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1. Executive Summary

As an agricultural assessment covers both agronomic and agribusiness issues, which sometimes point in different directions, the two are clearly separated in this assessment.

Agronomic issues cover the plant, soil, water, oxygen and sunshine cycle, all of which can be only marginally manipulated.

Agribusiness considerations, while related to the agronomy of the site, more often impinge on management and economic factors, which have their own rationale and which, in the interests of constructive decision making, should be clearly separated.

A. Executive Summary : Agronomic Considerations

For the purpose of readability and flow the main body of this report deals with broad issues only. Where these need to be elaborated on, verified or clarified, appropriate annexes are appended hereto. Furthermore, and where possible, technical jargon has given way to layman's terminology.

This study covers a property 1120 ha in extent. This is one of the core Tongaat Hulett Sugar (THS) estates supplying the Maidstone Sugar Mill, also owned and managed by THS. Temporary and permanent personnel are resident on the farm, which has a well developed and integrated infrastructure. This infrastructure includes offices, workshops, well maintained roads and bridges, management offices and 2 strategically located staff hostels.

A well planned and maintained infrastructure of this type provides the framework not only for good agricultural practices, but also gives the important benefit of being able to respond rapidly and effectively to crises such as unplanned fires and excessive rainfall.

Technically, Inyaninga and Watson Highway are two separate farms. However, apart from 88 ha of Watson Highway lying between the 'brick' road and the N2, the property is managed as one unit by Inyaninga management. This assessment will follow the same pattern.

The methodology used in the preparation and compilation of this study is as follows:

- An interview and drive around the 88 ha of Watson Highway, accompanied by Mr. Gavin Ogilvie and a similar drive around Inyaninga, accompanied by Mr. Arthur Makhunga, the respective farm managers.
- A desk top study of BRU data, Soil Parent Materials and Soil Systems common to the area and in addition, a geological history of this sub-region.
- In compliance with the KwaZulu-Natal Dept of Agriculture and Environmental Affairs (KZNDAE) requirement for the assessment of standing sugar cane of one observation pit per 50 ha, a route for the digging of 32 observation pits was mapped out.
- Pits were excavated to a typical depth of 1.5 m using a TLB. Slope was measured using an Abne Level.
- During the process of examining the observation pits it became apparent that there are several soil forms on the estate, ranging from light sands to heavy clays.
- A further drive through was undertaken accompanied by Ms. Nonhlanhla Myeni, a member of the KZNDAE Land Usage team.

This assessment will report that this farm is currently suitable for sugar cane production but in the medium to long term will become progressively less viable, even when taking into account milling margins. Steep slopes, shallow soils, heavy clays and wetness severely limit the choice for other crops, and in particular annually cultivated row crops.

This conclusion has been determined, in the main, by use of soils and crop production data published by various organs of the SA Sugar Industry and evaluated along the guidelines used by, and recommended by, KZNDAE for this type of land use assessment.

During the course of this study it became apparent that the intelligent use of well funded resources and the thoroughly planned application of good agricultural practices has led to gratifying yields from basically mediocre soils.

Where appropriate, additional data, considerations and technical issues not dealt with in the main text are covered in the narrative accompanying the annexures.

B. Executive Summary : Agribusiness Considerations

Ever since its inception, economic and management considerations have led the RSA Sugar Industry towards economies of scale not only at commercial grower but also at miller levels.

Urbanization has had an impact on planting and milling geography, but in terms of industry production the subsequent loss of cane is of minimal consequence.

While capacity at the mills currently operating in KZN appears to have stabilized, cane production has declined.

Industry emphasis and investment is moving away from dry land farming in KZN to irrigated production further north and, more particularly, outside of RSA.

A trend that is of major concern to millers, to commercial growers and to KZNDAE is the decline of small grower ha under cane and the even greater decline in yields per ha evidenced in small grower production. This trend severely inhibits horizontal expansion of cane production.

The three new major sugar milling projects that are currently on the drawing boards, and approved, are for the production of ethanol only. Thereafter no more water will be allocated to the irrigation of sugar cane.

An important consideration is that 280 ha of Inyaninga is irrigated using waste water (dunder water) from the mill. A further 20 ha at Watson Highway is irrigated using water from the Tongaat River.

The total overview on the impact of the change of use from agriculture to commercial and industrial development needs to also take into account the loss of cane production from land currently leased from Airports Company of South Africa(ACSA), .

During the cutting season the estate currently employs between 200 and 300 personnell, many of whom are low grade seasonal workers.

The commercial or industrial development of this site will present numerous employment opportunities during both the development and operational phases.

The decision on whether or not to proceed with an application for change of land use lies, in the first instance, with Tongaat Hulett management.

There could also be interventions arising from central government cluster groups.

A. AGRONOMIC CONSIDERATIONS

A. 1. Locality

The main body of the property lies immediately south of the Tongaat borough. It straddles both the Tongaat / Verulam road (R 102) and the North Coast railway line. The eastern boundary lies along land currently leased from ACSA

The lesser portion is immediately south of the Watson Highway (linking Tongaat to the N2) and abuts on the northern end of the ACSA property.

It would appear from the 1:50 000 Surveyor General's cadastral map (ref 1931CA Verulam) that Inyaninga and Watson Highway are subdivisions of the original farms 1267 FU Buffelskraal and 922 FU Klipfontein.

Current title deed descriptions are made up of portions and remnants of Buffelskloof 1267, Farm no 1523, Farm No 862, Klipfontein 922 and Cottonlands 1575. Should it be required, the full 10 page schedule is on file.

The locality of this site is also illustrated in Annexure I hereto, which maps salient landmarks and key infrastructure.

A. 2. Geologic Features

This section of the KZN North Coast has a relatively stable and clearly defined geological history.

The strip of land adjacent to the beach along the KZN North Coast is usually made up of 'Grey Recent Sands' which are frequently less than 10 000 years old.

Behind this formation lies a belt of 'Red Recent Sands', which is typically 5 km wide and which is highly suited to both sugar cane production and to civil construction.

The incidence and extent of the above two soils, as well as the further inland Coastal Lowlands System, is clearly illustrated in the attached map defining the various Soil Systems prevalent in the RSA sugar growing regions.

Inland of the sands we encounter more difficult soils arising from interspersed areas of Ecca and Dwyka Groups of the Karoo Supergroup, formations that came into being some 300 million years ago.

As clearly illustrated in the soil and geologic maps making up Annexure II, Inyaninga falls mainly into the Ecca (Shale) group.

A.3. BioResource Unit(BRU)Ya14 – North Coast

The site lies within Bioresource Unit (BRU) Ya14 – North Coast (KZN DAE Natural Resources Unit). This BRU stretches from the Thukela River in the north and to the Umhlanga River in the south. It extends approximately 20 km inland. This BRU lies within Bioresource Group 1, (BRG subgroup 1.3). BRG 1 is defined as “Moist Coastal Forest, Thorn and Palm Veld.”

99.2 % of BRG 1 consists of vegetation typical of the Maputaland Coastal Belt.

A.4. Climatological Data – BRU Ya14- North Coast

Annual Jan Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec
Rainfall(mm)

Median		118	104	103	56	31	17	14	25	53	82	97	107
Mean	973	126	127	114	70	55	33	26	42	68	91	111	110

Temp (Deg C)

Mean	20	24	24	23	21	19	16	16	17	19	20	21	23
Min	15	19	19	19	16	13	10	10	11	14	15	17	18
Max	25	26	27	27	26	24	23	22	23	24	24	25	26

Heat Units

(Base 10)		595	535	567	489	437	351	357	391	429	474	492	564
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<i>Chill Units</i>		0	0	0	0	0	0	0	0	0	0	0	0
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Evaporation

APan (mm)	1678	180	159	160	126	106	88	99	118	129	163	165	185
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Frost Severity : Nil

The above table is included in the main assessment because it results in a Climate Capability Rating of C.1, which indicates that the climate will permit good yields for a wide range of adapted crops throughout the year. Climate Capability Rating is measured on a scale of I to VIII. However, climate is not the only factor in crop production. Soil and water are two other critical determinants of yield potential.

A.5. Inspection Pits

In order to minimize damage to standing crops and roots, pits were excavated at field edges only.

On the second drive through, undertaken to map out a route for the TLB over 60 potential pit sites were identified. This list was reduced to 32 sites due to visible similarities in soil form and series.

The figure of 32 sites is well within the KZNDAE requirement of one pit per 50 ha for standing sugar cane. Care was taken that samples were representative of crests, midslopes and bottomlands.

A map of pit sites with pit identity numbers as well as a schedule listing GPS co ordinates for each pit and a locality description comprise Annexure III hereto.

Descriptions of the pit profile, surrounding Slope Percentage, Rooting Depth, Wetness, Permeability for each pit site are tabled in Annexure XI (Land Capability Class)

The pit data was then collated to compile a Land Capability Class Determination (Annexure XI) for each site using the Land Capability Class determination flow sheet developed by KZNDAE Directorate of Natural Resources (Annexure V).

Profiles of typical soil forms found are illustrated in Annexure IV

In case any further clarifications or determinations may be required, 20 correspondingly numbered samples of upper B Horizon and other interesting subsoils have been retained.

A.6. Slope

Slopes are mapped in Annexure VI

Slopes > 12 %

Land that has a slope of greater than 12 % may not be cultivated for annual crops. It may be used for permanent pastures, plantations and sugar cane.

Approximately 70 % of slopes (800 ha) on the farm fall into this category (Category D)

These slopes, by definition, result in a Land Capability Determination Class IV.

Slopes < 12 %

The second most commonly occurring slopes are Category A (0-3 %) and Category B (4-7 %), which on their own would support Capability Determination Classes of I and II respectively.

However, in many instances, other factors lead to these gently sloping fields being downgraded to Class IV.

These fields are found in the broad bottom lands lying along both sides of the railway line, in the vicinity of the offices and workshops, parallel to and west of the R 102 and on parts of the crest parallel to the R 102, between the R 102 and the ACSA property.

A.7. Soil Texture

Where orthic topsoils occur, mainly on the crests and midslopes, clay content was typically between 20 and 35 %. This range of topsoil clays is ideal for crop production.

Elsewhere upper B Horizon clays were usually in excess of 35 % and even 55 %, occurring mainly under Melanic A Horizons. The latter are unworkable when wet and rock hard when dry.

The method used to determine soil texture is described in Annexure VII

A.8. Rooting Depth

As illustrated in the pit profiles table (Annexure XI) rooting depths are generally poor.

The surprising extent to which roots were able to, in some of the fields, work their way into the shale layers is an indication of good nutrient and husbandry practices.

On the gentle slopes rooting depth is frequently inhibited by heavy clay layers and wetness.

Running north to south along the eastern boundary of the estate there is a strip of red soil originally derived from molten dolerite having forced its way to the surface through a rift or sill in the shale. This strip gets top score on texture, rooting depth, permeability and wetness. Were it not on a steep slope this would comprise a Capability Class I soil.

Typical rooting depths are mapped in Annexure VIII

A.9. Wetness

In the low lying areas wetness is severe. This was not only evident from pit observation. In places visible surface salts indicate salinity arising from poor drainage. In other places irrigation water still lay in furrows from the previous day.

Cambered beds, designed to lower the water table in the immediate area, thus allowing the roots access to oxygen, are clearly visible, not only from the road, but also from aerial photographs.

In other areas Meletti ditches have been used to facilitate soil drainage.

The use of cambered beds has, for several years, been banned by KZNDAE

Wet areas are mapped in Annexure IX

In the development plan (Annexure XVII) open areas do not always coincide with wetlands and wetland reserves. It is suggested that the draft development plan be revisited.

Nut grass and cynodon species also present a challenge in the wetter fields

A.9. Permeability

Water permeability through the orthic topsoils on the crests and midslopes is good (Class 5). On the melanic topsoils and heavy clays is restricted (Classes 2 and 3) and on the light soils (Watson Highway), rapid and extremely rapid (Class 6 and 7).

Permeability ratings are detailed in Annexure XI

A.11. Rockiness

As surface rock makes up an area of less than 100 m², this determinant was disregarded.

A.12. Land Capability Class Determination

Application of the guidelines laid down by KZNDAE Directorate of Natural Resources (Annexure V) has led to most of Inyaninga and Watson Highway having been determined to be Class IV sites. This Class of land is subject to severe cultivation restrictions.

Where fields pass on permeability they fail on slope. Where they pass on slope they fail on wetness, and so forth.

Class II and Class III soils are highlighted in Annexure XI.

The other determinant for alternate crop suitability is water.

A.14. Water

Due to slope, permeability and shallowness this estate cannot make full use of the 973 mm of rain experienced.

Weather experts' current predictions are that rainfall figures will not drop in the foreseeable future. However they are emphatic that rainfall incidences will become further apart and precipitations will increase in severity.

This trend will inevitably lead to more run off and less retention of rainfall water on poorer and more difficult soils.

Both Watson Highway and Inyaninga have access to supplementary irrigation water.

The Watson Highway situation is straightforward. Twenty ha is irrigated with water drawn from the Tongaat River. This water allocation is part of a THS overall irrigation water allocation permitted by DWAF. The rest of the allocation is utilized on neighbouring Estates.

The options are clear :

- Continue the current practice.
- Use the water for irrigating alternate crops.
- Switch the allocation to an adjoining THS sugar estate.
- Sell the water rights to a third party

On the other hand Inyaninga irrigates 280 ha using dunderwater (waste water) from the Maidstone Sugar Mill.

While the use of dunderwater for irrigation is an agronomic consideration, there are also agribusiness considerations. In order not to fragment the issue, both agronomic and agribusiness considerations will be addressed in this section of the assessment.

Expressed very simply, the primary function of a sugar mill is to extract as much juice as possible out of every stick of sugarcane. This juice is made up of sugar, a few impurities and a huge quantity of water, typically in excess of 80 tons water per 100 tons juice.

A mill crushing 300 tons of sugar cane per hour has therefore to dispose of approximately 250 tons of water per hour. One means of disposal is to put it back on the fields.

If this mill cannot dispose of this dunder water this mill shuts down.

There are a number of issues affecting the use of raw dunderwater for irrigation.

- How long will DWAF permit raw dunderwater to be spread on fields and eventually find its way into communal groundwater.
- Should there be a repeat of the spillage of dunderwater akin to that that occurred at Darnall some 20years ago the public outcry and subsequent pressure on DWAF would force major and immediate remedial steps to be taken.
- The method used to apply dunderwater to the Inyaninga fields is extremely inefficient. Overhead sprinkles systems are typically 55 % water efficient, compared with up to 93 % water efficiency that other systems can achieve.
- Dunderwater cannot be used for irrigating fresh produce in instances where the market specifies compliance with Euregap Standards. (exports to the northern hemisphere and delivery to leading RSA chain stores).

It would appear that there are a number of options that can be exercised with regard to the future employment of Inyaninga dunderwater:

- In the medium term, continue growing sugar at Inyaninga, using the dunderwater to irrigate 280 ha cane.
- Stop growing sugar and divert the dunderwater to one of the other estates
- Purify the dunderwater to the point where it can comply with Euregap standards and use it for irrigating alternate crops at Inyaninga.
- Purify the dunderwater to the point where it can be used as either industrial or potable water and then sell it to Dube Tradeport.
- The dunder water currently used for irrigating 280 ha of sugar cane is in excess if what can be used for irrigating alternate crops due to the limited area of land suitable for alternate crops

Again, these are some of the issues that would need to be decided by Tongaat Hulett management prior to proceeding with a change of land use application.

Further, three of the four areas suitable for row crop production (Annexure XII) are outside of the current irrigation area (Annexure XIII).

This then implies cost considerations in either maintaining or moving existing irrigation infrastructure for use on a limited area.

McCain will not, due to quality variances arising from unequal precipitation, purchase vegetables grown under overhead sprinkler systems.

A.15. Fifty meter radius

The terms of reference call for an assessment of a 50 m radius around the property's borders. The eastern boundary of Inyaninga is residential properties situated within the Tongaat Borough.

To the north, poor quality veld and acacia scrub.

The western boundary is largely sugar cane farms

To the south is good quality ACSA land, currently being leased from ACSA for the production of sugarcane.

A.16. Indigenous Flora

Existing indigenous flora is limited mainly to the valley bottoms where there are, in places, small stands of common indigenous trees and shrubs. Decorative veld plants have disappeared, but will commence to reappear once sugar cane production ceases.

The topography of the site lends itself to some exciting opportunities of creating attractive water features surrounded by a panoply of indigenous flora.

There are also opportunities for re establishing pristine Lala Palm Savannah, remnants of which still exist in isolated pockets along the KZN coast.

A. 17. Caution

Although it is not only beyond my terms of reference but also outside of my field of expertise, I would suggest that, in view of underlying shale strata on the crests and midslopes as well as wet clays on the lower slopes and bottomlands, it might be prudent to conduct a thorough geotechnical study prior to any commitment to civil construction work.

B. AGRIBUSINESS CONSIDERATIONS

B.1. Economies of Scale

At the beginning of the last century there were over 60 sugar mills along the KZN coast, the cane production for which mills was steadily diverted to larger mills.

The peak in economies of milling scale was reached in RSA when Zululand Sugar Mill at Empangeni and the old Felixton mill were shut down and replaced by the current Felixton II mill.

This mill was designed to crush 600 tons cane per hour, at that time double the capacity of most of the other mills. The design was such that capacity could readily be increased to 900 tons cane per hour.

For various reasons the relatively small mills at Melville, Entumeni and Glendale have been have been shut down within recent memory. Their cane supplies were either diverted to other mills or lost through increased delivery distances. Mount Edgecombe, a substantially larger mill was decommissioned and cane supplies cascaded northwards. Milling capacity at the three remaining north coast mills was substantially increased, usually by the employment of diffusion technologies.

Economies of scale in order to meet the cost / income squeeze have also impacted on cane production.

Twenty years ago a 7 000 tons cane per annum farm gave the grower an extremely comfortable, if not luxurious, standard of living. A few years ago this figure had risen to 15 000 tons per annum, and is now nearing 20 000 tons. There are numerous instances of 7 000 ton farmers having been bought out by, or having bought out their neighbours. Minimum economic production size for corporate farms is regarded as close to 50 000 tons per annum.

A similar parallel exists in the Timber industry, when, a few years ago Mondi Forests sold off plantations smaller than 40 000 ha as they were regarded as sub minimal management units.

Another indication of the high cost of small scale farming was the phasing out of the Sukumani project, reportedly because cane was costing the mill an additional R 23 per ton cane over the weighbridge.

It is becoming increasingly apparent that in the long term commercial dryland sugarcane farming and milling can only continue on the basis of ever expanding farming units and a rationalization of milling capacity .

B.2. Impact of Urbanization on the KZN Sugar Industry

It is inevitable that urbanization, with its concomitant demand for additional housing, office space, factories, improved roads and other infrastructure will impact on surrounding agricultural activities, agricultural production and agricultural product processing.

The name of the Mobeni industrial complex is derived from the isiZulu word 'eMobeni', meaning 'the place of sugar cane'. Prospecton used to be a Hulett sugar estate.

Urban expansion southwards, together with increased cane production in the midlands led to the translocation of the sugar mill at Illovo to its present site at Eston, which impacted on the economy of the Illovo village.

The present Glenashley, La Lucia and the part of Umhlanga inland of the present M5 were all sugar plantations. Similarly, Phoenix and KwaMashu were built on land owned by the Marshall family, the principal growers for, as well as owners, of the former Natal Estates Mill at Mount Edgecombe.

'Mashu' was the isiZulu name for Marshall Campbell, the doyen of the Marshall family. Hence the name KwaMashu.

(As a light aside : Shanty landlords told people from Cato Manor, destined to move to KwaMashu, that Kwa Mashu rested on a huge swamp. When sufficient people had moved there, KwaMasu would one night be swallowed up by the swamp. The other current story was that mambas at Kwa Mashu had 2 heads. Knock one off and the other will get you. Urban Legends !!!)

Urbanization in the Ethekekwini area may have resulted in one or two thousand job losses in the sugar industry. Most of these would have been low grade and seasonal. These numbers pale into insignificance when compared with the hundreds of thousands of permanent employment opportunities, many at a high level of sophistication, created by turning the same land to other uses.

Another corollary of urban development is the demand for improved air services. Until the 1950s commercial flights operated from the Stamford Hill Aerodrome, located on a block of land bordered by North Beach on the east and Umgeni Road in the west. The northern and southern boundaries were the Durban Country Club and Argyll Road.

During World War Two military needs were met by the use of flying boats operating from Durban Bay.

As larger aircraft came off the production lines together with an increased demand for air travel and safety considerations associated with an air port in the middle of a built up area, Stamford Hill Aerodrome was shut down and replaced by a new airport south of the Merebank / Clairwood area, again at the expense of wetlands and sugar cane fields.

During the early 1960s the government decided that Durban needed a larger airport. After due investigation a site near Verulam was identified and the land expropriated, much to the chagrin of the then land owners.

