could create social anxiety in the land owners.	• Medium positive impact at a regional scale. • Low negative impact; may be rendered acceptable in light of proposed mitigation measures.	• Notification of landowners of the proposed process and progress.
Cumulative impacts			
Social anxiety **Ecology** **Layout**	• Social anxiety may arise should the landowners not be adequately notified of the proposed activity; and • Potential disturbance to local fauna and flora in the immediate area.	• Low negative impact; may be rendered acceptable in light of proposed mitigation measures.	• Notification of landowners of the proposed process and progress. • Disturbance to potentially sensitive flora and fauna during site assessments must be avoided.

Impact	Impact summary	Significance	Proposed mitigation
	• If the Alternative Layout 2 Alignment were to be authorised it would change the future settlement patterns with Hluhluwe town, as expansion of the town to the west would not be possible.	• Medium negative impact if the Alternative Layout 2 Alignment were to be authorised; may have a localised impact on settlement patterns, based on the relevant planning documentation.	• As Alternative Layout 2 influences settlement patterns, it is not considered the preferred alignment
CONSTRUCTION PHASE			
Direct impacts			
Pollution	• There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil and cement spills, litter from personnel on-site, sewage from ablutions etc.); • Dust and noise will be created during the construction phase, which may impact on the local community and possibly the surrounding landowners; • Removal of vegetation and anticipated soil disturbance could result in increased dust levels in the area; • The receiving environment may be polluted due to accidental spillages of petrochemicals from the vehicles and equipment, or bitumen from the constructing the road; • The construction phase will generate some noise pollution which is not considered significant; • Air pollution related to particulate and dust generation will occur during construction, however, this is not considered to be significant; • Planning of alternative energy sources (solar panels for lighting and solar studs for road marking) to reduce reliability on the national grid; and • Potential spills of hydrocarbons into the watercourse.	• The impact of air and noise pollution ranks as a low negative impact; may be rendered acceptable in light of proposed mitigation measures. • The impact of spills will have a medium negative impact due to the significance of hydrocarbon spills on site. Mitigation is required to reduce the negative impacts.	• All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum; • A Community Liaison Officer could assist in raising any concerns / complaints noted by the landowners or surrounding community to the construction team; • Road dampening measures must be undertaken to prevent excessive dust during construction. Note, measures such as soil binders, are preferred over the use of water as it is a scarce resource; • Any spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation, local Department of Economic Development, Tourism and Environmental Affairs etc.); • All vehicles and equipment shall be fitted with effective exhaust silencers and shall comply with the South African Bureau of Standards recommended code of practice and the South African National Standard (SANS) Code 0103:1983, for construction plant noise generation. • Research and implement alternative energy sources for road lighting where possible; • The site camp is not to be established in close proximity to the watercourse.

Impact	Impact summary	Significance	Proposed mitigation
Stormwater control	• The additional hardened surfaces created during construction will increase the amount of stormwater runoff, which has the potential to cause erosion; • Litter or pollution such as hydrocarbons may wash into the watercourse.	• The negative impact is considered low should it be mitigated correctly.	• Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development;
Erosion	• Physical disturbance of the soil and plant removal may result in soil erosion; • Erosion and potential soil loss from cut and fill activities; • During the construction phase, soils may be cleared for the realignment construction. Potential disturbances include compaction, physical removal and potential pollution by hydrocarbons. Furthermore, if standard storm water control measures are not implemented during the construction phase, soil erosion and sedimentation may occur.	• The negative impact is considered low and can be mitigated.	• Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development; The area surrounding the realignment must be regularly checked for signs of erosion. If erosion is evident, corrective action must be taken; • Soil erosion prevention measures must be implemented such as gabions, sand bags etc. whilst energy dissipaters must be constructed at any surface water outflow points. The site should be monitored by the Contractor weekly for any signs of off-site siltation. All areas impacted by earth-moving activities must be re-shaped post-construction to ensure natural flow of runoff and to prevent ponding; • Various types of drainage structures have been incorporated into the design, all of which are accordance with the SANRAL typical details, amended to suit where required.
Vegetation removal	• Clearing of vegetation during the construction phase will increase surface runoff and therefore adequate stormwater measures will need to be implemented.	• The negative impact is considered low; little to no indigenous vegetation is found along the proposed realignment route.	• The construction footprint must be limited in its size and be demarcated should any confusion arise as to its extent; • Demarcated vehicle travelling routes must be adhered to at all times; • Vegetation clearing must be limited to the construction area and care must be taken to avoid the removal of trees if not necessary; • One tree is to be planted adjacent to the route alignment for every tree that is cut down.
Loss and fragmentation	• The proposed realignment will bisect a portion of agricultural land that is currently utilised for the production of pineapples. The farming techniques are specific for this type	• The negative impact is considered medium due to the removal of arable agricultural land.	• Access to the fragmented portion of the land has been considered in the design phase of the realignment. An agricultural underpass will be required at km 1960 and will be included in