At the time of the announcement there was a huge flurry of interest in the development of the Compensation Flats as the northern industrial hub. The Compensation Flats lay along the then highly active North Coast / Zululand railway line and the R 102, the first flat topography of any consequence, north of Durban, after removal of the level 'La Mercy' land

For the next 40 years no move was made to develop the site, then dubbed the "La Mercy Airport"

B.3. Implications of King Shaka Airport and Dube TradePort

The development of these two nationally important facilities bring into sharp focus the issues facing rain fed sugar production in KZN and the north coast in particular

The evolution from 'La Mercy Airport' to King Shaka Airport and the Dube Trade Port has significant implications for the KZN North Coast sugar industry and more particularly for Tongaat Hulett Sugar Ltd., who own two of the three north coast mills.

The Maidstone mill is directly affected. The continued existence of the Maidstone mill also impinges on the associated, and nationally important, Voermol animal feed production facility. Manufactured from the two basic ingredients of bagasse and molasses, Voermol animal feeds form an important component of highveld winter livestock condition maintenance.

The ripple effect will spread further north. The next mill north is Gledhow, which supplies bagasse as a feedstock to Sappi Fine Papers. This latter enterprise contributes to a saving in foreign exchange on imports and is an earner of foreign exchange on exports.

Darnall Mill has no downstream commitments.

A few rounded off statistics illustrate the breadth and depth of the challenge facing the industry, which challenge is aggravated by the loss of land to the new developmental hub.

Table 1 vividly illustrates the combined effect of the King Shaka / Dube Tradeport complex will have on Maidstone throughput when lands currently leased from ACSA are also taken out of cane production.

Table 1

Cane Deliveries Inyaninga (' 000' Tons cane per season)

Season	Inyaninga Section	Klipfontein Airport	Inyaninga Airport	Umhloti Airport	Total
2002	47	2	17	16	82
2003	38	2	12	15	67
2004	31	2	15	12	60
2005	35	3	16	17	71
2006	37	2	21	17	77
2007	37	3	16	18	74
2008	40	2	14	14	70

B.4. Cane Areas Harvested : KZN North Coast Mills

Table 2 overleaf illustrates the decline in areas harvested since the 1999 season. At Maidstone MCP and Small Grower areas declined dramatically, while Large Scale grower areas remained stable. Glendale cane moved to Gledhow, keeping Gledhow figures stable. At Darnall there was an even more dramatic decline in MCP ha while Large Scale Grower ha remained stable.

In round numbers, Maidstone ha decreased by 34 %, Gledhow / Glendale has remained stable and Darnall has lost 11 %.

Table 2

Areas Harvested North Coast Mills					
Maidstone ; Area Harvested (ha)					
		MCP	LSG	SSG	Total
1999/00		9470	15193	7345	32008
2000/01		8894	16514	6932	32340
2001/02		9498	16076	5494	31068
2002/03		8121	15903	4820	28844
2003/04		7184	16607	4740	28531
2004/05		5684	16198	3047	24929
2005/06		5657	16180	3061	24898
2006/07		5580	14931	2416	22927
2007/08		5307	14507	2068	21882
Gledhow ; Area Harvested (ha)					
		MCP	LSG	SSG	Total
1999/00		3573	13809	1399	18781
2000/01		3505	13741	1453	18699
2001/02		3747	13216	2020	18983
2002/03		3552	13062	1862	18476
2003/04		3501	12189	2190	17880
2004/05		4871	12825	6803	24499
2005/06		5283	12547	6214	24044
2006/07		5820	12505	5964	24289
2007/08		5617	16391	5397	27405
Darnall ; Area Harvested (ha)					
		MCP	LSG	SSG	Total
1999/00		4230	18025	2761	25016
2000/01		3622	17920	3986	25528
2001/02		3782	17866	4495	26143
2002/03		2848	18736	4700	26284
2003/04		1899	19648	4700	26247
2004/05		996	20189	2400	23585
2005/06		911	20865	2536	24312
2006/07		848	19910	2476	23234
2007/08		1057	15987	2554	19598
Glendale ; Area Harvested (ha)					
		MCP	LSG	SSG	Total
1999/00		1007	604	3662	5273
2000/01		1269	418	3933	5620
2001/02		1095	556	3893	5544
2002/03		1171	576	3240	4987
2003/04		1193	771	4100	6064

SACGA Figures

B.5. Milling Capacity ; Tons Crushed : North Coast Mills

Table 3 overleaf illustrates that decline in tons crushed per season, expressed as a % of milling capacity. Although Gledhow ha under cane remained stable, tons crushed has declined, indicating a decline in yield per ha.

During the 2007 and 2008 seasons Maidstone and one other north coast mill could have crushed the entire crop.

For the three seasons preceding 2007 the crop exceeded crushing capacity by only 8 %.

Table 3

Comparison of mill crushing capacity and tons crushed : 199 to 2008 (Millions Tons)							
Maidstone : Crushing Capacity 2.0 million tons							
Year		Tons Crushed		% of Capacity			
1999		1.68		84			
2000		2.17		109			
2001		1.65		83			
2002		1.9		95			
2003		1.39		70			
2004		1.39		70			
2005		1.31		66			
2006		1.35		68			
2007		1.17		59			
2008		1.22		61			
Gledhow : Crushing Capacity 1.5 million tons							
Year							
1999		1.36		91			
2000		1.49		99			
2001		1.15		77			
2002		1.38		92			
2003		1.18		79			
2004		1.09		73			
2005		1.18		79			
2006		1.2		80			
2007		1.19		79			
2008		0.91		61			
Darnall : Crushing Capacity 1.5 million tons							
1999		1.31		87			
2000		1.56		104			
2001		1.21		81			
2002		1.37		91			
2003		1.1		73			
2004		1.26		84			
2005		1.35		90			
2006		1.22		81			
2007		1.08		72			
2008		1.1		73			

B.6. Horizontal Expansion : Small Grower Decline

Virtually the only avenue for increased production in the dryland areas is horizontal expansion through an increase in small grower areas. Table 4 illustrates that this is a highly unlikely event.

Table 4

Small Scale Growers : Dryland			
Season	AUC	AH	Tons Cane
	('000 ha)	000 ha	(million)
1999	73	57	2.3
2000	75	60	2.7
2001	74	59	2.3
2002	73	54	2.1
2003	72	56	1.5
2004	68	55	1.5
2005	67	52	1.5
2006	63	47	1.3
2007	59	48	1.2
Small Scale Growers : Irrigated			
Season	AUC	AH	Tons Cane
	('000 ha)	000 ha	(million)
1999	10	9	0.8
2000	10	10	0.9
2001	11	10	0.8
2002	10	10	0.8
2003	11	11	0.8
2004	11	11	0.8
2005	12	11	0.8
2006	11	10	0.7
2007	11	10	0.6
AUC = Areas under Cane			
AH = Areas Harvested			

There have been a number of contributory factors. One has been an unprecedented increase in the cost of fertilizers as depicted in Table 5. Another factor has been increased incomes to the extended family from affirmative employment in the government service, commerce and industry.

Further, the widespread implementation of child support grants and income derived from civil construction and maintenance work under the Expanded Public Works programme have had the unintended consequence of making farming income less needed or attractive. Farming is, after all, hard work!

It is further disturbing that, while ha harvested have decline by one fifth, the cane delivered by small scale growers has halved

On the other hand areas harvested and tons cane delivered in the northern irrigated areas have remained relatively stable. Most of this area falls under the Walden Irrigation Scheme in Mpumalanga Province.

This tends to once again illustrate the enhanced economic attractiveness of irrigate production, not only through higher yields per rand input, but also through mitigating the rainfall risk factor.

Fertilizer Costs

Table V overleaf illustrates the impact of fertilizer prices on farm input costs. Other input costs such as chemicals and diesel have followed a similar trend.

Dryland cane typically needs 800 kg fertilizer at plant and 500 kg fertilizer per annum on ratoon crops.

These figures go a long way towards explaining the consolidation of large scale dryland farms and the severe drop in the volumes of cane per ha being harvested by small scale growers.

The price for sugar has increased over the corresponding period, but to nowhere near the same extent.

World sugar prices are currently at the highest levels for the last 30 years, due partly to drought related crop failure in India, partly due to a sharp decrease in EU sugarbeet production resulting from withdrawal of subsidies.

Since the start of the decade world prices have fluctuated between US\$ 0.07 per lb and US\$ 0.017 per lb, but have now climbed to US\$ 0.027 per lb.

Production break even cost is around US\$ 0.07 per lb.

Historically the world price of sugar has been volatile and cyclical. The current view is that by 2011 / 12 the Indian crop will have recovered and that Brazil will have taken up the EU shortfall.

Probably one of the most dramatic rises in sugar prices was in the mid 1960s when a cyclone hit Cuba and part of Brazil at the same time. Prices rose from Br.Stg 13.10.00 per long ton c.i.f Plastow Wharf (London) to Br. Stg. 103.00.00

Table 5

Fertilizer Prices 1998 to 2008

(ZAR per Ton)

Date	LAN	Urea	Supers	MAP	Potassium
1998	800	1120	901	1603	1050
2003	1775	2280	1510	2760	2050
2007	2350	2900	1995	3650	2600
2008	3880	4910	6490	11790	7170
% increase over 2007	65	69	225	223	176
% increase over 1998	485	438	720	735	682

B.7. Impact of Land Restitution

This assessment not only accepts, but also endorses, the concept of land restitution. It makes economic good sense and it makes social good sense' Therefore, of itself, it makes political good sense.

In a democracy the fundamental and non negotiable contract between the government and the governed is that the government will provide an environment that is both economically and socially of optimum benefit to the governed.

The appallingly inept manner in which land restitution has been mismanaged in the implementation thereof is not only a gross betrayal of the targeted beneficiaries but also harmful to the agricultural economy.

The negative impact has, so far, been most severely felt in Limpopo Province where the general consensus is that agronomic and agriprocessing income has dropped by 30 %.

The crops most effected in Limpopo have been tropical and subtropical crops which rapidly becomes stressed and deteriorate rapidly in the face of poor husbandry.

Evidence of crop reduction on restitution farms in KZN is already becoming apparent. As sugar is a far more resilient crop than subtropical fruit and vegetables the full impact of poor restitution practices will probably not be fully felt for several seasons in KZN.

This study assesses that, unless there is a drastic reversal of current trends, losses of sugar production through urban expansion will pale into insignificance when compared with losses arising from restitution.

In sharp contrast, land restitution has had minimal impact on sugar production in the Mpumalanga irrigated area. This could be attributed to an alert management, having taken early cognizance of the threat, followed up with action at a presidential level.

The result was direct interventions in the land transfer process, leading to a ripple free transfer process.

This assessment has been unable to obtain verifiable data for the impact of Land Restitution on cane supplies in the Ilembe Municipality. However, figures obtained from two independent sources in the Mhlatuze Municipality reflect that of 21 farms, 18 have failed. The cost has been 150 000 tons of sugarcane valued at R 40 million. 900 jobs have been lost. Nkwalini is excluded.

B.8. RSA Sugar Industry ; Future Trends

By definition this section of the TOR for an agricultural assessment will contain an element of subjectivity and probably a bias towards the personal viewpoints of the author.

However, every effort will be made to limit these two hazards.

The first pointer is a brief review of Industry investment over the last decade.

Tens of billions of rands have been invested in the purchase and upgrade of sugar mills and irrigated estates to the north of us. Amongst these are a mill and estates in Swaziland, four mills and estates in Mocambique, two mills and estates in Tanzania, two mills and estates in Malawi and a mill and estate in Zambia.

Most of these mills and estates are making far greater profits than local enterprises due to lower costs and preferential prices.

In addition to equity held the RSA industry has given huge support in the form of key personnel and unstinting technological back up.

These higher operating margins seem set to maintain themselves for the foreseeable future.

In contrast, new local investment has been minimal and MCP ha have been steadily eroded.

Due to the withdrawal of EU subsidies on production of sugar beet, world sugar prices, traditionally always volatile, are currently at good levels. However, it is anticipated that low cost, high volume sugar producing countries will rapidly fill this gap between supply and demand.

The positive note is that there is a firm commitment to the establishment of three sugar mills for the production of ethanol. These mills are planned for Cradock, Hoedspruit and Makhathini, in that sequence of priorities. The IDC has committed itself to R 4.3 billion in support of the three projects.

Feedstocks under trial include sugarcane and sugar beet as well as high biomass and sweetstem sorghum (imfe), all under irrigation .

It might be of interest to note that, at Hoedspruit, trials on dryland sweetstem sorghum are being conducted on tribal authority land which lies at an elevation of 1000 m and has a rainfall of 600 to 700 mm per annum. The intention is to use the crop, reaching peak sugars in January / Feb, to extend the milling season.

A ten year trend in the drop of sugar production is contained in Annexure XV

B.9. Alternate Crops

A case can be made for growing alternate crops, but should be viewed against the background of Annexures XII and XIII (Class II and Class III sites, Irrigated Areas).

THS core business is the growing and milling of sugar. An irrigated produce operation would need to have its own infrastructure and management. In order to generate sufficient revenue to pay a full time professional farm manager and a similarly qualified admin / marketing manager would require a contribution R 700 000 to R 800 000 p.a. plus an equal return commensurate with the high risks involved in full time cash crop farming.

At an average net return of R 15 000.00 per ha, 100 ha of land is required.

The existing irrigation infrastructure at the Watson Highway Section can be discounted as this portion has Fernwood and Kroonstad Soil Forms only, which apart from being Class IV soils, should in the first instance, never have been cultivated.

The fields around Pits 24 and 26 are outside of the current irrigation area and would therefore require the installation of a mother line and laterals.

It would also incur the cost of pumping to a head an additional 30 to 40 m above the nearest point of the existing irrigation infrastructure. 10 ha of irrigation does not justify the cost.

12 ha could be found in the vicinity of Pits 13 and 14 which is immediately adjacent to and level with the western end of the existing irrigation scheme.

A further 15 - 20 ha in the vicinity of Pits 2,3, 4 and 5 lie within the existing irrigation scheme or immediately adjacent to it.

The above two likely sites are on the periphery of THS farming operations, therefore, if farmed, would result in minimal disruptions to normal farming activities.

The remaining area around Pit 29 is outside of the irrigation area and is an isolated pocket within the THS property.

In the event of the TH group deciding to go ahead with the application approximately 30 ha could be excised for high intensity, high value food production on a land lease out basis.

Under normal circumstances one would need to take care not to flood the local market. However, this study has found that a similar area of family owned and managed market gardens have fallen into desuetude as a result of land restitution.

Most highly profitable root crops such as potatoes, beetroot, jugo beans and carrots are precluded by relatively high clay levels.

However there is extensive local expertise in the growing and marketing of crops such as Colocasia esculenta (amaDumbe) and table maize, both of which typically yield R 20 000.00 to R 25 000.00 per ha. Other crops in which there is local expertise include tomatoes (zero to R 50 000.00 per ha), cabbages (R 12 000.00 to R 15 000.00 per ha, but often in over supply) brinjals, peppers and 'double beans' and members of the pumpkin family. In some instances the climate permits double cropping.

Detailed and readily updatable income and expenditure statements, nutrient recommendations etc., are available on request.

Apart from the local Tongaat and Verulam fresh produce markets, a vibrant bakkie trade operates in the area.

Buyer access would need to be limited by placing access control booms and buyer kiosks at the external entry points to the THS property.

B.10. Socio-Economic considerations

This topic will be thoroughly canvassed elsewhere in the environmental impact assessment

However, as indicated in the layout of the proposed development, Annexure VIII hereto, 100 ha will be taken up by Industrial and Logistics activities.

As a rule of thumb every 70 m² in a distribution complex provides one employment opportunity. At a 60 % cover this represents 700 000 m² or 10 000 employment opportunities. Office space creates one employment opportunity for every 15 m².

The farm currently uses a part time harvesting crew and a part time field husbandry crew, each about 15 people.

Development Phase

Figures given by the Building Industries Federation of South Africa for 2007 indicate that the construction industry creates 27.6 jobs for every R 1 million spent

The development phase will provide mainly medium term work for the duration of the contract. The implementation phase will provide mainly permanent employment, in itself a major source of food security.

The development will be within a single bus or taxi trip to the Inanda / Ntuzuma / Kwa Mashu Presidential Poverty Node.

B.11. Food Security

South Africa is going backwards as a food producer, not only for our own domestic needs, but also for export and balance of payments purposes.

During the last two years food prices have reached unprecedented peaks.

Figures and trends recently released by the National Agricultural Marketing Council (NAMC) are a cause for concern.

Excluding several million illegal immigrants the population has grown by 32 % over the last 16 years while agricultural production has increased by only 10 %. Unless there is a significant change in pattern the result is inevitable;

Increasing food shortages
Escalating prices.

Fifty years ago there were 19 countries in Africa that were net exporters of food. Ten years ago there were two, RSA and Zimbabwe. Zimbabwe then fell away. In 2007 our food imports and exports reached an equilibrium of R 30 billion each. Between 2002 and 2006 agricultural export contribution to balance of trade fell from R 11 billion to nil.

This is the first time in the 98 year history of RSA that we have not been a net exporter of food

The NAMC cites the following causes:

- Adverse climatic conditions
- Poor quality and low availability of water
- Lack of Investment
- Uncertainty because of land reform
- Low profits due to high input costs

1. Adverse climatic conditions can in part be countered by irrigation, which practice takes the rainfall risk out of the farming equation.

2. Poor water quality and limited supplies require that every liter of water be effectively used. Over 1 200 community irrigation schemes are lying under utilized, derelict and decaying. This is sometimes due to lack of funding and skills, but more often due to community conflict.

3. Lack of investment is the product of uncertainty and low profits.

At the same time it is common cause that there are huge tracts of land (The NAMC cites 3 million ha of high yield potential soils) that are lying under utilized or unutilized in the former homelands, most of which constitute Presidential Poverty Nodes.

Again, a study of Annexure XVI, the 2030 Water Availability map, tells its own story.

B.12. Inyaninga Assessment

- Inyaninga Estate can, for the medium term continue to function as an economically MCP sugar estate, making a useful contribution to milling margins, (but not as a stand alone profit centre), provided current high standards of management are maintained.
- The loss of cane from Inyaninga Estate is compounded by the loss of cane currently grown on ACSA land as quantified in Table 1. The implications include either shutting down a milling train at Maidstone or shutting down the Darnall mill.
- Looking further towards Amatakulu and Felixton mills, Amatikulu has been affected by the loss of 150 000 tons small scale grower cane. Felixton has lost 250 000 tons UVS cane to Umfolozi Mill, and will after two more seasons lose 350 000 tons of Senekal cane.
- Approximately 30ha of Inyaniga estate can be excised from the proposed development and converted to cash crop production. This step will facilitate approval of change of land usage.
- In view of the widespread wet areas in the valley bottoms, areas of high clay levels and the incidence of shale strata, the layout of the proposed development should be revisited

B.13. Strategic Considerations

In view of the strategic importance of the King Shaka Airport and the Dube Trade Port together the impact that they will have on the centre of gravity of economic development in the geater Ethekwini area, the final fate of agricultural land within economic distance of this complex, could well be a national rather than a local decision at an Economic Cluster level.

C. ANNEXURES

Annexure I : Salient Features / Key Infrastructure

A.

Inyaninga Estate and Watson Highway Section in relation to King Shaka Airport and the N2 Freeway.

B.

Salient Features and Key Infrastructure : Narrative

C.

Salient Features and Key Infrastructure : Map

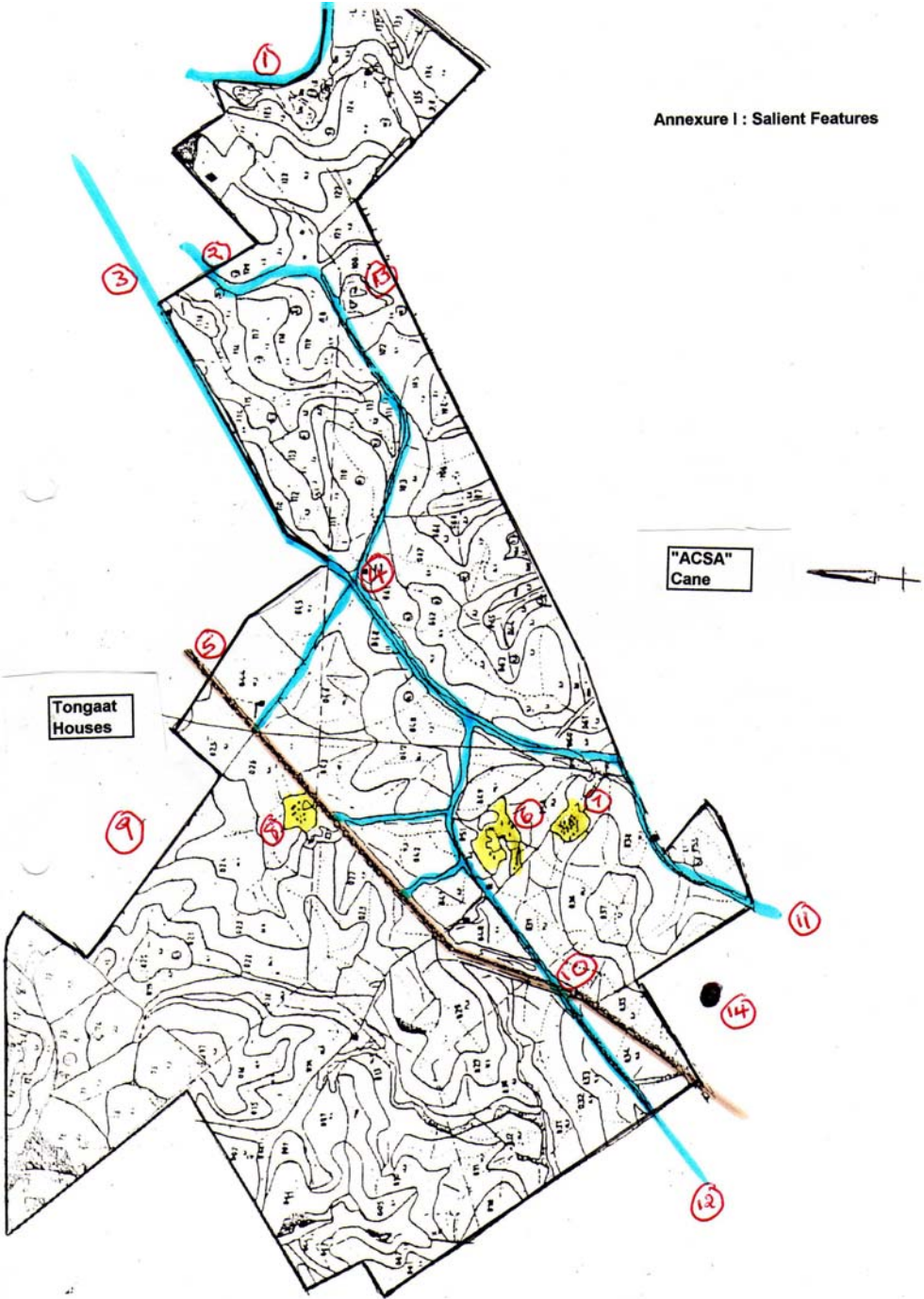
INYANINGA & WATSON HIGHWAY SITES



Annexure I : Salient Features and Key Infrastructure : Narrative

1. Watson Highway, Start of Brick Road, Tall White Gate Pillars
2. Start of main internal farm road from Tongaat Borough
3. Access from Tongaat main Street to Nyaninga ; Northern Entrance
4. Boom Gate at Intersection main internal farm road and Tongaat to Verulam rd.
5. Entrance of Railway Line into Tongaat
6. Offices and Workshops
7. Staff Accommodation. Temple.
8. Staff Accommodation. House with green roof.
9. Housing, Borough of Tongaat.
10. Intersection Railway Line, main internal farm road / road to Nwandwe
11. Southern exit from Inyaninga on Tongaat – Verulam Road
12. Southern exit ; Road to Ndwandwe
13. Large House with white cross
14. Vodacom Mast (off property)

Annexure I : Salient Features



Annexure I1 : Geological Maps

Map A

Geologic history of the KZN North Coast showing Recent Sands (Yellow), Dwyka Tillite Group formed 320 to 350 million years ago (olive green) and the Ecca Group formed some 300 million years ago (brown).

Source : Geological Journeys ; Norman and Whitfield ; pg 162 ; Struik ; ISBN 1 77007 062 1

Map B

Current Geology of the KZN North Coast showing Recent Sands ref Qb (Red sand, subordinate white, yellow , brown and purple sand; basal conglomerate).

Source : Council for Geoscience map 2930 Durban. Scale 1:250 000

Map C

Soil System : Kranskop – Umlaas Rd – Durban. SA Sugar Research Institute (SASRI) publication ‘Identification and Management of the Soils of the South African Sugar Industry’. Pg 17. SASRI. ISBN 1-874903-17-4

Note the deep red soils that are characteristic of ACSA land.

Geology of the route

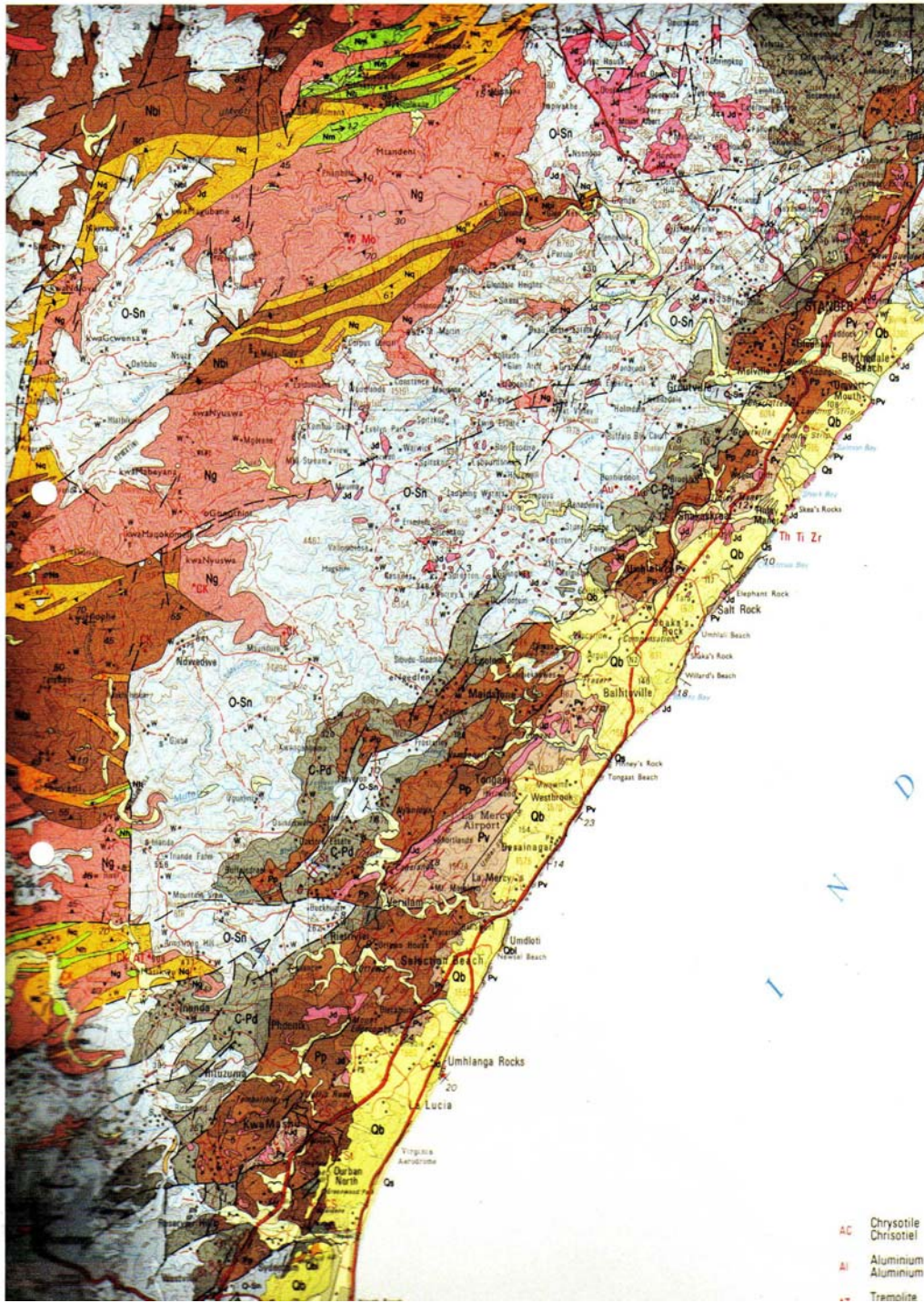
Durban to Mtubatuba

For the first 13 km north of Durban, the N2 crosses poorly exposed, faulted blocks of both the Dwyka and Ecca Groups of the Karoo Supergroup. Much of the first part of the freeway is carved out of the red, compacted and well-vegetated dunes known as the Berea Formation – or, more informally, as the Berea Red Sand. This formation, which extends inland for up to 5 km, occurs almost continuously along the entire KwaZulu-Natal coast. Named after its type area on the Berea Ridge in central Durban, it consists of an old dune cordon made of Tertiary wind-blown beach sand. It was first calcified as a buff-coloured aeolianite and then, during millions of summers of soaking rains, became decalcified and coloured red by iron leached from minerals in the dunes. The Berea Red Sand makes for good sugar-cane land and, more recently, prime building sites along the booming Dolphin Coast. Much of the first part of the N2 north of Durban is carved out of this soft formation, in places exposing Karoo rocks at the base of the fossil dunes.



New building developments abound on what was once sugar-cane fields, north of Umhlanga Rocks. The dark red sand represents 'fossil' coastal dune cordons, now well above sea level, and are heavily pigmented by oxidised iron minerals.

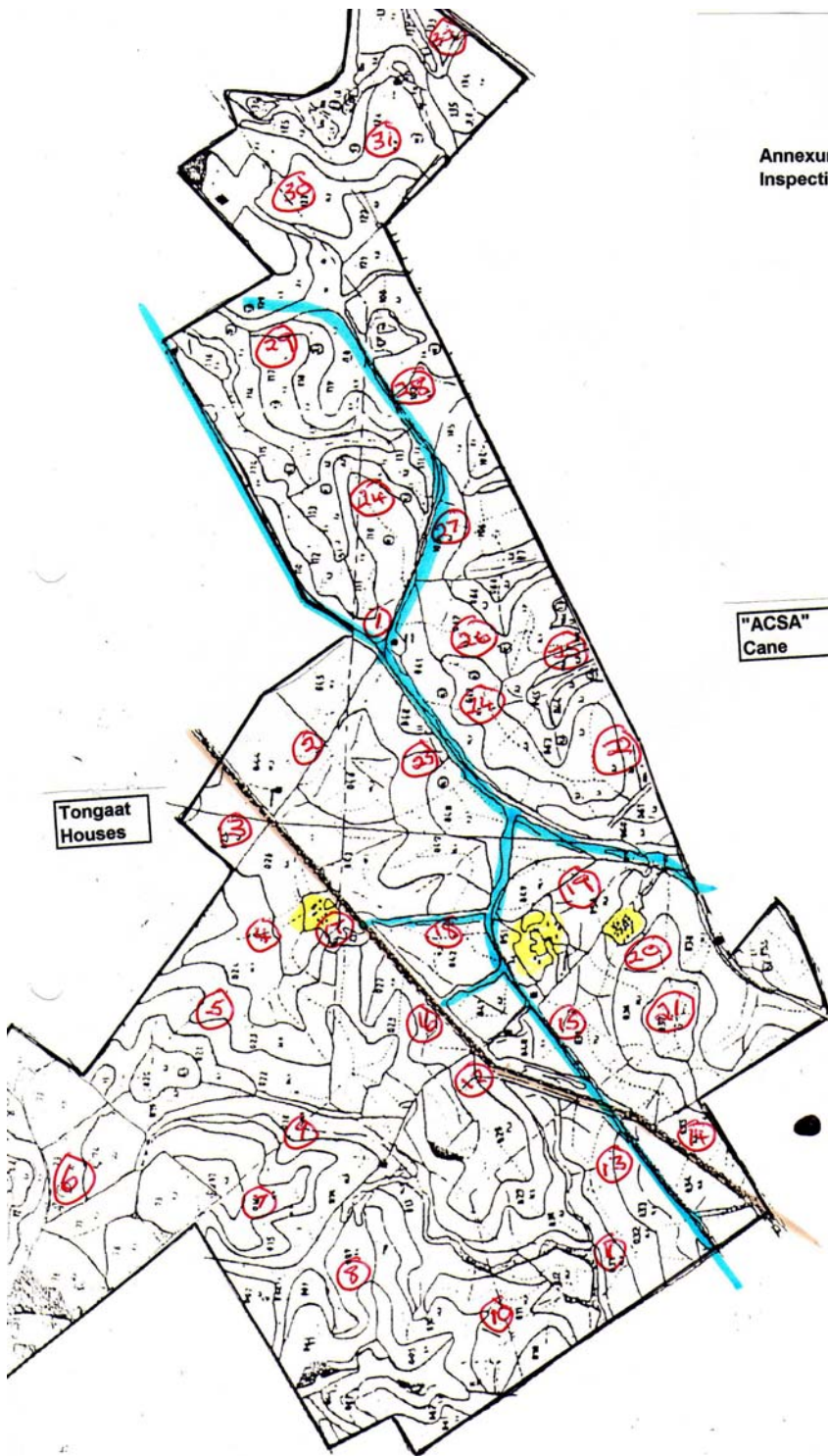




Annexure III

Inspection Pits ; Map and Co ordinates

Annexure III : Map
Inspection Pits



Annexure III : Narrative

Inyaninga Inspection Pit Co ordinates and Locality

Pit no	South Co ordinate	East Co ordinate	Elevation (m)	Locality Description
1	29.35.359	31.06.014	104	On crest next to boom gate
2	29.35.313	31.05.800	93	On right of road on midslope opposite boom gate
3	29.35.183	31.05.399	85	On right of road in first valley bottom field across rlway
4	29.35.188	31.05.183	99	Top end of field, midslope
5	29.35.272	31.05.072	97	Northwest corner of field, midslope
6	29.35.179	31.04.836	135	On hill crest
7	29.34.960	31.04.454	168	On left side of crest road, towards lone fig tree
8	29.35.165	31.04.210	161	Midslope above small dam
9	29.35.171	31.04.422	160	Midslope opposite side of hill from 8
10	29.35.382	31.04.719	121	Valley bottom near western boundary
11	29.35.615	31.04.144	138	Midslope under Eskom pylon on road to quarry
12	29.35.520	31.04.391	100	Valley bottom near bend in railway
13	29.35.796	31.04.969	108	Field north of Ndwedwe road, near western boundary
14	29.35.248	31.04.672	88	Field south of railway line, near western boundary
15	29.36.340	31.04.787	92	South of Nwedwe rd, between rail crossing and offices
16	29.36.043	31.05.026	106	Near brick bridge over railway
17	29.35.457	31.05.179	104	Near house with green roof
18	29.35.606	31.05.307	88	Midslope between rail line and offices
19	29.35.849	31.05.500	102	Midslope opposite offices
20	29.36.144	31.05.420	115	Midslope between temple and reservoirs
21	29.36.292	31.05.344	125	Crest at Oats
22	29.35.968	31.05.947	110	Midslope at west end of pipeline. On ACSA boundary
23	29.35.461	31.05.793	102	Midslope on road between ACSA and Royal Palms
24	29.35.623	31.05.924	130	Crest behind house with cross
25	29.35.564	31.06.257	85	Midslope on field north of Ndwedwe road
26	29.35.481	31.06.383	109	Crest between Royal Palms and house with cross
27	29.35.292	31.06.619	85	Dip between Royal Palms and house with cross
28	29.35.080	31.06.603	94	Next to gate of house with cross
29	29.35.322	31.07.514	66	Valley bottom behind house with cross
30	29.34.852	31.07.077	69	Next to tarred road from Tongaat to house with cross
31	29.35.531	31.07.961	105	North of entrance to Chairman's house
32	29.35.302	31.08.271	94	Field close to N2 Plaza

Annexure IV : Typical Soils Profiles and Properties

A.

Mispah Soil Form

Soils typical of the Mispah Form are found along the crests and upper midslopes of the northern and western areas of the Inyaninga estate. These soils may not be cultivated if topsoil is less than 400 mm.

B.

Milkwood Soil Form

Milkwood type soils are found mainly on the lower midslopes of the northern and western areas of Inyaninga estate. These soils should not be worked when too wet or too dry.

C. Bonheim Soil Form

This soil form predominates the valley bottoms and from the railway line up to the Tongaat – Verulam Road. The B horizons are predominantly yellow blocky clays, resulting in poor natural drainage. Even though it had recently rained there were, in places, visible indications of salinity.

Where B Horizons were red, drainage was much improved.

D.

Swartland Soil Form

The most common soil found in the area of Inyaninga estate that lies between the Tongaat – Verulam road and the ACSA cane belongs to the Swartland Form.

Yellow blocky clays lie below the topsoil, inhibiting root penetration.

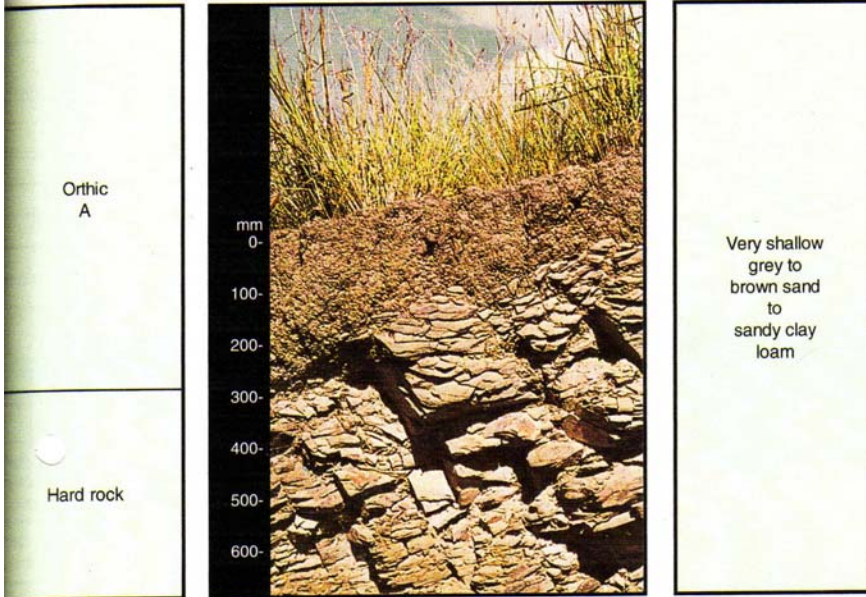
All the above soil forms are derived from Ecca Shales.

E.

Kroonstad and Fernwood Soil Forms

These two soil forms cover the Watson Highway section. Derived from recent sands, these soils may not be cultivated if topsoil depth is less than 400 mm.