Impact	Impact summary	Significance	Proposed mitigation
of agricultural land	of crop. The bisection of the land will result in the fragmentation of this land. • The realignment will result in the loss of arable agricultural land.		the design drawings. It is envisaged that a standard cast in situ concrete underpass will be sufficient to provide the required access for farm implements, tractors and the like. • Agricultural land will be lost through the construction of the realignment. However, as the realignment provides important safety benefits and improves travel time due to a more direct route. Cumulatively, the loss of agricultural land is not considered significant in relation to the benefits provided for the greater region.
Alien vegetation encroachment	• Disturbance of the site may lead to encroachment of alien plant species on-site • Alien vegetation may encroach onto the surrounding lands due to poor on site alien vegetation control.	• The negative impact of alien vegetation encroachment is ranked as very low to unimportant as it can be mitigated.	• Alien plant encroachment must be addressed in the EMPr; • An Alien Vegetation Control Programme, as determined by the Contractor, and submitted to the ECO and Engineer for approval prior to implementation, is to be implemented on site; • Any exposed earth should be rehabilitated promptly with suitable vegetation to protect the soil. Vigorous indigenous grasses are very effective at covering exposed soil. It is important to note, that the any use of fertilisers, must be undertaken with caution and must not be allowed, in any circumstances, to run into any drainage lines to avoid any possible eutrophication impacts; • Necessary rehabilitation measures, if required, (e.g. burning, seeding, removing alien plants etc.) should be introduced to ensure species composition reverts to a more natural state (with regards to affected areas). Indigenous vegetation with deep set root systems is advisable to limit further soil loss on site. Alternatively, water dissipating mechanisms such as gabions or reno-mattresses may be implemented on-site to help stabilize the surrounding soil and provide a platform for the growth of vegetation;

Impact	Impact summary	Significance	Proposed mitigation
			• All exposed earth must be rehabilitated promptly with suitable vegetation to stabilize the soil.
Stockpiling	• Incorrect stockpiling may cause the mobilisation of sediments and the contamination of any surrounding watercourse; • Stockpiles may obscure drivers line of site; • Incorrect stockpiling could result in the contamination of topsoil.	• The negative impact is anticipated to be low, and can be managed accordingly.	• Should temporary stockpiling become necessary, the areas for the stockpiling of excavated / imported material shall be indicated and demarcated on the site plan submitted in writing to the ECO for approval, together with the Contractor's proposed measures for prevention, containment and rehabilitation against environmental damage. • Areas affected by stockpiling shall be reinstated to the satisfaction of the ECO; • The Contractor shall remove topsoil from all areas where topsoil will be impacted on by construction activities, including temporary activities such as storage and stockpiling areas, and detours; • Topsoil stockpiles shall be convex and no more than 2m high. Stockpiles shall be shaped so that no surface water ponding takes place; • Topsoil stockpiles shall be protected from erosion by wind and rain by providing suitable stormwater and cut-off drains (approved by the ECO) and/or the establishment of temporary indigenous vegetation.
Waste generation	• Waste could be generated through the following: – Chemical waste - petrochemicals, resins and paints; and – Sewage as may be generated by on site employees.	• The negative impact is ranked as low and can be overcome through mitigation measures.	• Site personnel (i.e. construction staff) must undergo Environmental Training and be educated on keeping any vegetation disturbance to a minimum and on the separation and correct disposal of different types of waste; • All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials is supported; • All solid wastes should be disposed of at a registered landfill site and records maintained to confirm safe disposal;

Impact	Impact summary	Significance	Proposed mitigation
			• Adequate scavenger-proof refuse disposal containers should be supplied to control solid waste on-site; • The construction site should be inspected for litter on a daily basis. Extra care should be taken on windy days. Precautions should be taken to avoid litter from entering any watercourses; • Methods for reducing and managing waste e.g. recycling, reuse of materials, should be considered; • Soil that is contaminated with, e.g. cement, petrochemicals or paint, should be disposed of at a registered waste disposal site and is NOT to be deposited into any watercourses or buried on site; • Drip trays and spill kits are to be made readily available for use should any construction machinery develop a leak; • Chemical waste should be stored in appropriate containers and disposed of at a licensed disposal facility • Any leftover material must be appropriately disposed of (i.e. recycled or issued to the local community for their use);
Contamination of surface and groundwater	• Hazardous (diesel, oils, cement) waste will be generated during the construction phase and if spilled can cause contamination of the surrounding environment, including the watercourse; • Waste generated during the construction phase may enter the environment through surface water runoff.	• The negative impact is ranked as low, should mitigation measures be implemented to prevent any significant impacts from taking place.	• All hazardous contaminants are to be stored in designated areas that are sign-posted, lined with an appropriate barrier and bunded to 110% of the volumes of liquid being stored to prevent the bio-physical contamination of the environment (ground and surface water and soil contamination); • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or water-proof drums, and must not be allowed to enter into natural drainage systems; • Any spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation) and must be remediated as per the EMPr;

Impact	Impact summary	Significance	Proposed mitigation
			• Ensure all contaminants are stored in designated areas that are sign-posted, lined with an appropriate barrier and bunded adequately (i.e. 110% of total capacity contained within the bund) to prevent the bio-physical contamination of the environment; • Routine checks must be done on all machinery on site and these must be kept in good working order. No washing of machinery or vehicles may take place on site and container washing must take place in a designated, bunded washing areas.
Disturbance to the watercourse	• The proposed realignment passes directly through a watercourse. Construction activities may cause degradation, pollution, erosion, siltation, alien infestation etc. of the watercourse, as well as the Ngweni River into which the watercourse drains.	• The negative impact is ranked as medium as the impacts may extend past the development footprint. However, if the mitigation measures listed in the EMPr are adhered to, then significant impacts can be prevented.	• A stormwater culvert will be constructed to ensure the continued through flow and drainage of the watercourse. • All mitigation measures listed in the EMPR regarding hydrocarbon storage and control, erosion control, alien vegetation control, rehabilitation etc. are to be strictly adhered to when construction within the watercourse takes place.
Health and Safety	• Incorrect road traffic control measures may result in serious injury to road users, as well as to employees working on the construction of the realignment; • Slow-moving construction vehicles on the surrounding roads may cause congestion and / or accidents; • If not properly maintained, the increased road on the existing infrastructure by construction personnel may cause damage; • Construction personnel / construction vehicles – movement of construction personnel and vehicles may pose a potential health and safety risk to road users and local residents; • There is potential for construction labour to use the surrounding vegetation and farm lands for ablutions; • Disruption to residents through increased activity and noise in the area;	• The negative impact is ranked as low, as mitigation measures can prevent any significant impacts from taking place.	• Relevant road traffic signage is to be erected and visible at all times to control traffic activities and to provide a safe environment for all; • Personnel must not be allowed to trespass onto neighbouring properties and poaching or harvesting of indigenous flora / fauna is strictly forbidden; • Appropriate temporary traffic control and warning signage must be erected and implemented on all affected roads in the vicinity; • Construction worker's / construction vehicles must take heed of normal road safety regulations; thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual;