Mispah Form - Ms



MAIN SOIL SERIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Effective rooting depth (mm)
All systems except Coastal Sands	Cave sandstone	Mispah	Fine sandy loam	150 to 500
	Tarkastad sediments		Clay loam	
	Swaziland quartzite Vryheid sediments		Sandy loam to sandy clay loam	
Dry Lowveld	Swaziland shales and limestones	Muden (calcareous)	Sandy clay loam	

FEATURES TO NOTE

- non-arable : when effective rooting depth is less than 400 mm
- shallow profile : soil moisture retention is limited
- planting : use minimum tillage and planting in the interrow, preferably with filtercake in a vertically mulched slot
- erodibility : protect soils with a trash blanket or scattered tops
- low nutrient status : high fertiliser rates would not generally be warranted because of the overriding limitations of soil depth and available moisture

SELECTED PROPERTIES OF MISPAH FORM SOIL SERIES

Soil series	Physical					
	Clay % A horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Mispah	6 to 35	Less than 80	Medium	Moderate	Moderate to high	cr, co, mw, sh
Muden	15 to 35	Less than 80	Medium	Moderate	Moderate to high	cr, co, mw, sh

Soil series	Chemical								
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Salinity/sodicity hazard
Mispah	4,5 to 7,0	Low to moderate	Low to** moderate	Low to moderate	Low to moderate	Low	Low	Low	Low to** moderati
Muden	7,0 to 8,5	High*	Absent	Low	Low to moderate	Low	Low	Low	Low to** moderati

*Free lime present **Moderate in Mistbelt System only ***Moderate in Dry Lowveld System only

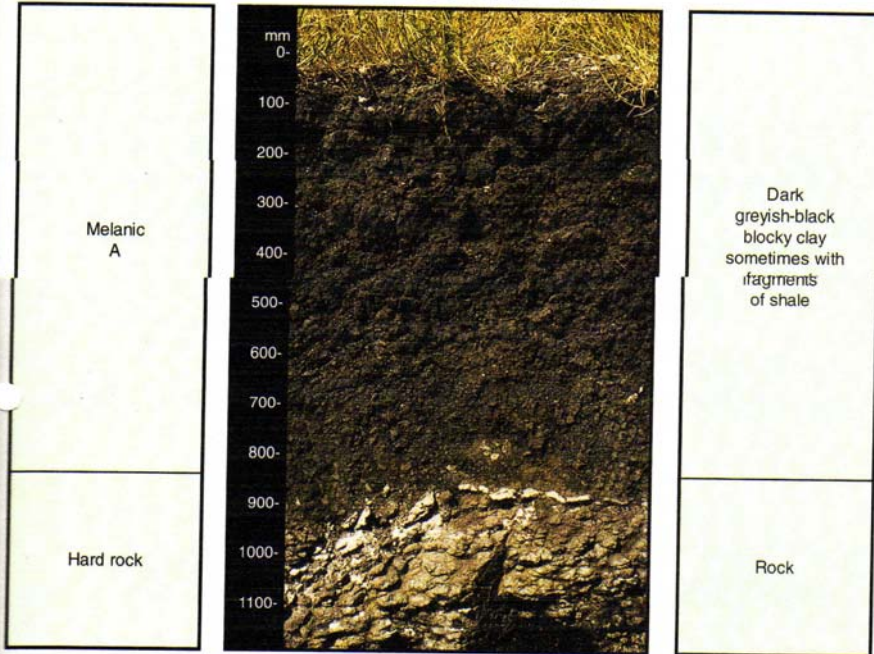
Correlation FAO

Lithosols

Correlation USDA

Aridisols

Milkwood Form - Mw



MAIN SOIL FAMILIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Effective rooting depth (mm)
Coastal Lowlands	Amphibolite Pietermaritzburg shales Vryheid sediments Tarkastad sediments	Dansland	Clay loam	300 to 700
		Milkwood	Clay	
Dry Lowveld	Swaziland basic rocks Vryheid sediments Basalt	Sunday (calcareous)	Clay loam	
		Greythorne (calcareous)	Clay	

FEATURES TO NOTE

- drought problems : cane is frequently droughted
- salinity hazard : can exist in the Graythorne and Sunday series
- soil tilth : soil should not be worked when too wet or too dry
- trashing : good responses to a trash blanket under rainfed conditions
- harvest : preferably in the drier months

SELECTED PROPERTIES OF MILKWOOD FORM SOIL SERIES

Soil series	Physical					
	Clay % A horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Dansland	15 to 35	100 to 180	Medium	Moderate	Low to moderate	cl, sh
Milkwood	More than 35	100 to 140	Medium	Moderate	Moderate to low	cl, sh
Sunday	15 to 35	100 to 140	Medium to poor	Moderate to poor	Moderate to low	cl, sh
Graythorne	More than 35	100 to 140	Medium to poor	Moderate to poor	Moderate to low	cl, sh

Soil series	Chemical									
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Salinity/ sodicity hazard	
Dansland	5,5 to 7,0	High	Absent	Low	Moderate	Moderate	Moderate to high	Moderate to high	Low	
Milkwood	5,5 to 7,0	High	Absent	Low	Moderate	Moderate	Moderate to high	Moderate to high	Low	
Sunday	7,0 to 8,5	Very high*	Absent	Low	Moderate	Moderate	Moderate to high	Moderate to high	Moderate to high	
Graythorne	7,0 to 8,5	Very high*	Absent	Low	Moderate	Moderate	Moderate to high	Moderate to high	Moderate to high	

*Free lime present

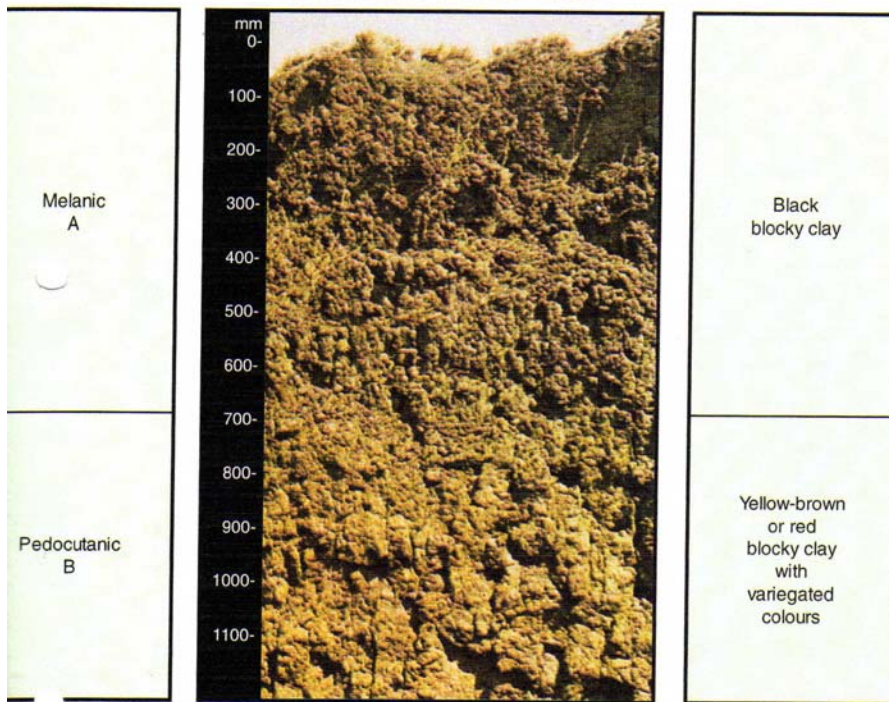
Correlation FAO

Haplic Phaeozems
Haplic and Calcic Chernozems

Correlation USDA

Mollisols

Bonheim Form - Bo



MAIN SOIL SERIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Effective rooting depth (mm)
Cape Coastal Lowlands Vryheid Lowveld	Dolerite-basalt	Kiora	Sandy clay loam	800 to 1 200
		Stanger	Clay	
		Rasheni (calcareous)	Clay	
Cape Coastal Lowlands	Alluvium Pietermaritzburg shales Vryheid sediments Cretaceous sediments	Glengazi	Clay	400 to 800
Vryheid Lowveld	Alluvium Dolerite-basalt Cretaceous sediments Vryheid sediments	Bonheim (calcareous)	Clay	

FEATURES TO NOTE

SELECTED PROPERTIES OF BONHEIM FORM SOIL SERIES

Soil series	Physical					
	Clay % A horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Kiora	15 to 35	100 to 140	Medium to good	Moderate to good	Low	cl
Stanger	More than 35	100 to 140	Medium	Moderate	Low	cl
Rasheni	More than 35	100 to 140	Medium	Moderate to poor	Low	cl
Glengazi	More than 35	100 to 140	Medium to poor	Moderate to poor	Low to moderate	cl
Bonheim	More than 35	100 to 140	Medium to poor	Moderate to poor	Moderate to low	cl

Soil series	Chemical								
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Salinity/sodicity hazard
Kiora	5,0 to 6,0	Moderate	Low	Moderate	Moderate	Moderate	Moderate	Low	Low
Stanger	5,5 to 7,5	High	Absent	Low to moderate	Moderate to high	Moderate	Moderate	Moderate	Low
Rasheni	7,0 to 8,5	High to very high*	Absent	Low to moderate	Moderate to high	Moderate	Moderate	Moderate	Moderate to high
Glengazi	5,5 to 7,5	High to very high	Absent	Low to moderate	Moderate to high	Moderate	Moderate	Moderate	Moderate to high
Bonheim	7,0 to 8,5	High to very high*	Absent	Low to moderate	Moderate to high	Moderate	Moderate	Moderate	Moderate to high

*Free lime present

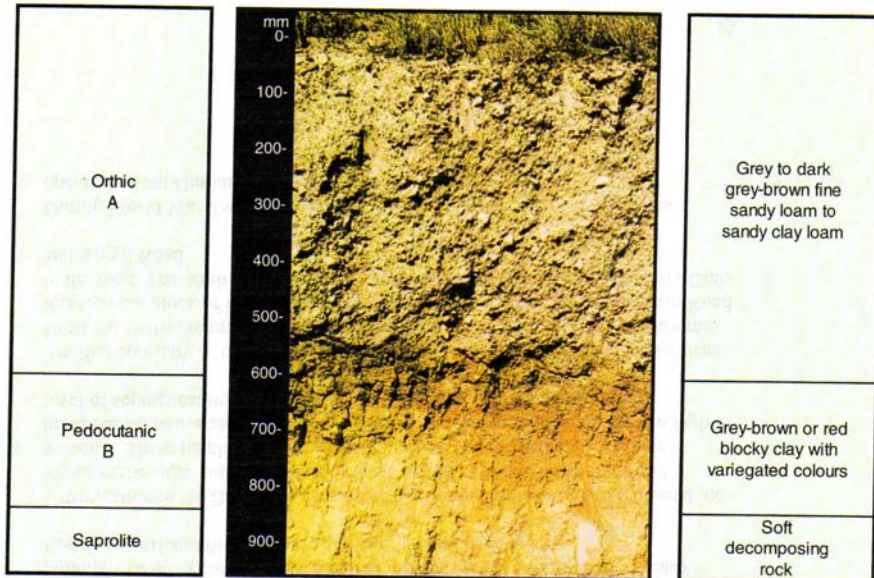
Correlation FAO

Luvic Phaeozems
Chemozems

Correlation USDA

Mollisols

Swartland Form - Sw



MAIN SOIL SERIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Colour (subsoil)	Effective rooting depth (mm)
Coastal Lowlands	Vryheid sediments Tarkastad sediments	Rosehill	Fine sandy loam	Grey-brown	500 to 700
		Swartland	Fine sandy clay loam		700 to 1 200
		Skilderkrans	Fine sandy clay loam	Red	500 to 700
River Valley Dry Lowveld	Vryheid sediments Cretaceous sediments Tarkastad sediments	Malakata (calcareous)	Fine sandy clay loam	Grey-brown	500 to 700
		Nyoka (calcareous)	Fine sandy clay loam		300 to 500
		Broekspruit (calcareous)	Fine sandy clay loam	Red	300 to 500

FEATURES TO NOTE

- erodibility : subsoils are often highly erodible with dispersive clays
- cover cropping : because these soils are low in organic matter and prone to erosion, cover cropping should be practised on summer fallow fields
- planting : use minimum tillage and plant in the interrow, in a vertically mulched slot containing filtercake
- irrigation : exceptionally good surface water management and irrigation scheduling are required
- salinity hazard : drainage and careful irrigation management required in the Lowveld
- trashing : under rainfed conditions a good response to a trash blanket can be obtained
- timing : prone to compaction; soils should not be worked when wet

SELECTED PROPERTIES OF SWARTLAND FORM SOIL SERIES

Soil series	Physical					
	Clay % B horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Rosehill	15 to 35	80 to 140	Medium to poor	Moderate	Moderate to high	cl, cr, co
Swartland	35 to 55	100 to 140	Medium	Moderate	Moderate	cl, mw
Skilderkrans	35 to 55	100 to 140	Medium	Moderate	Moderate	cl, mw
Malakata	15 to 35	80 to 140	Medium to poor	Moderate to poor	Moderate to high	cl, cr, co
Nyoka	35 to 55	80 to 140	Medium to poor	Moderate to poor	Moderate	cl, mw
Broekspruit	35 to 55	80 to 140	Medium to poor	Moderate	Moderate	cl, mw

Soil series	Chemical								
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Salinity/sodicity hazard
Rosehill	5,0 to 6,0	Moderate	Low	Low to moderate	Low to moderate	Low	Moderate	Moderate	Low
Swartland	5,0 to 6,0	Moderate to high	Absent	Low to moderate	Low to moderate	Moderate	Moderate to high	Moderate to high	Low
Skilderkrans	5,0 to 6,0	Moderate to high	Absent	Low to moderate	Low to moderate	Moderate	Moderate to high	Moderate to high	Low
Malakata	7,0 to 9,0	High*	Absent	Low to moderate	Low to moderate	Low	Moderate	Moderate	Moderate
Nyoka	7,0 to 9,0	High*	Absent	Low to moderate	Low to moderate	Low	Moderate to high	Moderate to high	Moderate
Broekspruit	7,0 to 9,0	High*	Absent	Low to moderate	Low to moderate	Moderate	Moderate to high	Moderate to high	Moderate to high

*Free lime present

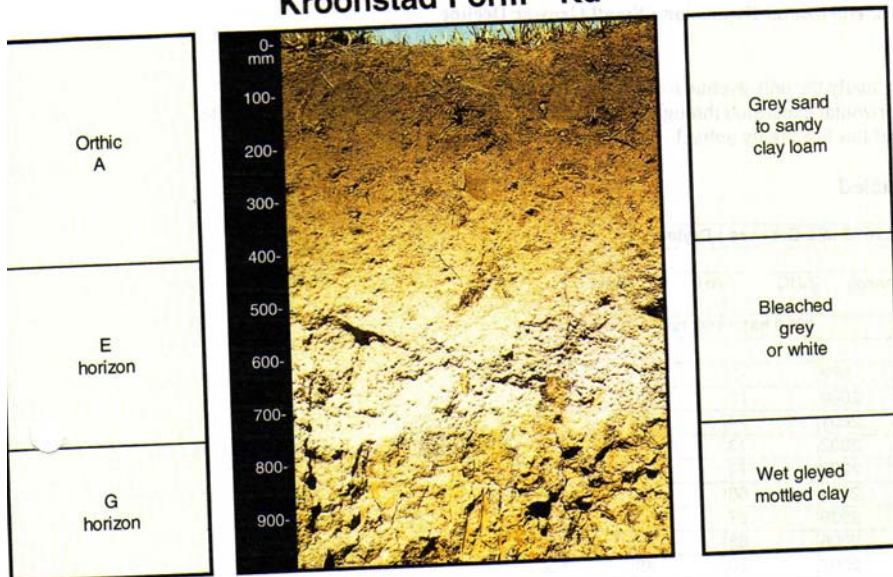
Correlation FAO

Brunic and Chromic Luvisols

Correlation USDA

Alfisol
Aridisol

Kroonstad Form - Kd



MAIN SOIL SERIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Effective rooting depth (mm)
Coastal Sands	Recent Sands	Kroonstad	Fine sand	450 to 1 200
Coastal Lowlands	Natal Group Sandstone	Mkambati	Medium sand	600 to 800
Dry Lowveld Humid Lowveld Coastal Lowlands	Granite	Katarra	Coarse sand	400 to 600
	Vryheid sediments Alluvium	Avoca	Medium sandy loam	600 to 800
Coastal Lowlands	Dwyka tillite Vryheid sediments	Bluebank	Fine sandy clay loam	400 to 600

FEATURES TO NOTE

- non-arable : when less than 400 mm deep and if part of a wetland
- high erodibility : use minimum tillage; protect with a trash blanket or leave burnt tops scattered; do not cultivate; banks of open drains need protection against erosion
- poorly drained : drainage is a problem in bottomland areas and growing cane on the ridge is advisable; salinity may develop in the Bluebank, Katarra and Avoca series in the Dry Lowveld System
- irrigation : generally not recommended, but where practised good irrigation scheduling is essential
- timing : the sandy clay loam soils compact easily when wet and cap when dry, so planting should take place in spring or early summer; this ensures that the soil is well protected by the cane canopy in the rainy season
- low nutrient status : inherently low in nitrogen, phosphorus and potassium and possibly zinc; split applications of nitrogen and potassium are advisable; high levels of nitrogen may be required to balance nitrogen losses due to denitrification and leaching, particularly in wet years; leaf sampling is strongly recommended
- low available water capacity : exceptionally good surface water management and irrigation scheduling required
- nematodes : may be a problem where A horizon is very sandy

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SELECTED PROPERTIES OF KROONSTAD FORM SOIL SERIES

Soil series	Physical					
	Clay % E horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Kroonstad	6 to 15 (fine sand)	Less than 80	Medium	Poor	Very high	cr, co, sh
Mkambati	6 to 15 (medium sand)	80 to 100	Medium	Poor	Very high	cr, co, sh
Katarra	0 to 6 (coarse sand)	Less than 80	Medium	Poor	Very high	co, mw, sh
Avoca	15 to 35 (medium sand)	100 to 140	Medium to poor	Poor	Very high	cl, cr, co, sh
Bluebank	15 to 35 (fine sand)	100 to 140	Poor	Poor	Very high	cl, cr, co, sh

Soil series	Chemical								
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Salinity/ sodicity hazard
Kroonstad	5,5 to 7,0	Low	Low	Low	Low	Low	Low	Low	Low to moderate
Mkambati	5,5 to 7,0	Low	Low	Low	Low	Low	Low	Low	Low to moderate
Katarra	6,0 to 8,0	Low	Absent	Low	Low	Low	Low	Low	Moderate
Avoca	5,5 to 7,0	Moderate	Absent	Low	Low	Low	Low	Moderate	Moderate
Bluebank	5,5 to 7,0	Moderate	Absent	Low	Low	Low	Low	Moderate	Moderate

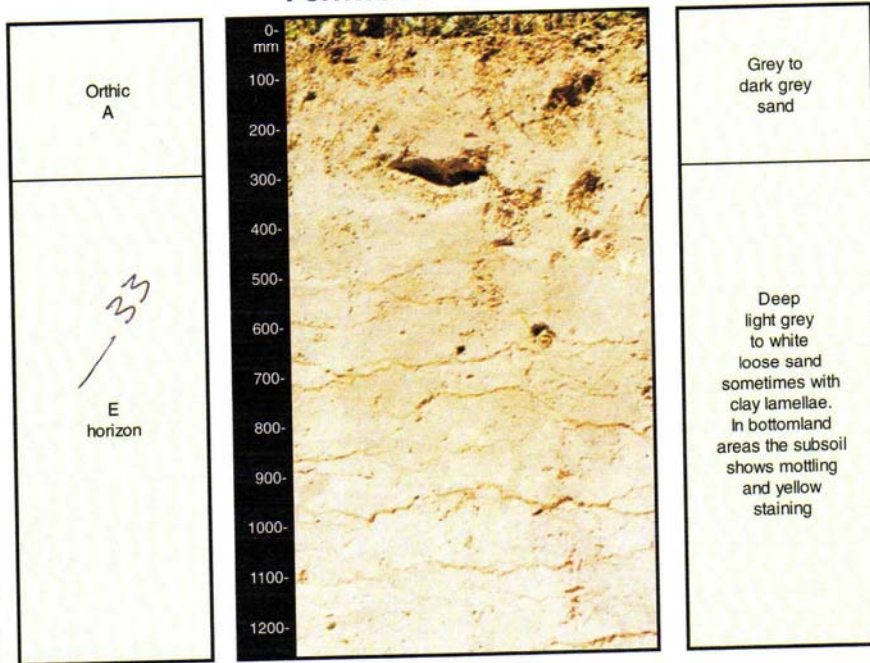
Correlation FAO

Ochric Planosols

Correlation USDA

Alfisols

Fernwood Form - Fw



MAIN SOIL SERIES, TEXTURE AND DEPTH

Soil system	Parent material	Soil series	Topsoil texture	Effective rooting depth (mm)
All systems (mainly Coastal Sands)	Grey Recent Sands Recent alluvium	Maputa	Fine sand	More than 1 200
		Fernwood	Medium sand	
		Langebaan (calcareous)	Medium sand	
		Sandveld	Coarse sand	
		Warrington (bottomland soil)	Medium sand	800 to 1 200
		Trafalgar (bottomland soil)	Coarse sand	

FEATURES TO NOTE

- field layout : soils are highly erodible and good conservation layouts are important; other measures include strip cropping and a trash blanket
- narrow row spacing : because cane growth is slow weeds are a problem and close row spacing will help rapid formation of the leaf canopy
- minimum tillage : is essential and will also combat wind erosion
- nematodes : are a serious problem and without a nematicide good yields will not generally be obtained
- low nutrient status : thorough soil sampling is required, as agricultural lime and zinc may be needed, in addition to high levels of nitrogen, potassium and possibly phosphorus
- iron chlorosis : a problem on fields that have been over-limed through excessive filtercake usage

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SELECTED PROPERTIES OF FERNWOOD FORM SOIL SERIES

Soil series	Physical					
	Clay % E horizon	Available water capacity (mm/m)	Steady intake rate	Drainage	Erosion hazard	Tillage constraints
Maputa	0 to 6 (fine sand)	Less than 80	Good	Excessive	Very high	cr, co, mw
Fernwood	0 to 6 (medium sand)	Less than 80	Good	Excessive	Very high	cr, co, mw
Langebaan	0 to 6 (medium sand)	Less than 80	Good	Excessive	Very high	cr, co, mw
Sandveld	0 to 6 (coarse sand)	Less than 80	Good	Excessive	Very high	mw
Warrington	0 to 6 (medium mottled sand)	80 to 100	Good	Moderate to poor	Very high	mw
Trafalgar	0 to 6 (coarse mottled sand)	80 to 100	Good	Moderate to poor	Very high	mw

Soil series	Chemical								
	Soil pH	Base status	Al toxicity	P fixation	Organic matter content	N and S mineralisation capacity	K reserves	Zn reserves	Nematode hazard
Maputa	5,0 to 6,5	Low to very low	Low to moderate	Low	Very low	Low	Low	Low	Severe
Fernwood	5,0 to 6,5	Low to very low	Low to moderate	Low	Very low	Low	Low	Low	Severe
Langebaan	7,0 to 8,5	Low to very low	Absent	Low	Very low	Low	Low	Low	Severe
Sandveld	5,0 to 6,5	Low to very low	Low	Low	Very low	Low	Low	Low	Severe
Warrington	5,0 to 6,0	Low	Low	Low	Very low	Low	Low	Low	Moderate to severe
Trafalgar	5,0 to 6,0	Low	Low	Low	Very low	Low	Low	Low	Moderate to severe