Impact	Impact summary	Significance	Proposed mitigation
	• If not properly managed, there may be damage to landowners fencing, crops etc.		• Construction worker's / construction vehicles should take heed of normal road safety regulations; thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; • No-go areas must be demarcated; • An appropriate number of toilets (1 toilet for every 20 workers) must be provided for labourers during the construction phase. These must be maintained in a satisfactory condition and a minimum of 100m away from any watercourses.
Employment	• Increased temporary employment and skills development for local community members; • There is potential for community members to hamper construction; • Possible economic benefits to suppliers of building materials in the Hluhluwe area or further afield as goods and services may be purchased from these entities during the construction phase.	• The positive impact is considered to be low and short lived, but will provide the surrounding community with opportunities, particularly if the correct employment process are put into place.	• Increased temporary employment and skills development for local community members; • Wherever possible, local suppliers are to be used for the sourcing of material.
Alignment with IDP and LSDI	• The IDP notes that future development within Hluhluwe town is planned to the south and the west of the existing town. For this reason, the Alternative Layout 2 is not considered feasible, as it will limit any future growth to the west of the town. However, the Preferred Layout will allow future expansion of the town to the south and the west. As such the proposed realignment is in line with the IDP. • The proposed realignment falls within the extent of the LSDI and will form an integral economic and social connector between the surrounding regions.	• If the impacts considered are taken onto consideration in the design and authorisation phases, then the possible negative impacts are considered low to negligible.	• Sufficient communication is required with the Local Big 5 Hlabisa Local Municipality to ensure that the proposed development remains in line with the local IDP.
Indirect impacts			
Employment/ skills	• Provision of temporary employment opportunities during construction (for engineers, labourers etc.);	• The positive impacts are considered to be medium to low and will last for the extent of the planning and design and construction phases,	• Local labour is to be sourced as far as possible;

Impact	Impact summary	Significance	Proposed mitigation
development and transfer	• Revenue for local businesses supplying the contractors (i.e. construction materials, machine hire etc.); • Increased temporary employment and skills development for local community members; • Skills development and transfer during construction phase to members of the local community employed to assist in construction.	but will provide the surrounding community with opportunities, particularly if the correct employment process are put into place.	• Local materials are to be sourced as far as possible; • Toolbox talks are to be undertaken regularly to ensure skills development and knowledge transfer.
Alien vegetation encroachment	• Alien plant infestation – seed dispersal via building material and equipment imports, vehicles and personnel; • Soil disturbance and plant removal – increased competition from alien plant species;	• The negative impact of alien vegetation encroachment is ranked as low as it can be mitigated.	• A monitoring programme must be implemented to enforce the continual eradication of alien and invasive species during the construction phase;
Pollution	• Noise impacts generated from construction activity i.e. vehicles, equipment and personnel.	• The negative impact is low and can be mitigated.	• Construction personnel must be made aware of the need to prevent unnecessary noise such as hooting and shouting;
Health and safety	• The development may result in concern and confusion amongst IAPs should they not be aware of the project prior to construction commencing; • Faunal disturbance may occur potentially from the additional noise from increased vehicular movement at the construction site; and • Increase in road strikes of birds and wildlife, especially slow-moving organisms such as frogs. • Construction personnel/ construction vehicles – movement of construction personnel and vehicles pose a potential health and safety risk to road users and local residents • Noise impacts generated from construction activity i.e. vehicles, equipment and personnel;	• The negative impact is low and can be mitigated.	• Hours of work should be limited to between 7am and 5pm on weekdays and Saturdays; • No work is to be permitted on Sundays or Public Holidays; • Construction personnel should be made aware of the need to prevent unnecessary noise such as hooting and shouting; • A designated speed limit should be set by the developer to limit possible road strikes.
Aesthetics	• The surrounding landowners, road users, tourists etc. may be exposed to an	• The negative impact is slight and can be mitigated.	• The Construction Camp should be positioned on previously disturbed areas;

Impact	Impact summary	Significance	Proposed mitigation
	aesthetically unpleasant environment during the construction phase.		• The Construction Camp must be contained so as to prevent any visual intrusion and be kept in a clean and orderly state at all times. This will also deter rodents and other fauna from entering the camp; • The roofing of the proposed construction camp should be neutral shades and constructed with non-reflective materials.
Poaching of local fauna and flora	• Due to the species rich region in which the construction site is found, poaching of fauna and flora by employees may take place.	• The negative impact is lowa nd can be mitigated.	• No hunting is permitted on-site or in the surrounding areas; • No animals required for hunting e.g. dogs, under the supervision of construction workers, should be allowed into the area; • All construction personnel should be informed of this ruling; and • Any construction personnel found to be poaching in the area should be subjected to a disciplinary hearing.
Social anxiety	• Loss of agricultural land along which the realignment falls; • If surrounding landowners are not adequately informed of the process and the related construction activities, social anxiety may arise.	• The negative impact is considered medium due to the removal of arable agricultural land. • The negative impact is considered low if mitigated correctly.	• Compensation/buying of land from landowners on which the realignment falls; • All IAPs should be contacted to inform them of the starting date of construction and the proposed duration; • All IAPs should be notified of the construction process and the manner to which it should be implemented via public notices; and • All IAPs should be given the correct correspondence information should they wish to contact the Contractor during the construction phase.
Cumulative Impacts			
General	• Environmental degradation; • Additive disturbance to IAPs during the construction phase; • Increased runoff and water turbidity from run-off and construction activities; • Construction personnel/ construction vehicles – movement of construction personnel and vehicles pose a potential	• Cumulatively the negative impacts are considered low if mitigation measures are correctly implemented.	• Ensure that original mitigatory impacts regarding soil erosion, flora, fauna disturbance and social anxiety are enforced and adhered to in the construction phase; and • All mitigation measures as detailed above have been included in the EMPr.

Impact	Impact summary	Significance	Proposed mitigation
	health and safety risk to road users and local residents; • Increased temporary employment and skills development for local community members; • Alien plant infestation – seed dispersal via building material and equipment imports, vehicles and personnel; • Soil erosion, disturbance and plant removal – increased competition from alien plant seeds; • Noise impacts generated from construction activity i.e. vehicles, equipment and personnel; • Construction personnel may illegally poach local fauna; • The development may result in concern and confusion amongst IAPs should they not be aware of the project prior to construction commencing; and • Increase in road strikes of birds and wildlife, especially slow-moving organisms such as frogs; • Increased runoff and water turbidity from run-off and construction activities.		
OPERATIONAL PHASE			
Direct impacts			
Road safety	• Regular maintenance of built infrastructure; • Improved road safety for pedestrians in Hluhluwe town.	• The positive impact is considered medium and of a long-term nature.	• Appropriate traffic signage must be installed to alert road users of speed limits; • Road safety measures such as rumble strips and speed bumps could be installed to prevent speeding during the construction phase; • Safety implements such as guardrails, fencing and appropriate road signs should be erected where necessary to assist in addressing safety measures on the road.
Improved efficiency of travel	• The realigned route will allow for faster, safer and more direct travel for commuters.	• The positive impact is considered medium and of a long-term nature.	• Mitigation measures required include the relevant safety signage and standards along the realigned route.