Correlation FAO

Dystric and Eutric Rhogosols

Correlation USDA

Entisols

Annexure V Land Capability Class Flowsheet

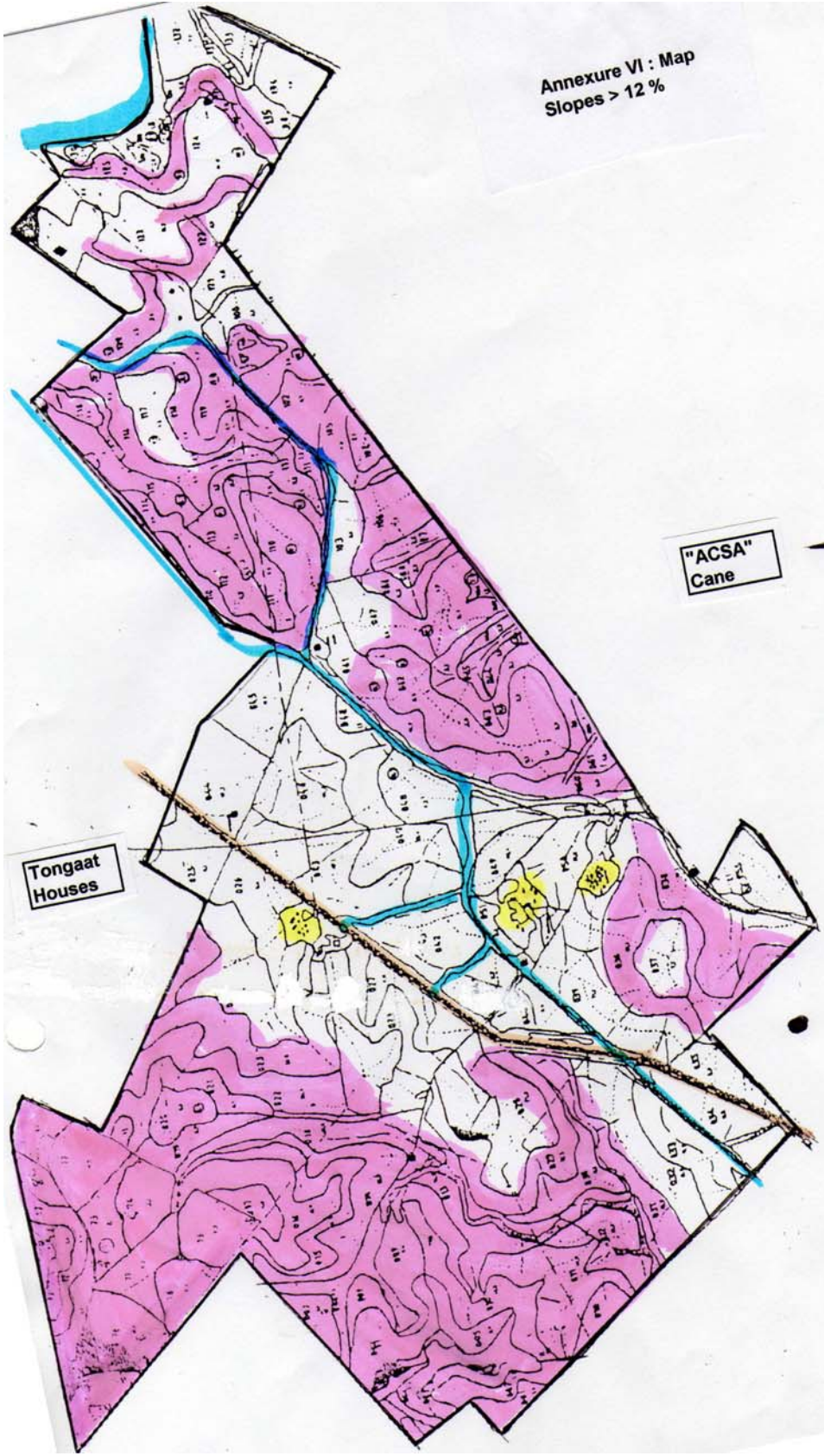
This document provides the key to determining Land Capability Classes.

The left page gives the keys to be followed. The right hand side lists adjustments to be made for wetness, permeability, rockiness and surface crusting.

Annexure VI : Slope %

Slopes that are greater than 12% may not be cultivated for annual crops. Permanent pastures, sugar cane and plantations are permitted, but good conservation measures need to be practiced.

The uncoloured portion of the map reflects slopes mainly of 0 to 3 %, with slopes of 4 to 7 % interspersed.



Annexure VII : Soil Texture

Field measurements of clay content are made using the sausage method illustrated overleaf.

In the field some idea of textural class can be determined by taking a handful of **moist** soil, kneading and rolling it between the palms of the hands to form a 'spindle' or 'sausage'. The diagram below illustrates this relationship.

If no sausage can be rolled, the soil is sandy (less than 10% clay)

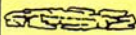

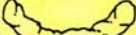
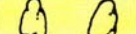

If a sausage can just be formed but it cracks upon bending, it is a loamy sand (10 to 15% clay)

If it will bend a little, it is a sandy loam (15 to 20% clay)

If it will bend readily before cracking, it is a sandy clay loam (20 to 35% clay)

If it will bend around nearly into a circle, it is a sandy clay (35 to 55% clay)

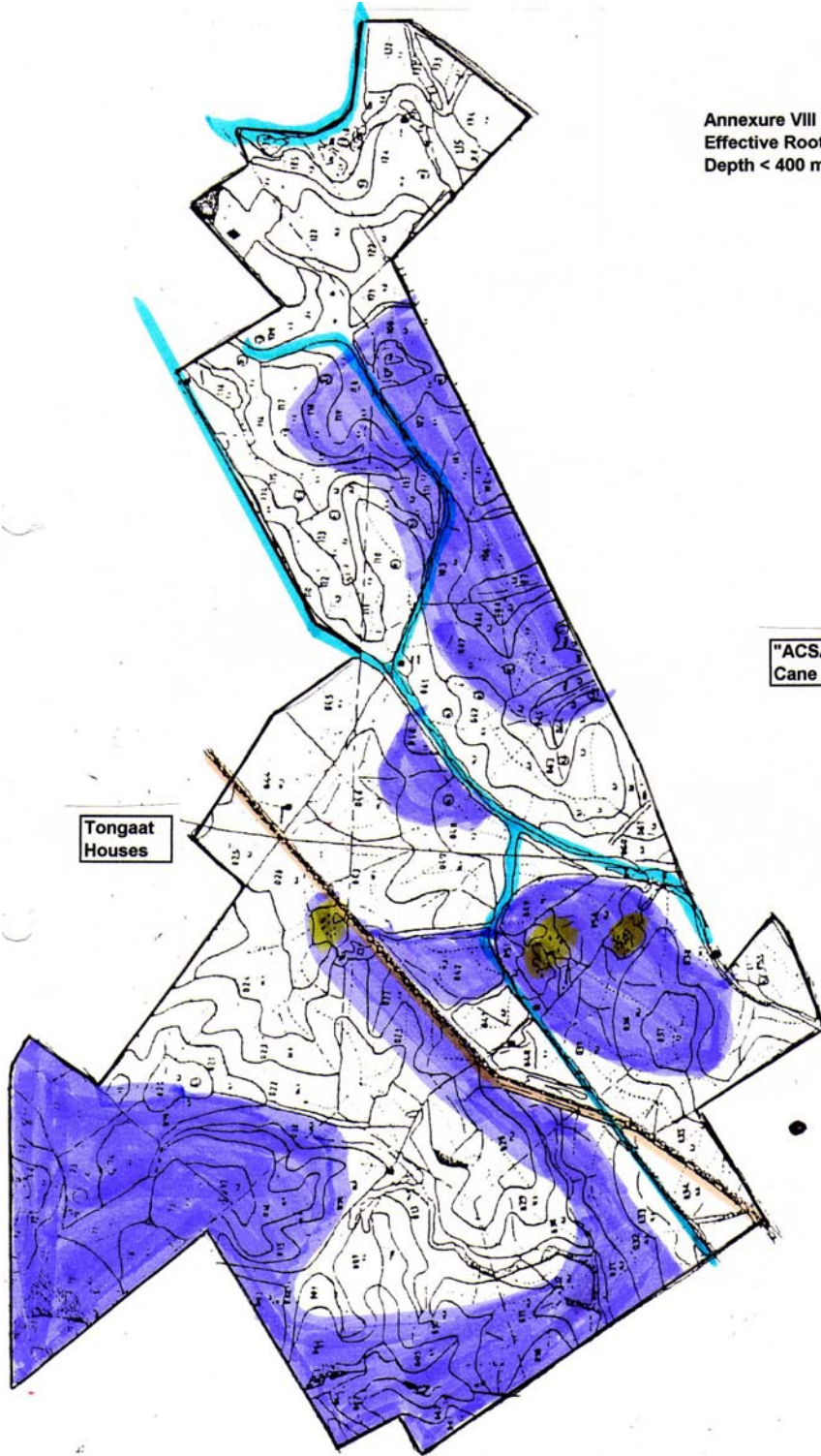
If it will bend into a circle, it is a clay (more than 55% clay)

No sausage	Sand
	Loamy sand
	Sandy loam
	Sandy clay loam
	Sandy clay
	Clay

Annexure VIII : Rooting Depth

Rooting depth is seen by observation on the walls of the pit and measured accordingly. The effective rooting depth is then used as one of the determinants in keying Land Capability Class.

In any given species of plant there is a direct correlation between below soil root mass and above soil vegetative mass. Any limitation of root mass therefore effects the productivity of the plant.



Annexure VIII : Map
Effective Rooting
Depth < 400 mm

"ACSA"
Cane

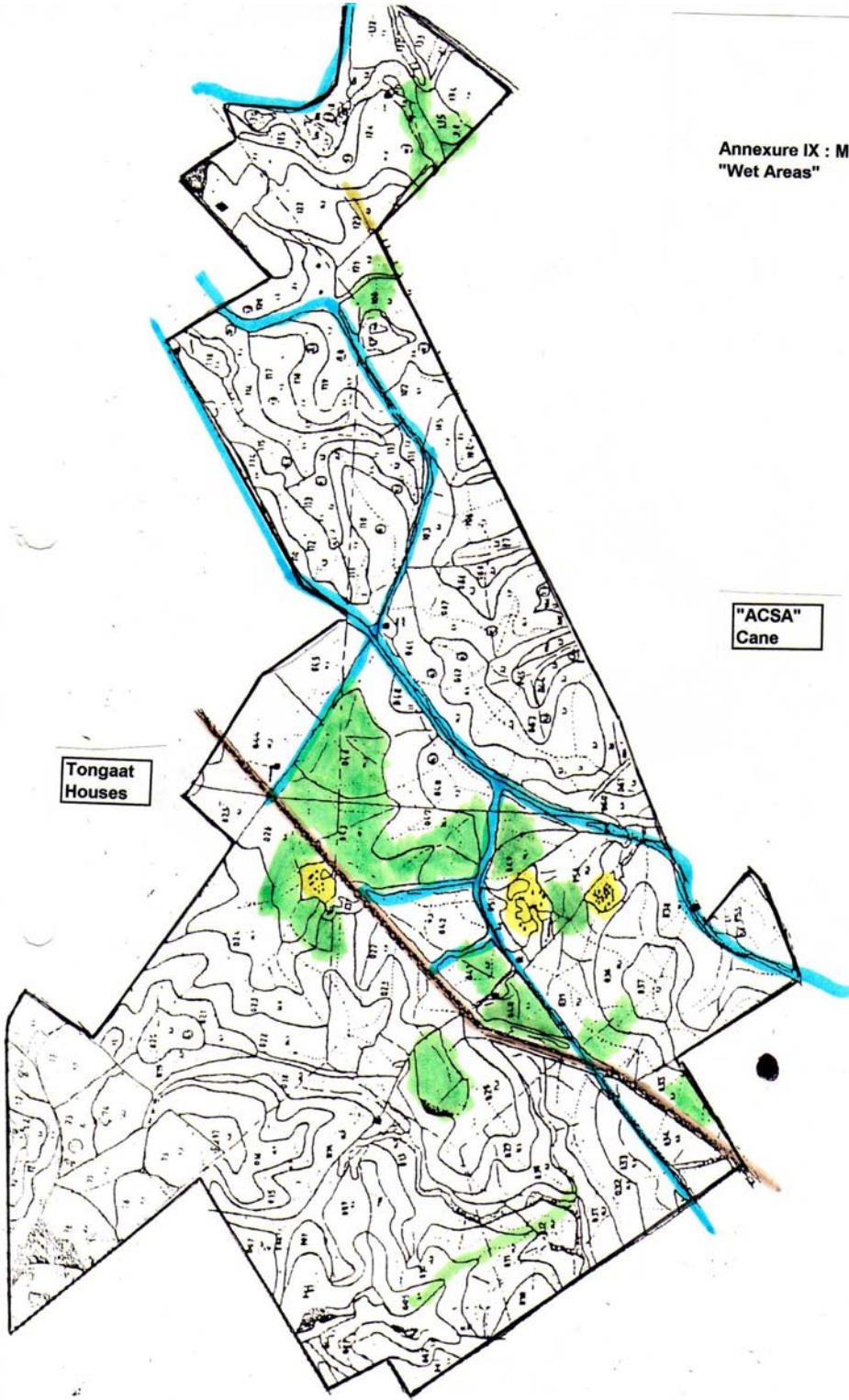


Annexure IX : Wetness

A plants root system needs oxygen in order to be able to breathe. Excessive soil moisture inhibits oxygen uptake and thus stunts plant growth.

Surface moisture was assessed on a 'drive by' basis and subsurface moisture by pit observation.

Annexure IX : Map
"Wet Areas"



Annexure X : Permeability

The rate at which soils are able to take in and then drain soils determine permeability.

Permeability is determined by the length of time surplus soil moisture takes to flash off. Permeability class determinants are table in the bottom portion of the left hand page of the Land Class Determination flow sheet.

Soils with good intake and drainage rates are far more easily managed than those with poor corresponding qualities.

Annexure XI : Land Capability Class Determination

This is a logical process based on data taken from observation pits and applied to the Land Class determination flow sheet.

In theory it might appear that determinations based on a one m² pit every 30 to 40 ha is statistically highly suspect. In practice, however, soil characteristics and qualities tend to visibly change, and often only gradually so.

Experienced observation of visibly similar soil forms leads to a selection of observation pit sites that will give realistic trends in soil forms and characteristics.

Pits 30 to 32 refer to the Watson Highway section, the rest to Inyaniga estate

Annexure XI

Land Capability Class Determination ; Inyaninga and Watson Highway

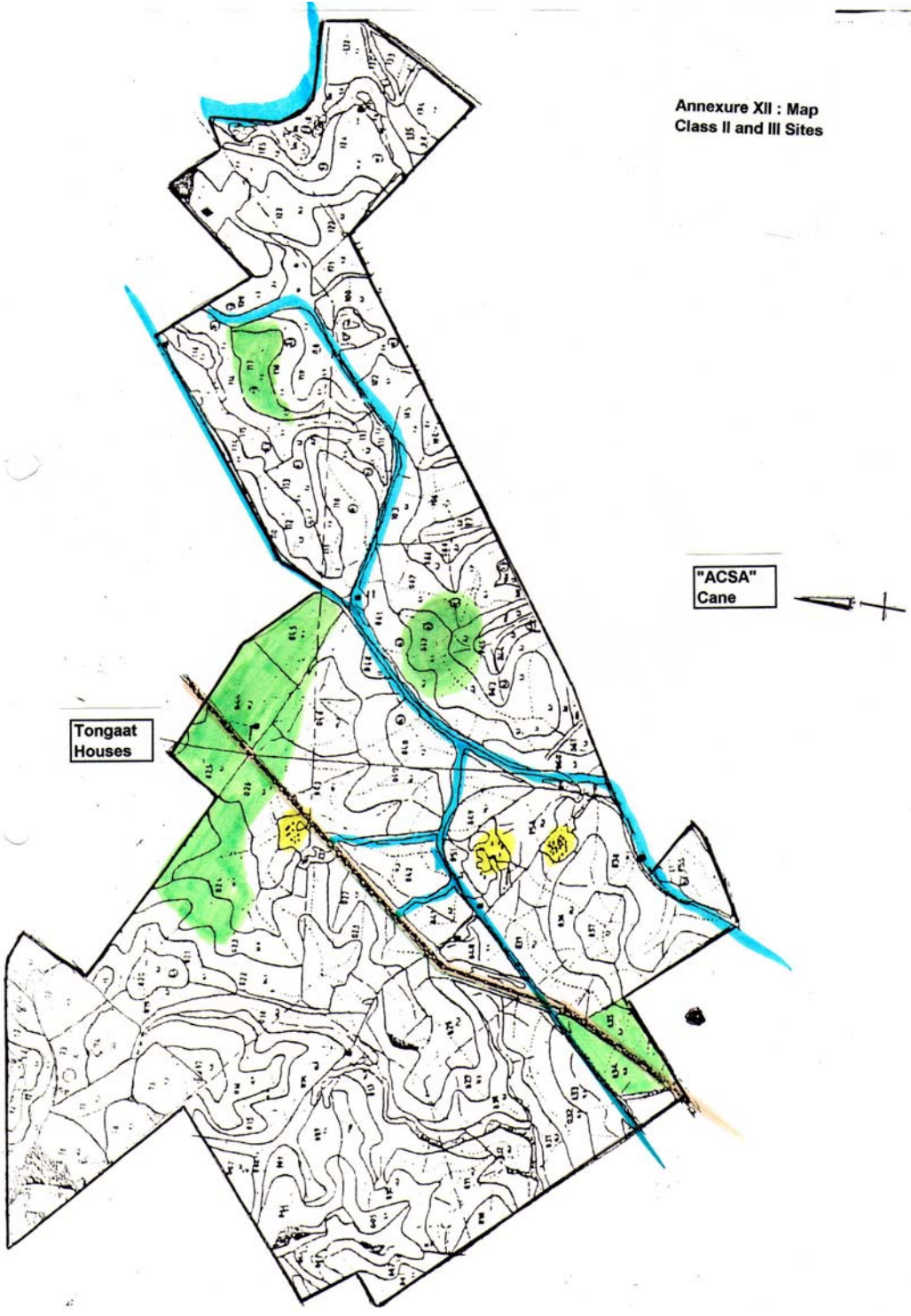
Pit no	Profile Description	B Horizon Clay %	Slope %	Rooting Depthmm	Permeability	Wet ness	Land Cap Class
1	Melanic A Horizon over red clay and chip shale. G Horizon.	> 35	8 to 12	650	3	W 2	IV
2	Melanic A Horizon over yellow clay	20,-35	4 to 7	500	4	W1	III
3	Melanic A Horizon over shale	20-35	< 3	400	4	W1	III
4	Melanic A Horizon over yellow clay with concretions	20-35	<3	500	3	W1	III
5	Melanic over red concretions	20-35	< 3	600	3	W1	III
6	Orthic over slab shale	N/A	> 13	350	5	W 0	IV
7	Orthic over slab shale	N/A	> 13	350	5	W 0	IV
8	Melanic over red concretions	20-35	> 13	600	3	W 2	IV
9	Orthic over slab shale	N/A	> 13	350	5	W 0	IV
10	Orthic over slab shale	N/A	> 13	350	5	W 0	IV
11	Orthic over shale	N/A	> 13	150	5	W 0	IV
12	Melanic over slickensides	>55	< 3	250	2	W 2	IV
13	Melanic over soft shale and clay	> 35	<3	150	3	W 2	IV
14	Melanic over red weathered shale	20-35	4 to 7	500	5	W 1	II
15	Melanic over shale and yellow clay	> 35	<3	150	2	W 2	IV
16	Melanic over shale over yellow clay	> 35	<3	200	2	W 2	IV
17	Melanic over red gravel and yellow clay	> 35	<3	150	2	W 2	IV
18	Melanic over black clay	> 35	4 to 7	200	2	W 2	IV
19	Melanic A Horizon over red weathered shale and heavy yellow clay	> 55	8 to 12	200	2	W 2	IV
20	Orthic A Horizon Pedocutanic B Horizon over Saprolite	> 35	4 to 7	200	4	W 1	IV
21	Orthic A Horizon over Pedocutanic B Horizon over Saprolite	> 35	8 to 12	150	4	W 1	IV

Pit no	Profile Description	B Horizon Clay %	Slope %	Rooting Depthmm	Permeability	Wetness	Land Cap Class
22	Orthic A Horizon over red structured B Horizon	> 35	>12	1000	5	W 0	IV
23	Melanic A Horizon over red weathered shale and heavy yellow clay	> 55	8 to 12	300	3	W 2	IV
24	Orthic A Horizon over red structured B Horizon	20-35	<3	500	5	W 0	II
25	Orthic A Horizon over small stones and shale	N/A	>12	350	5	W 0	IV
26	Melanic A Horizon over Pedocutanic B Horizon	> 35	4 to 7	350	4	W 2	IV
27	Orthic A Horizon over Pedocutanic B Horizon	> 35	4 to 7	350	4	W 2	IV
28	Melanic A Horizon over soft shale over Saprolite	20 – 35	4 to 7	300	4	W 1	IV
29	Orthic A Horizon over red structured B Horizon	N/A	4 to 7	500	3	W 0	III
30	Orthic A Horizon over E Horizon	< 15	4 to 7	450	6	W 0	IV
31	Melanic over soft shale over saprolite	N/A	<3	450	4	W 1	IV
32	No A Horizon. E Horizon	< 15	<3	500	6	W 0	IV