Impact	Impact summary	Significance	Proposed mitigation
Loss and fragmentation of agricultural land	• The construction footprint will result in the loss of agricultural land, which will continue to be experienced during the operational phase. • Arable land will remain fragmented during the operational phase.	• The negative impact is considered medium due to the removal of arable agricultural land. However, fragmented land will be accessed via an underpass / culvert, which will mitigate this impact.	• It is anticipated that SANRAL will compensate the land owner for any loss of agricultural land and consequent earnings. This is however being dealt with as a separate process to this assessment. • The land which will be fragmented from the main portion of agricultural land will be accessed through an agricultural underpass.
Alignment with IDP and LSDI	• The various objectives listed in the IDP and LSDI, in relation to the realignment of the R22, will be realised once the Preferred Layout is constructed and in operation.	• The positive impact is medium and of a long-term nature.	• No mitigation measures required.
Potential loss of income	• Potential fears on the part of local proprietors and businesses regarding the scope of their business revenues, the value of their properties, and the impact of the road on land uses. Petrol stations, quick stop service stations and fast food restaurants cater largely for through traffic and are the most likely to be impacted by the diversion of traffic due to the realignment, although all layout alternatives provide easy access to the CBD. • Loss of income for farmers relating to loss of arable agricultural land.	• The impact is considered medium to low and can be mitigated through easy access to Hluhluwe town via the layout alternatives provided. • The negative impact is considered medium due to the removal of arable agricultural land that generates an income.	• As per the Traffic Study undertaken the bypass will not have a big impact on local business. In addition, if commuters are wanting to enter Hluhluwe town for business reasons, they can do so via the entry / exit points. • It is anticipated that SANRAL will compensate the land owner for any loss of agricultural land and consequent earnings. This is however being dealt with as a separate process to this assessment.
Change to land values	• The value of the farmer's land may decrease as a result of the bisected agricultural land. • Possible decrease in the value of houses at the northern extent of Hluhluwe town relating to the proximity of the houses to the realignment.	• The negative impact is considered medium to those land owners who will be impacted upon by the development.	• This is an indirect impact which cannot be mitigated against.
Stormwater control	• Stormwater run-off from the hardened surface of the road may create erosion; • Additional vehicles travelling to and from the site will increase traffic on the surrounding roads, as well as noise.	• The negative impact is considered low if mitigation measures are implemented.	• Velocity dissipating measures with regards to stormwater management should be installed; and • The site, and surrounding areas, must be monitored for signs of erosion, excess construction material, waste etc. Should any signs be noted, the erosion mitigation measures, as noted in the relevant EMPr, must be implemented.

Impact	Impact summary	Significance	Proposed mitigation
Alien vegetation	• Alien plants may invade the site if not monitored and removed on an on-going basis.	• The negative impact is considered low if mitigation measures are implemented.	• Alien plant encroachment must be monitored and prevented as outlined in the EMPr.
Cumulative impacts			
Traffic	• Decrease in traffic volumes in Hluhluwe town; • Increase in pedestrian safety in Hluhluwe town due to decreased traffic volumes; • Change in traffic patterns / increased traffic volumes could result in increased noise levels and an increase in 'road kill' accidents along the road (fauna).	• The positive impacts are considered high due to the benefits associated with rerouting traffic around Hluhluwe town.	• Increase in traffic volumes is difficult to mitigate against as the purpose of the realignment is to transfer road traffic from Hluhluwe, out of town.
ACTIVITY: DECOMMISSIONING AND CLOSURE PHASE			
It is not anticipated that the realigned route will be recommissioned or closed at any point as it ties in directly with other planned future expansions within the greater area namely the expansion of the railway line and the Lubombo Spatial Development Initiative. As such it is not envisaged that the realigned route will ever be decommissioned or closed.			
ACTIVITY: NO-GO OPTION			
The purpose of the proposed realignment, is to provide a safe more direct commute for passengers using the R22 and surrounds, to improve the safety of pedestrians within Hluhluwe town, to comply with national standards regarding regional routes passing through towns, and also for the R22 to tie in directly with the authorised road-over-rail bridge. If the no-go option is followed, the safety of road users and pedestrians within Hluhluwe town will continue to be compromised. In addition, this will compromise the development of the road-over-rail bridge and the expansion of the railway line, which are integral motivating factors in this application, as the realignment forms an integral part of the Lubombo Spatial Development Initiative, which links the N2 with Sodwana, Kosi Bay and Mozambique. As such it is not recommended that the No-Go alternative is pursued.			

10. PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

10.1. Introduction

As required in terms of Section 29 (i) of NEMA and GNR 326, Appendix 2 of the EIA Regulations, as amended, this Section provides details of the methodology for the EIA Phase of this Application. The Scoping Phase of the project concentrates on determining and describing the key issues which would require specialist investigation, conducting such assessments, and determining the key alternatives that require further assessment. Likely impacts identified will be confirmed and evaluated according to criteria given in Section 9 to determine their significance. Mitigation measures to minimise any significant negative impacts and maximise all positive impacts have been and will continue to be proposed.