Annexure XII Class II and III Sites

This annexure constitutes a map of the areas found suitable for other crops

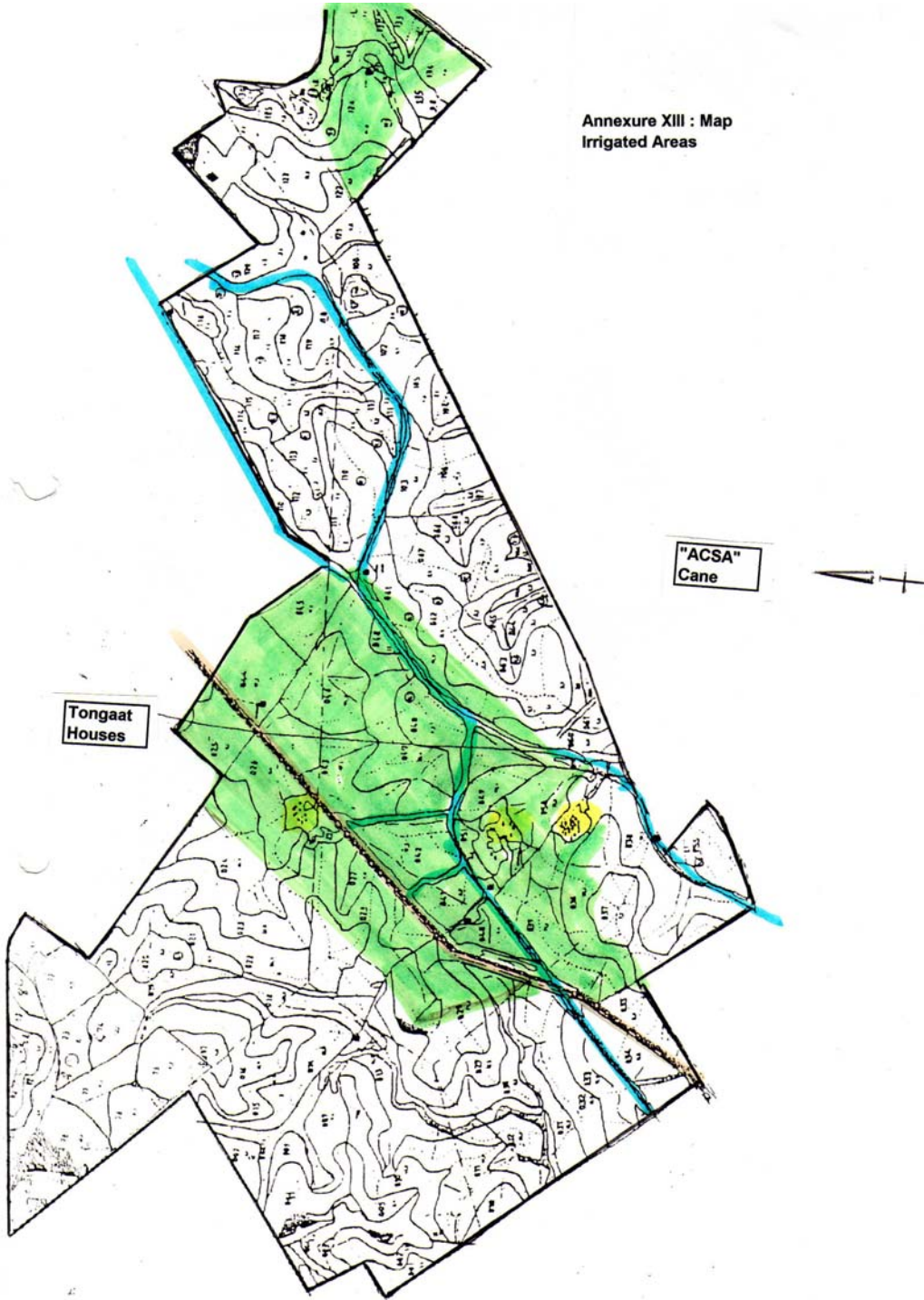
Annexure XII : Map
Class II and III Sites



Annexure X III : Irrigated Areas

This map reflects the extent of the present irrigation scheme, enabling one to see at glance which of the Class II and III areas can readily be irrigated.

Annexure XIII : Map
Irrigated Areas



Annexure XIV : Maidstone Mill Group Board Letter

This document gives an independent assessment of Inyaninga cane tonnages for both the estate itself and the ACSA section.

MAIDSTONE MILL GROUP BOARD

No 1 Main Avenue
Maidstone

PO Box 770
UMHLALI
4390

Tel: 032 – 944 2783

Fax: 032 – 944 2787

e-mail: usha.growercouncil@telkomsa.net

Dear John

Detailed hereunder please find information as requested.

Inyaninga Estate 137926F
Inyaninga Airport 900022B
Ogilvie SH & AN 134676A

SEASON	TONS CANE	ESTIMATED AREA HARVESTED	TONS CANE PER HECTARE
2009	53 075	918.4	58
2008	53 987	916.0	59
2007	53 833	997.7	54
2006	58 016	973.3	60
2005	61 098	1 056.7	48
2004	47 086	1 002.0	47
2003	49 333	1 143.0	43
2002	64 431	993.3	65
2001	62 671	1 117.1	56
2000	65 643	995.9	66
1999	50 237	1 030.2	49

Notes

Information in respect of 2009 is based on the 6th Estimate - August submission.
Cane deliveries and areas include Estate , Airport and SCA.

John Albert Trust - Penc. 146238G

SEASON	TONS CANE	ESTIMATED AREA HARVESTED	TONS CANE PER HECTARE
2009	6 794	161	42
2008	5 001	128	39
2007	4 981	132	38
2006	8 579	191	45
2005	10 669	233	46
2004	9 435	155	61

Excel Files\MGB\cane_del_report_iny_penc 17/09/2009

Notes

The information in respect of 2009 is based on the 6th Estimate - August submission.

This Farm was transferred from Pencarrow Estate to John Albert Trust - Pencarrow in April 2004.

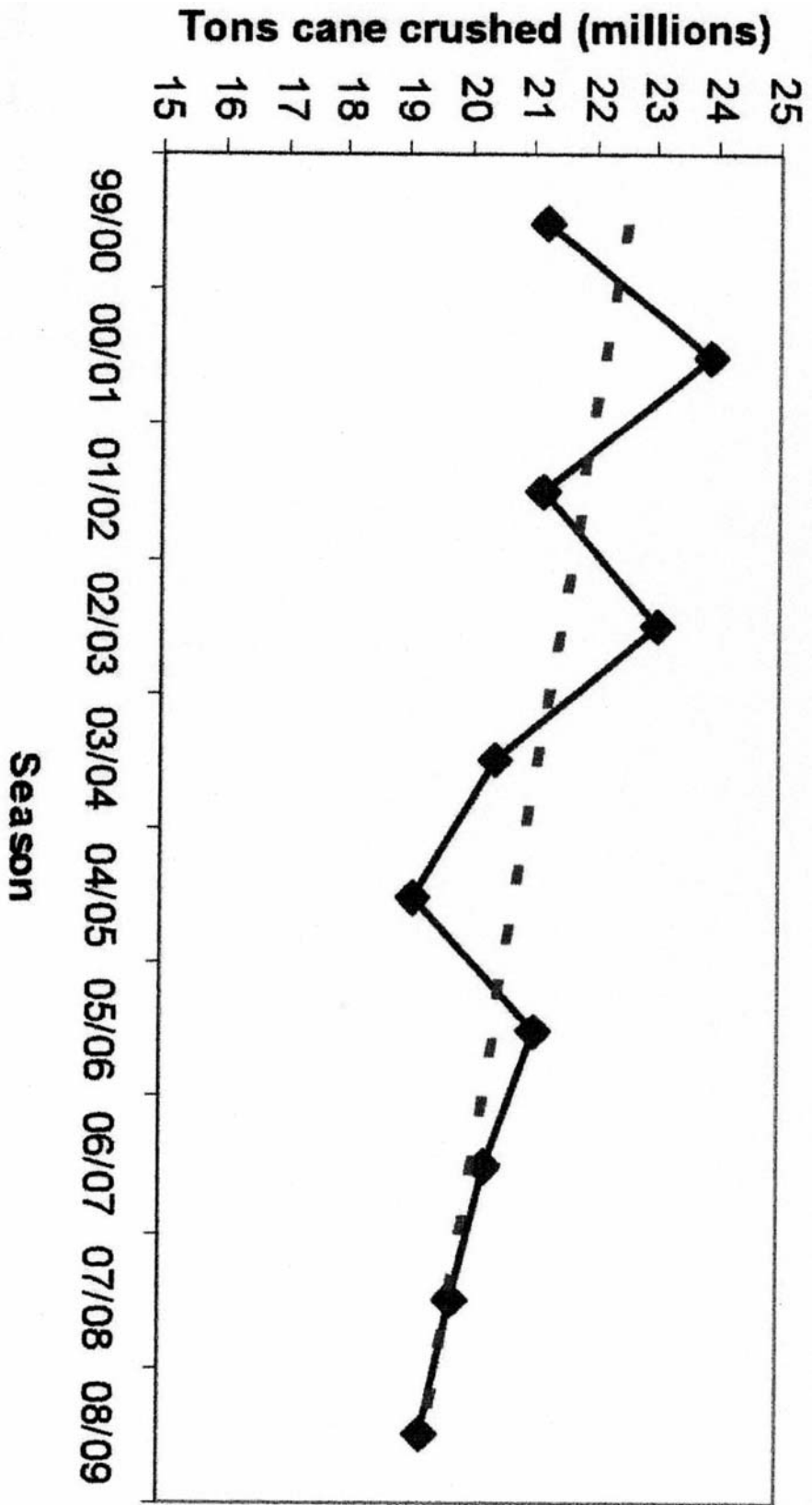
I trust that the information supplied meet your requirement.

Yours faithfully
MAIDSTONE MILL GROUP BOARD

RP SCOTT
CHAIRMAN

Annexure XV : Sugar Cane Production Trend Line : RSA

This graph is sourced from the proceedings of the 2009 SA Sugar Technologists Association.



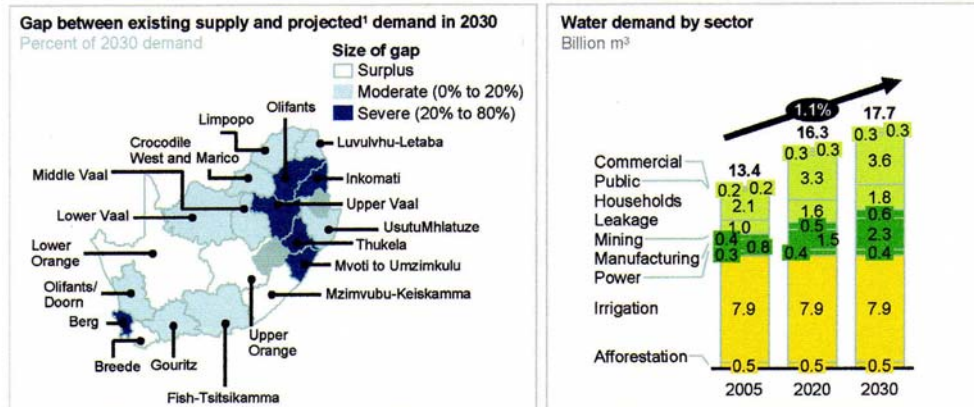
Cane tonnages in South Africa with linear trend line.

Annexure XVI: 2030 Water Map

This map is sourced from the Water Resources Group, led by the IMF and McKinsey Associates.

Exhibit 19

South Africa – Water supply and demand gap



¹ Frozen irrigation levels and limited ability to increase rainfed land will drive an increase in virtual water trade both between WMAs and internationally with trading partners
SOURCE: Water Research Commission, Department of Water Affairs and Forestry (DWAF), Statistics South Africa, 2030 Water Resource Group

Water supply

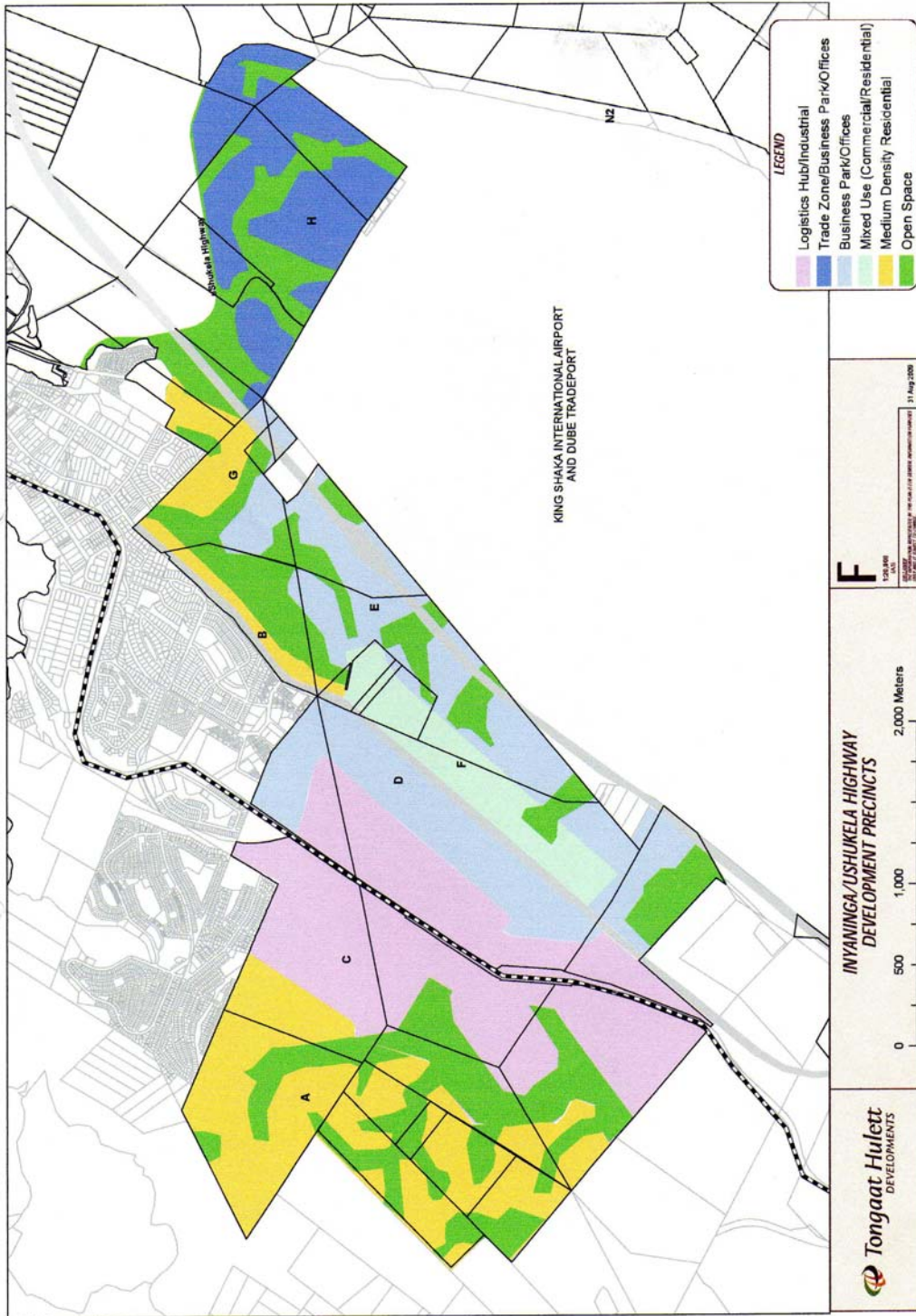
South Africa faces low levels of rainfall—about 50 percent of the world average—and receives around 10 percent of its run-off from neighboring Lesotho. It shares water courses with other countries in the southern African region. Rainfall is also highly seasonal with around 80 percent occurring within a span of five months. The rivers of South Africa are small (combined, their flow is less than 50 percent of the Zambezi) and shallow (resulting in a high rate of evaporation), so that with several inter-basin transfer schemes already in place, dam sites are becoming marginal.

In our base case, total renewable supply is just above 68 billion m³, of which approximately 19 billion m³ is renewable groundwater. Of this, only 15 billion m³ are currently accessible and reliable, including approximately 1.5 billion m³ from groundwater. In theory, an additional 25 percent of surface-reliable supply could be developed. Groundwater contributes only 15 percent of the total volume available, although over 300 towns and 65 percent of the rural population are entirely dependent on this resource for their water supply. The potential for additional groundwater is limited to approximately 2.3 billion m³, due to hard underground rock.

Water transfers among basins already form a critical part of South Africa's water supply. The Upper Orange receives over 4.4 billion m³ from Lesotho, almost 25 percent of South Africa's entire supply, much of which is then transferred downstream and to other basins.

Annexure XVII : Inyaninga Draft Development Plan

The development of this site will be a process, not an event. The current plan needs to be modified after further geohydrologic studies.



D. GENERAL

D.1. Acknowledgements

Ms. Nonhlanhla Khoza : THDev ; Maps and background briefing

Ms . Tina Hattingh : THDev ; Maps and convening review meetings

Mr. Gavin Ogilvie : THS; Drive around and background information
Watson Highway section. Administrative matters

MR Arthur Makhunga : THS ; Drive round and background information
Inyaninga estate

Mr John Boyce : Retired Agricultural Manager, THS ; Background

Mr. Paul Russell, Agricultural Manager, THS. Briefing on marginal contribution
towards milling revenue.

Ms Janet Taylor : KZNDAE Directorate of Natural Resources and
Macroplanning; BRU data

Mr Chris Gillitt, S A Cane Growers Association, Current and historical data, cane
production and milling, RSA and KZN North Coast

Mr Rowan Stranack, SASRI Extension Services. Data on soil parent materials

Ms Nonhlanhla Myeni, KZN DAE Directorate of Land Usage. Site visit and pre
report consultation

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A field Guide to the Wild Flowers of KwaZulu-Natal ; Elsa Pooley; Natal Flora Trust

Guide to the Aloes of South Africa ; Van Wyk and Smith ; Briza
Field Guide to the trees of Natal ; Elsa Pooley ; Natal Flora Trust

Veld Types of South Africa ;Acocks ; Botanic Research Institute
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KZN DAE, Cedara

Land Assessment in KwaZulu-Natal ; Botha et al ; Natural Resources Directorate ; KZN DAE; Cedara

SACGA Production data

Beginsels van Besproeing ; ChrisBarnard ; Agrofert Academy

Water Usage Module ; Pierre Viljoen ; Directorate of Agricultural Engineering ; KZNDAE, Cedara

Quality Maintenance Begins at the Design Table ; Awie Marais ; Netafim Irrigation International.

Row Crop Combud ; KZNDAE ; Directorate of Economics and Marketing

Creating Gardens with Indigenous Plants ; Pitta Joffe ; Briza

Soil Fertility and Fertilizers ; Havlin et al; Prentice Hall

Geological Journeys ; Norman and Whitfield; Struik

The Story of Earth and Life : McCarthy and Rubidge ; Struik

Proceedings of the SA Sugar Technologists Association

Various Industry and Financial Publications

D.3.Disclaimer

The consultant has no financial or other interest in any application for change in land use that might arise herefrom.

While the content of this assessment was made with due diligence and in good faith, no information contained herein may be used for litigation.

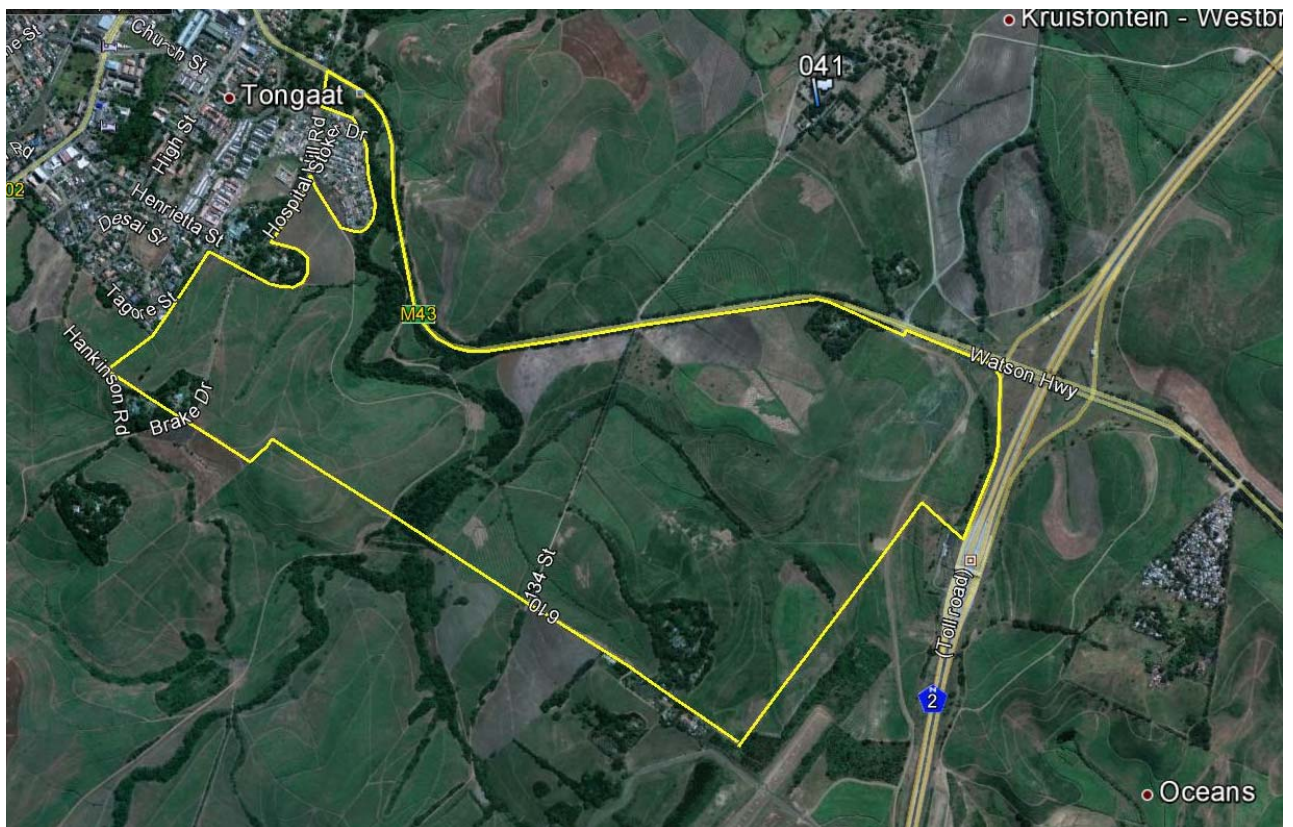
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Appendix 15: Agricultural Potential of Rem of Ptn 16 of Farm Buffels Kloof No 1267, Ptn 15 of Farm Buffels Kloof No 1267, Rem of Ptn 18 of Farm Klipfontein No 922, Ptns 9 and 13 of Farm Klipfontein No 922

AGRICULTURAL POTENTIAL
of
Rem of Ptn 16 of Farm Buffels Kloof No 1267
Ptn 15 of Farm Buffels Kloof No 1267
Rem of Ptn 18 of Farm Klipfontein No 922
Ptns 9 and 13 of Farm Klipfontein No 922

USHUKELA

Report 12 of 2012



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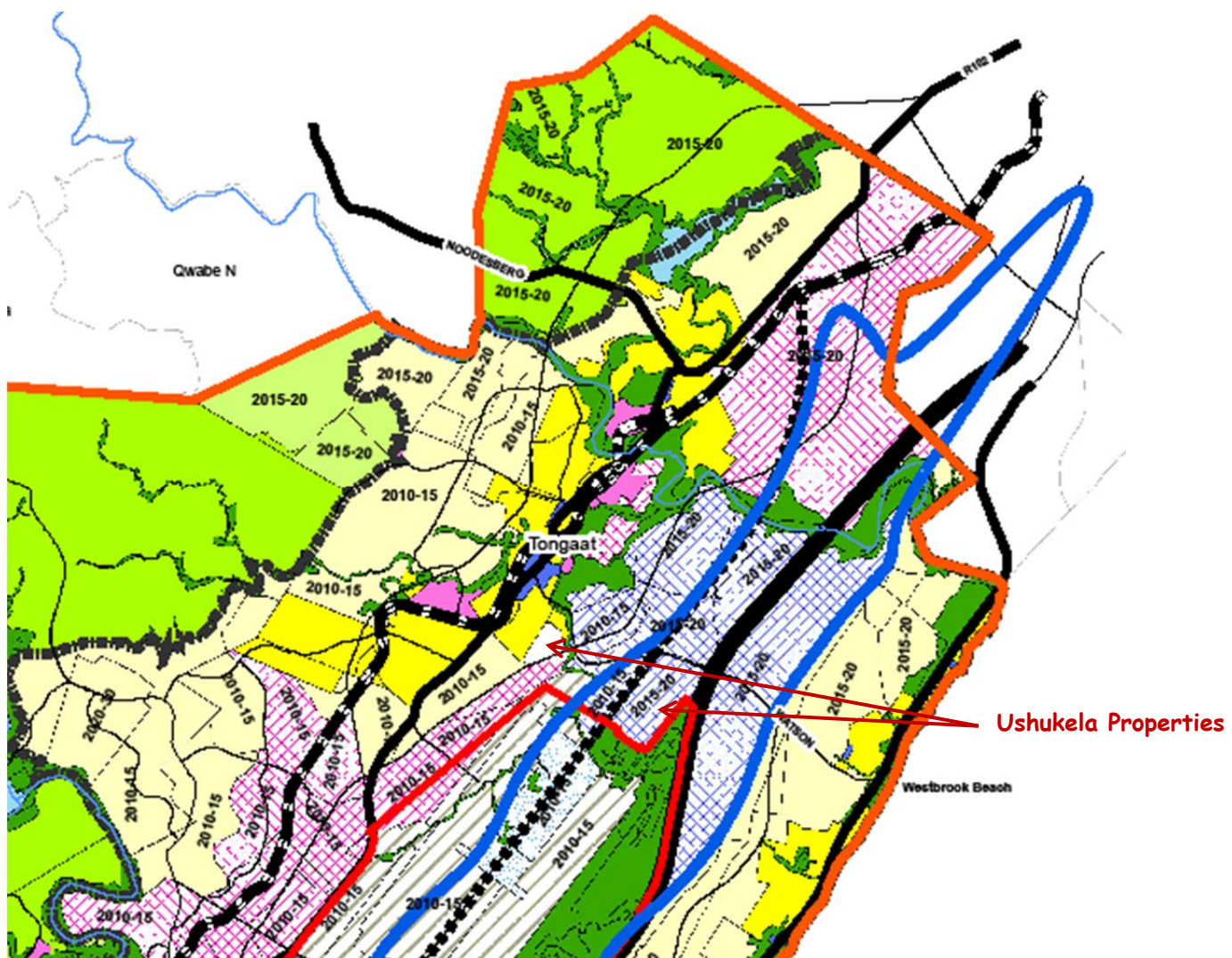
1 EXECUTIVE SUMMARY

1.1 Planned Expansion of Northern Node of eThekweni Municipality

The eThekweni Municipality is South Africa's second most important economic region. The metropolitan city contributes over 60% of the KZN GDP and over 10% of the country's GDP. The National Planning Commission recognises the importance of the city from the point of view of having to accommodate increasing urbanisation pressures, economic growth and city growth pressures. These pressures will result in a significant need for appropriate land and land use decisions.

From the eThekweni Municipality perspective, the Western (N3) and Northern (N2) corridors have been identified for future growth in alignment with both the Provincial and national government objectives. These corridors provide good access, decent topography, greenfield development opportunities and are close to existing and new employment and economic opportunities.

The eThekweni Municipality SDF includes that this Northern node seeks to exploit opportunities offered by its close proximity to the Dube Trade Port and those of eThekweni. The Ushukela properties lie in the eThekweni Municipality. The expansion programme in this node is for intensive agriculture, intensive mixed use, residential, office, business and industrial parks.



1.2 Location

The properties, situated along the eThekweni - Umhlatuze Corridor, are east of the N2 and straddle the R102. They are immediately north and northwest of the iShaka International Airport and, southeast of Tongaat.

1.3 Infill Development

This northern node is an important link between the Ports of Durban and Richards bay as identified by the KZN Planning Commission. The R8 billion investment into the new iDube Trade Port and King Shaka International Airport has set the foundation for the emergence of a new aerotropolis towards unlocking the economic growth potential of the region towards employment creation and poverty alleviation. This airport investment sits between the growing cities of Durban and Ballito and is acting as a natural attraction for such growth given the significant employment and economic opportunities being offered.

There is little doubt that over the next 10 to 30 years, this corridor will be transformed into a well-connected, compact and intense urban conglomeration serving the greater region.

1.4 Agricultural Assessment

The agricultural potential of these properties has been assessed and the Estate, only if certain improvements are made, can be deemed to have a moderate agricultural potential. Over the past 8 years, moderate sugarcane yields have been obtained, ranging from 56 to 76 t ha⁻¹ annum⁻¹ under dryland.

The yields under irrigation are especially poor and this could be due to a number of reasons, high input costs, old and faulty irrigation systems, poor irrigation scheduling, quality of wastewater used for irrigation, etc. Furthermore with shallow topsoils especially on the Milkwood, Windermere and Avoca, which are in the majority of the soils, restrictions prevail. These restrictions include poor soil water characteristics and high erosion hazards.

Yields predicted by Canesim show significantly higher yields namely, 107 and 135 t ha⁻¹ annum⁻¹ for dryland and irrigated production. This verifies the fact that production over the last eight years is well below these simulated yields.

With current costs and price of sugarcane the economic break-even yield for this Estate under dryland conditions is estimated at 55 t ha⁻¹ annum⁻¹, and with irrigation this increases significantly tending toward 80 t ha⁻¹ annum⁻¹.

The soils are predominantly Fernwood and Avoca soil with reasonable soil water characteristics. This results in varying potential even in good seasons. Good seasons include well distributed rainfall and sufficient incoming solar radiation.

Land capability on these properties varies between Class III and IV due to the limitations that exist, and with respect to agricultural land categories these properties fall within Categories C and D (Ref KZN Agric Report N/A/2012/11).

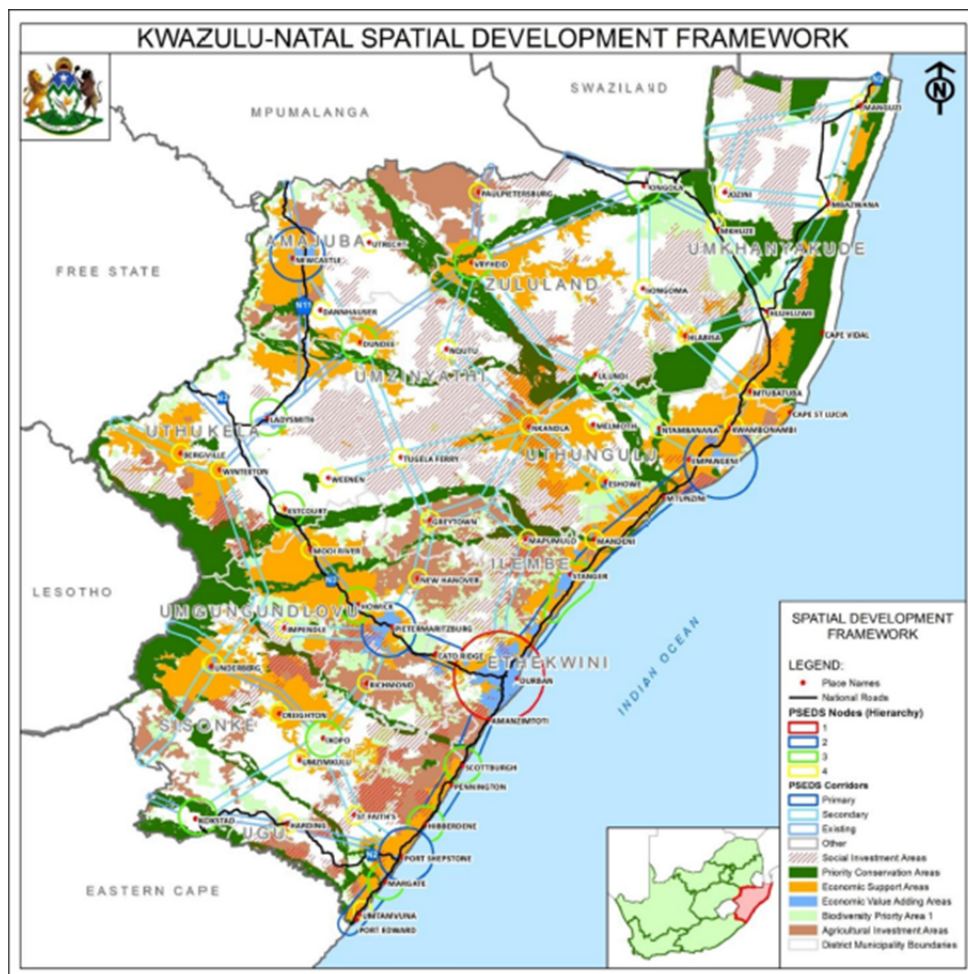
1.5 Compliance with Provincial Strategic Planning

The Provincial Planning Commission has recently released its Provincial Growth and Development Strategy (PGDS) and Plan (PGDP) that provide a very clear roadmap towards what is required to be done to achieve the Province's key objectives. The Province's vision is encapsulated in the following words - "*A prosperous province with a healthy, secure and skilled population, acting as a gateway to Africa and the world.*"

The PGDS is the primary strategy driving growth and development in the Province and the PGDP is the implementation plan based on the strategic objectives that have been identified. These strategic objectives include, amongst others - job creation, human and community development,

strategic infrastructure and spatial equity. These objectives are then broken down into strategic goals for implementation. Significantly, there is an explicit recognition of the importance of and need to promote agriculture and rural development whilst at the same time there is a recognition of the need to leverage off investments made into the iDube TradePort and King Shaka International Airport and the northern (and western) corridors of the Province.

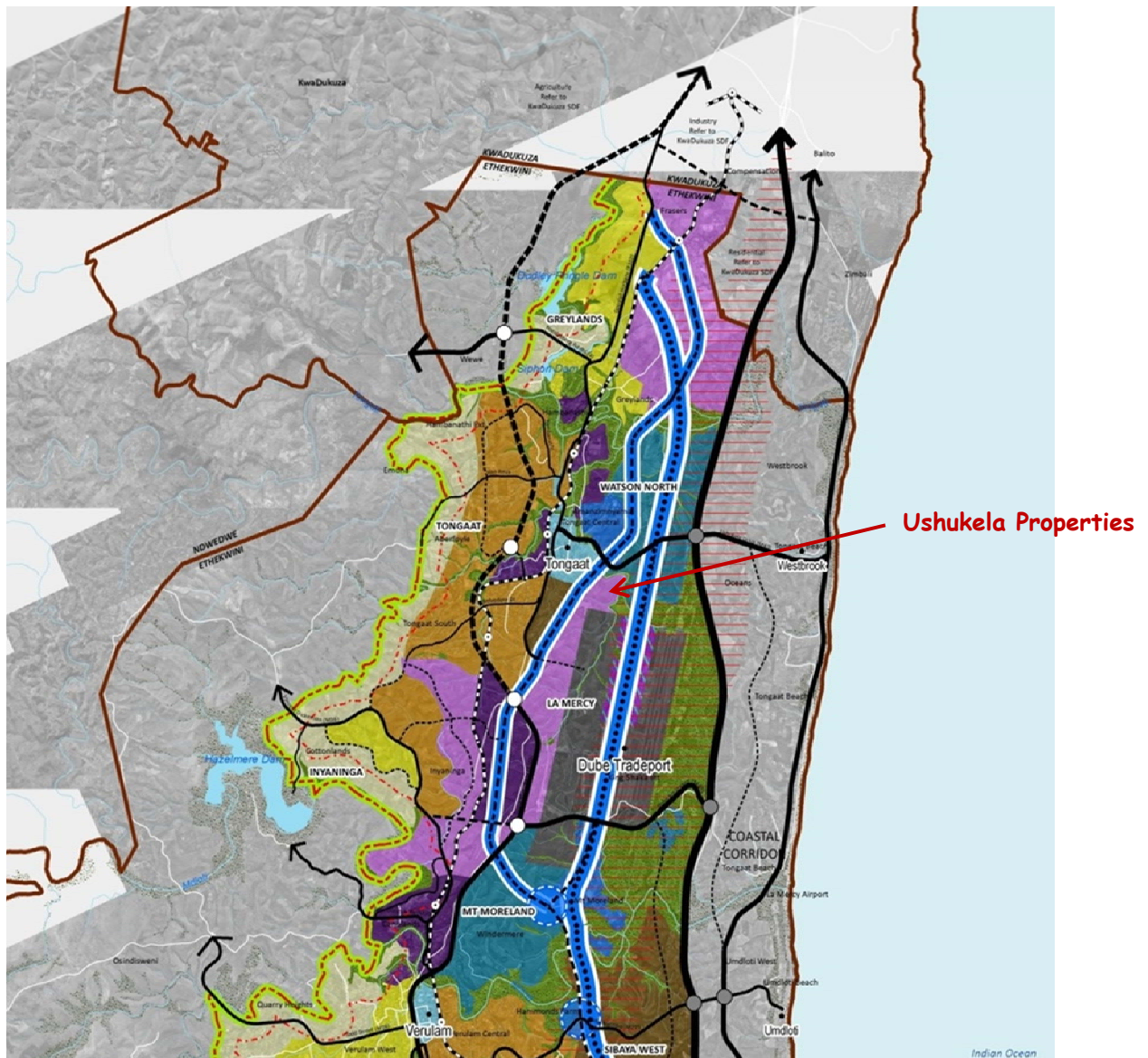
In terms of the KZN Provincial Spatial Economic Development Strategy (PSEDS) these properties are located in the eThekweni - Umhlatuze Corridor (Provincial Corridor PC1). This PSEDS has been adopted by the KwaZulu Natal Cabinet. The potential for industrial development in the province is anchored in the nodes of eThekweni and Umhlatuze. This will be west of, and north along the N2. This development will require corresponding industrial and residential support.



Tongaat Hulett is fortunate to be directly involved in both rural and agriculture development as well as urban development and is required to balance these two objectives. Tongaat Hulett's approach is aligned with the PGDS and PGDP and revolves around a strategic focus on agricultural and rural development based upon the extensive planting of new sugar cane as an anchoring, market guaranteed product. This focus is therefore around the rural hinterland where there has been a major disinvestment in agriculture over the past 2 decades. This approach thereby enables the potential to release appropriate land for urban growth pressures for uses such as housing, industrial, tourism, and commercial at the appropriate time whilst at the same increasing the land under sugar cane.

1.6 Compliance with Municipal Strategic Planning

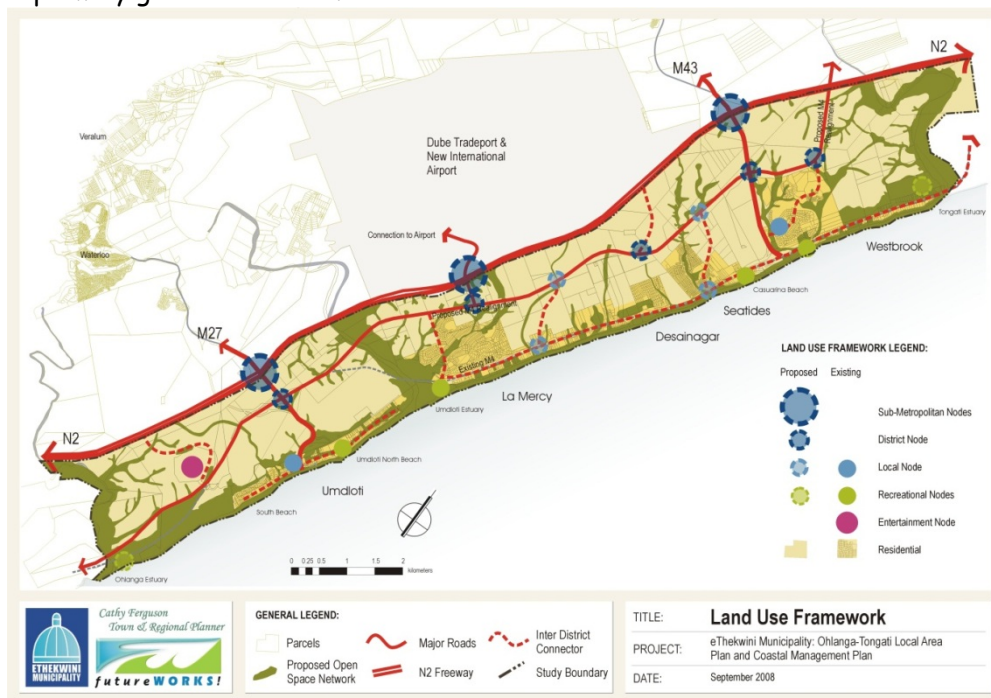
As part of the IDP SDF package of plans, the eThekweni Municipality has adopted two Local Area Plans (LAPs) that are directing new growth and development decisions in the northern region of the municipality. The Northern Urban Development Corridor Plan (NUDC) is a combination of the 3 Local Area Plans for the inland portion of the corridor. The NUDC is from Phoenix in the south to Tongaat in the north and includes the region surrounding the iDube TradePort and King Shaka International Airport as part of an emerging aerotropolis.