10.2. Public Participation Process

The Public Participation Process will continue in the EIA Phase. The register of IAPs from the Scoping Phase will be carried over and expanded during the EIA Phase. Registered IAPs will receive notification at the start of the EIA Phase, comprising a brief description of the EIA Process and their possible involvement.

Communication with the Assessing Officer, Government Authorities, Municipal Departments, community leaders, land owners and conservation bodies such as EKZNW will continue via telephonic, written and electronic means. After the completion of the Specialist Studies, an EIA Report and EMPr with be compiled. Following this, the EIA Report and EMPr will be made available to all IAPs for review and comment for a period of 30 days. Stakeholder and IAP's will be notified of the pending closure of timeframes of the commenting periods, approximately a week prior to the closure.

10.3. Landowner Consent

Consultation with landowners, in compliance with Chapter 6 of GNR 326, will continue throughout the process, in addition to SANRAL's continued liaison with all affected landowners. Confirmation obtained from the landowners indicating agreement with the proposed development, should this be obtainable, will be included in the final Environmental Impact Assessment Report.

10.4. Specialist Studies

A team of specialist consultants has been appointed to undertake various specialist investigations. These studies will investigate the baseline environment, potential impacts, alternatives and will provide management measures for the proposed development of the realignment. Findings from these studies will be incorporated into the EIA Phase and will include the input and recommendations provided from stakeholder engagement. The following Specialist Studies will be undertaken in the EIA Phase:

Table 10-1: Specialist Studies suggested for undertaking in the EIA Phase

SPECIALIST STUDY	SCOPE OF WORKS
Vegetation Assessment	• To undertake a baseline assessment of the vegetation along the road alignment to determine the presence or otherwise of indigenous trees and protected species as well as the level of indigenous vegetation; • To identify the potential impacts on this baseline vegetation by the implementation of the project; • To provided possible management and mitigation measures for these identified impacts; and • To make recommendations with regards to permit and licensing applications for the removal or disturbance of the specific identified trees.
Wetland Assessment	• To undertake the Assessment in accordance with the requirements of the NWA (Act 36 of 1998) WULA requirements; • To identify the presence of any wetland areas along the alignment and to delineate the boundaries of these wetland areas; • To determine the Present Ecological State (PES), the Ecosystem Services provided by the wetland area and the Ecological Importance and Significance (EIS) of the wetlands; • To identify the potential impacts on the delineated wetlands as a result of the implementation of the project and to conduct a Risk Assessment on these impacts; and • To provide management and mitigation measures to minimise or mitigate these impacts.
Heritage Assessment	• Desktop Heritage Impact Assessment in line with the South African Heritage Resources Information System (SAHRIS) requirements, including obtaining written comment from SAHRIS in terms of Section 38(8) of the National Heritage Resources Act (Act 25 of 1999). Further a Desktop Palaeontological Impact Assessment (PIA) will be undertaken. A report with associated mapping indicating any applicable heritage features will be produced.

All Specialist Studies will be undertaken in compliance with the EIA Regulations (2014), Appendix 6 of GNR 326 and will include:

a) Details of –
   (i) The Specialist who prepared the report; and
   (ii) The expertise of the Specialist to carry out the Specialist Study, including Curriculum Vitae;
b) A declaration that the Specialist is independent in a form as may be specified by the Competent Authority;
c) An indication of the scope of, and the rationale for the report;
d) The date and season of the site investigation and the relevance of the season to the outcome of the assessment;
e) A description of the methodology adopted in conducting the Specialist Study;
f) The specific identified sensitivity of the site related to the activity and its associated structures and infrastructure;
g) An identification of any areas to be avoided, including buffers;

h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;
i) A description of all assumptions uncertainties or gaps in knowledge;
j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment;
k) Any mitigation measures for inclusion in the EMPr;
l) Any conditions for inclusion in the Environmental Authorisation;
m) Any monitoring requirements for inclusion in the EMPr or Environmental Authorisation;
n) A reasoned opinion:
    (i) As to whether the proposed activity or portions thereof should be authorised; and
    (ii) If the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the Closure Plan;
o) A description of any consultation process that was undertaken during the course of preparing the Specialist Report;
p) A summary and copies of any comments received during any consultation process and where applicable all responses thereto; and
q) Any other information requested by the Competent Authority.

10.5. Environmental Impact Assessment Report

The EIA Report will contain a summary of the findings of the Specialist Studies and their recommendations for mitigation and management. It will also detail the Public Participation Process undertaken as part of the EIA Phase and will include records of notices, comments and meetings with IAPs. Essentially, the EIA Report will investigate environmental impacts and alternatives in more detail and mitigation measures and recommendations will be provided to address these issues.

10.6. Assessment of Environmental Issues

To assess potential environmental issues associated with the proposed development, the impacts addressed in this report will be given a qualitative rating based on certain aspects of each environmental impact, in conjunction with the information provided in the Specialist Studies. The aspects will be assessed in accordance with the information detailed in Section 9.

Where relevant, the following methods will be used to predict the characteristics of identified impacts:

- Professional judgement;
- Quantitative mathematical models;
- Case studies; and
- Past experience.

10.7. Assessment of Alternatives

The EIA Regulations require that alternatives to a proposed activity must be considered, including the "No-go" or "Do-nothing" alternative. The No-go alternative is the option of not undertaking the proposed activity or any of its alternatives. The No-go alternative also provides the baseline against which the impacts of other alternatives should be compared.

For this project, the following different types of alternatives have been identified:

- **No-go Alternative:** Assessment of environmental impacts if the proposed development of the realignment does not proceed.
- **Alternative locations:** Three layout alternatives have been investigated. Factors taken into consideration in this decision-making process included:
  - Topography;
  - Land suitability;
  - Wetland / watercourse and floodline constraints;
  - Socio-economic implications;
  - Planning limitations;
  - Road safety impacts;
  - Traffic requirements, current and predicted; and
  - Tie into authorised infrastructure.

10.8. Environmental Management Programme

An Environmental Management Programme (EMPr) will be compiled and will contain guidelines to ensure that all activities associated with the proposed development are carried out in an environmentally responsible and acceptable manner.

An EMPr is a legally-binding document that contains guidelines with which Contractors must comply, and which must be strictly implemented and regularly monitored. If this is done, it is likely that the majority of the potentially adverse impacts associated with construction activities can be minimised or prevented. An Environmental Control Officer (ECO) should be appointed by the Applicant to ensure compliance with the EMPr during the construction phase. Should non-compliance occur, this must be brought to the attention of the DEA, who will conduct the required prosecution procedure.

Specific management objectives and mitigation measures will be specified in the EMPr for the entire duration of the development, including the following stages:

- Planning and design;
- Pre-construction and construction activities; and
- Rehabilitation of the environment.

The EMPr will be based on the principles of the NEMA, as well as the recommendations made in the Scoping and EIA Reports and Specialist Reports, and will identify roles and responsibilities or

management personnel on-site. The EMPr will be used as a framework for environmental compliance monitoring and reporting.

10.9. Submission and Consideration of Documentation by the Competent Authority

Comments received in response to the EIA Report will be attached to, summarised and responded to in a final version of the EIA Report, which will be submitted to the DEA for consideration in terms of issuing Environmental Authorisation.

11. UNDERTAKING

Terratest (Pty) Ltd hereby confirms that the information provided in this report is correct at the time of compilation and was compiled with input provided by the Applicant, SANRAL.

Terratest (Pty) Ltd further confirms that all comments received from Stakeholders and IAPs have been included in this report. A record has to-date and will continue to be kept, of any comments submitted, which will be consolidated and incorporated into all subsequent reports, either submitted for comment, or to the DEA for consideration and decision-making.

Terratest (Pty) Ltd also undertakes to implement the Plan of Study for the EIA, of which the findings will be presented in the EIA Report.

For Terratest (Pty) Ltd:

Ms Imke Summers
Environmental Consultant

Mr Magnus van Rooyen
Executive Associate