The NUDC presents an ultimate land use plan for the inland portion of the corridor to be developed over a long period of time into the future. This northern region represents the primary area for the growth of the city and the land use plan clearly indicates the desired future uses but also, significantly, indicates the Urban Development Line wherein development has to occur. To the west of this line the remainder of the municipality is reserved for existing agricultural and related uses.

There is also a Coastal Local Area Plan for the coastal strip between the Ohlanga River and Tongaat River. Similarly to the NUDC, this LAP indicates desired future land use for the coastal strip to the east of the N2.

Both plans clearly demonstrate the strategic future direction of the municipality within the Province's primary growth corridor.



1.7 Compliance with Local Planning

Local planning is related to land use management schemes which are imposed over new areas prior to development occurring and with the consent of the Minister of Agriculture. These Schemes will be aligned with the LAPs as noted above.

The Municipal SDF includes these properties as does the Municipal Land Use Management System (LUMS) for industrial and residential development from 2010 to 2015.

1.8 Efficient and Effective Use of Infrastructure and Resources

The properties are extremely well located with respect to existing available and future planned infrastructures as follows:

- eThekweni accommodates an efficient transportation network consisting of the N2, the R102, and the M43 and a series of local access roads, in particular in the coastal and central zone linkages in the west
- The North Coast Rail extends through the length of the municipality and through the Ushukela properties
- There exist numerous other public and private transportation services, viz. buses and taxis
- The King Shaka Airport immediately south of these properties has had a significant impact on the development of the municipality and in particular in investment into new service infrastructure including new electrical substations and water reservoirs together with upgrades to the R102. New wastewater treatment works are in final stages of planning
- The supply of water to the Municipality is being upgraded with the construction of new major aqueducts that will transfer water from the Umgeni catchment into the northern region. The Hazelmere Dam and associated waterworks are being upgraded

- ESKOM and, the eThekweni and KwaDukuza Municipalities have identified various initiatives to upgrade electrical facilities as the demand unfolds

1.9 Impact on Adjacent Agricultural Uses

The land surrounding this land is either under urban development, part of Tongaat Hulett's ownership or is privately owned and also under commercial sugar cane. In regard to the former, there is no impact apart from positive due to security and nuisance issues. In regard to adjacent Tongaat Hulett owned agricultural land, there is no major impact as this will continue to be farmed until actual conversion to new development. Portions of farm estates that left over are merely incorporated into adjacent estates or continued to be managed centrally.

In regard to adjacent agricultural land owned by other parties there will be no impact as they are not part of this land and are managed separately. They are under sugarcane they will continue to deliver to the appropriate sugar mill.

1.10 Employment and Socio-Economic Benefits

Since the beginning of the twentieth century the contribution of agriculture to the national GDP has decreased significantly, from 20% to below 4%. Development that includes construction and real estate has over this period increased significantly.

The development of these properties will create a large number of employment opportunities and rates' income for the Municipality.

It is reported that on existing holdings (McCarthy & Pringle, 2007), the benefit in conversion from agriculture to development is estimated:

- 50:1 job creation
- 588:1 rates
- 250:1 turnover - contribution to GDP

TH having existing holdings is able to generate economic returns without incurring holding costs. TH are in a position to either acquire other land for new agricultural development and/or structure ownership and conform meaningfully to land reform in the medium term and empowerment in the longer term.

1.11 Impact on Food Security

The importance of agriculture and food security specifically, is a key objective identified by the Provincial Planning Commission in its PGDS and PGDP and Tongaat Hulett is committed to these objectives and is actively implementing strategies and action plans that will go a long way towards meeting these objectives.

From a sugar perspective in South Africa, Tongaat Hulett owns 4 sugar mills along the North Coast of KZN and is committed to these operations and the employment that they facilitate.

In the 2011/12 year, 486 000 tons of sugar was produced in South Africa (KZN) from 137 652 hectares of land that was under cane (note only a portion of this land is cultivated each year).

Significantly, the land used for cane in 2009 was 119 817 hectares, in 2010 the land under cane was 123 907 hectares and in 2011 the land used for cane was 129 513 hectares. There has therefore been an increase in land under cane by some 17 835 hectares over the past 3 years - an increase of some 15%. This would include land that was taken out of cane for new urban development.

This provides a clear indication that the impact of urban development on the loss of sugar cane is insignificant. In fact, Tongaat Hulett only owns 8% of the total quantum of land that supplies cane to its mills so even a total loss of this 8% to urban development would be insignificant. For the 2012/13 year, a further 9 506 hectares of land is proposed to be brought under cane with a further 10 000 hectares in 2013/14 and a further 7000 in 2014/15. Therefore at the end of the next 3 years an additional 26 506 hectares will be planted to cane which represents an increase of 44 341 hectares from 2009 - a 37% increase!

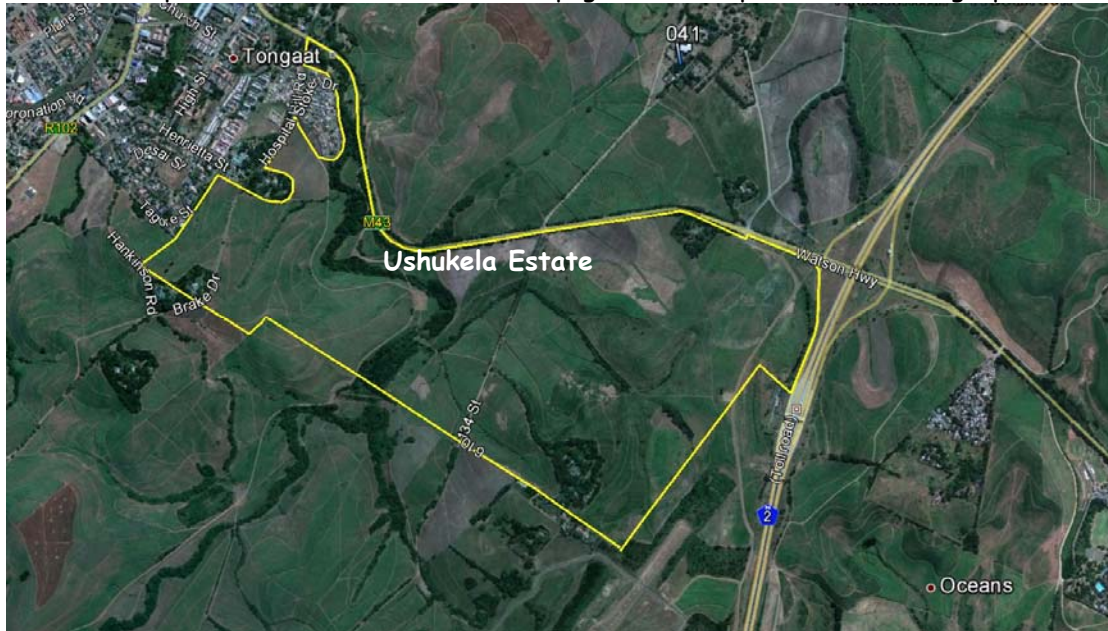
It is further significant that these new areas are being planted in the rural hinterland and combine with a rural development and food security strategy where new sugar cane development provides the anchor for services, investment and training to enable other more intensive food related crops to be grown for local consumption. This therefore 'frees up' those areas that are destined, as per the Municipal and Provincial objectives, to be developed for higher order uses more compatible with their surrounding context. The western and northern growth corridors form part of these future development areas.

The location of any piece of land is important and as the Durban metropolitan city grows to provide for urbanisation, economic growth, housing and other land use demands, the need to provide proactively and timeously for this is critical.

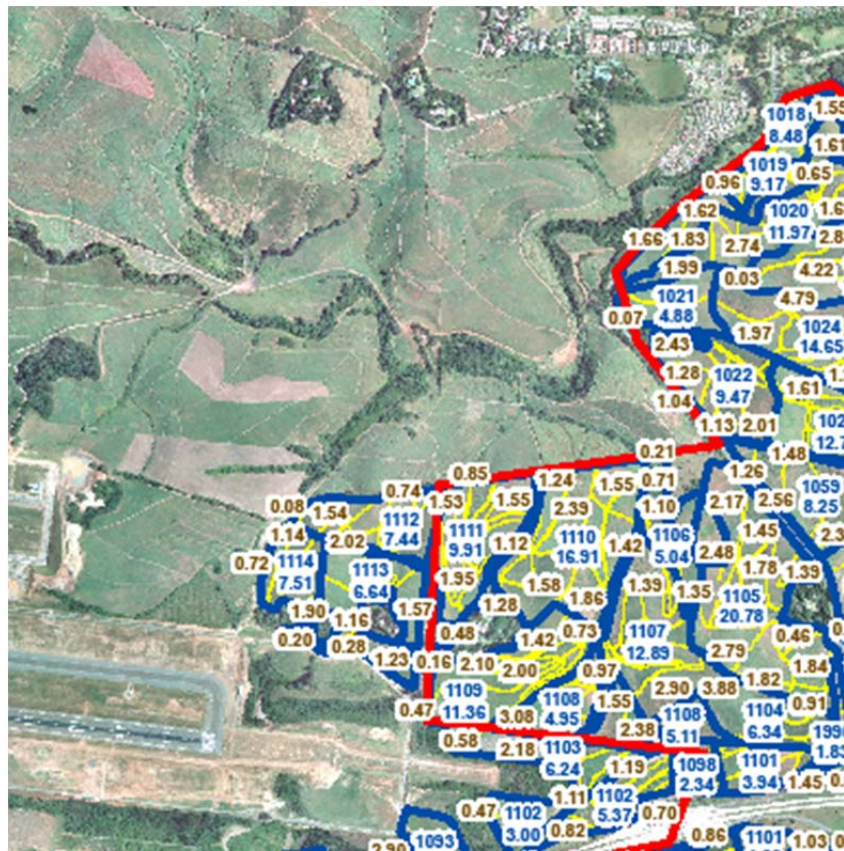
Thus removing these properties from agricultural production will have little or no impact on Food Security in the region.

2 INTRODUCTION

Ushukela Estate is situated immediately north and northwest of the King Shaka International Airport on the North Coast of KwaZulu Natal. Its position in relation to Tongaat town and the International airport is illustrated on the cover page of this report and in Photograph 1 below.



Photograph 1 Location of Ushukela Estate



Photograph 2 Production Lands on Eastern Section of Ushukela Estate



Photograph 3 Production Lands on Western Section of Ushukela Estate

Ushukela Estate, hereinafter referred to as the Estate is situated between 105 to 30m above sea level within the following coordinates:

29°04'28.76" S	31°07'15.63" E	29°34'31.99" S	31°07'15.18" E
29°34'33.25" S	31°07'18.35" E	29°34'42.18" S	31°07'21.11" E
29°34'44.61" S	31°07'19.85" E	29°34'43.65" S	31°07'16.88" E
29°34'38.63" S	31°07'13.60" E	29°34'35.79" S	31°07'09.65" E
29°34'47.08" S	31°07'13.62" E	29°34'39.04" S	31°07'13.46" E
29°34'49.70" S	31°07'09.58" E	29°34'46.35" S	31°07'02.51" E
29°34'54.95" S	31°06'56.29" E	29°34'57.99" S	31°06'51.43" E
29°34'07.18" S	31°07'07.42" E	29°34'04.56" S	31°07'10.12" E
29°35'34.22" S	31°08'12.03" E	29°35'11.10" S	31°08'22.54" E
29°35'14.64" S	31°08'27.21" E	29°35'05.41" S	31°08'31.34" E
29°34'57.90" S	31°08'31.09" E	29°34'51.05" S	31°08'11.02" E
29°34'55.38" S	31°07'28.39" E	29°34'39.61" S	31°07'23.20" E
29°34'31.48" S	31°07'21.09" E		

The Department of Agriculture, Environment Affairs and Rural Development (DAEARD) has acknowledged Tongaat Hulett's (TH) commitment to the agricultural sector in South Africa and KwaZulu Natal in particular together with its associated strategies to increase agricultural production whilst creating new and enhanced agricultural opportunities and a potential revenue base for emerging farmers.

DAEARD also recognises the need from a socio-economic perspective, for new investment and development in growth corridors and would like to ensure that this is appropriately managed.

DAEARD is working with TH and other role players in agricultural, rural and urban development, toward obtaining an understanding of the agricultural potential and future agricultural scenario in the Northern and Western corridors.

With respect to the approach on land assessment, namely:

- Assessment of agricultural potential of prime development land in the corridors
- Understanding of where new TH planting is and has been undertaken - from 2009
- Assessment of agricultural potential of land where TH's new areas of planting will occur
- Identification of other land with potential for agriculture - not limited to sugar cane.
- Specific areas in the Ndwedwe area,

Tongaat Hulett Developments (TDH) having identified this land for development requested an evaluation of the agricultural potential of Ushukela Estate. In compiling this report previous reports on this Estate have been studied and relevant and pertinent information extracted.

3 SOIL-PLANT-ATMOSPHERE CONTINUUM (SPAC)

A basic soil survey based upon the requirements of DAEARD was carried out and a survey of all the relevant crops that could be cultivated on this land and a selection of the most viable and sustainable crops, was conducted.

A study was made of the Bio Resource Units that exist in this area with respect to climate, terrain, aspect, natural resources and water resources available.

3.1 Soils

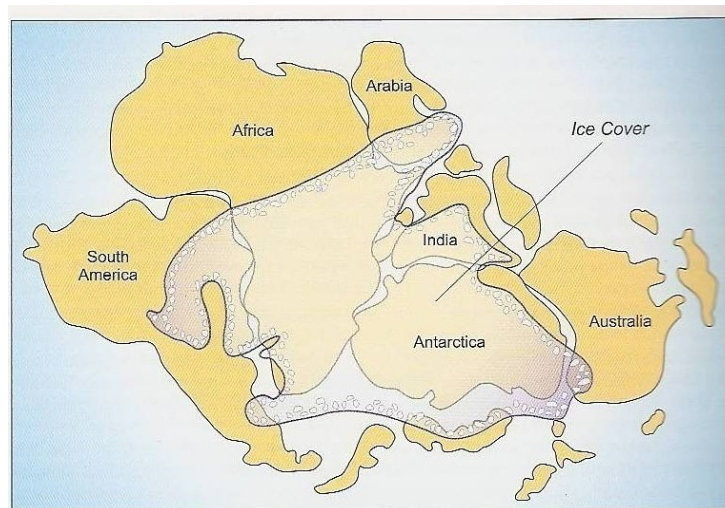


Figure 1 The extent of the ice cover over Gondwana during the Great Ice Age

Around 400 million years ago, a glacial event in the Great Ice Age that lasted 50 million years, got underway. Across Gondwana, which then sprawled over the southern polar region, vast ice sheets ground over India, nearly all Africa south of the Equator, south eastern South America, Antarctica and Southern Australia, leaving as evidence a thick layer of glacial sediments, known in South Africa as Dwyka Tillite, as they melted?

Dwyka Tillite is defined as accumulated glacial debris that has turned into rock, comprising a jumbled mix of boulders, pebbles, gravel and sand set in a matrix of glacial flour.

Up the North Coast the N2 crosses poorly exposed faulted blocks of both the Dwyka and Ecca Groups of the Karoo Supergroup. Nearer the coast are red well compacted red sand dunes known as the Berea Formation. Upon approaching the Estate the sands become browner indicating the presence of the Karoo rocks again (Figure 2).

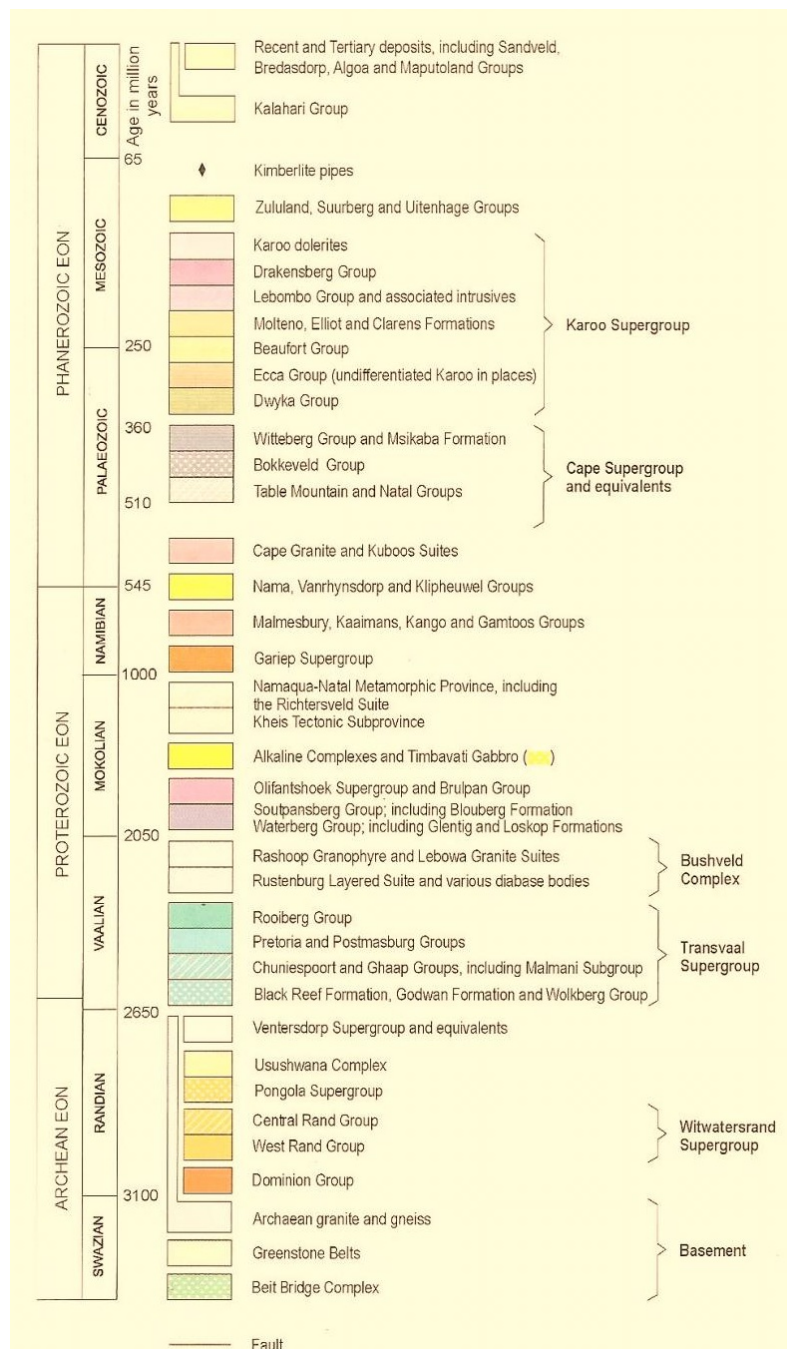
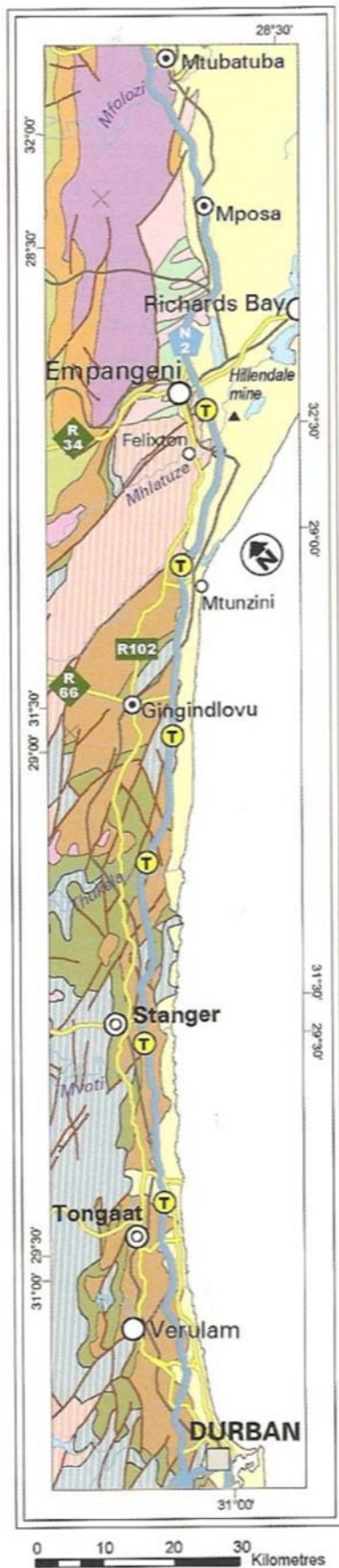


Figure 2 Geology of the areas surrounding the Estate (Norman and Whitfield, 2006)

Kranskop - Umlaas Road - Durban

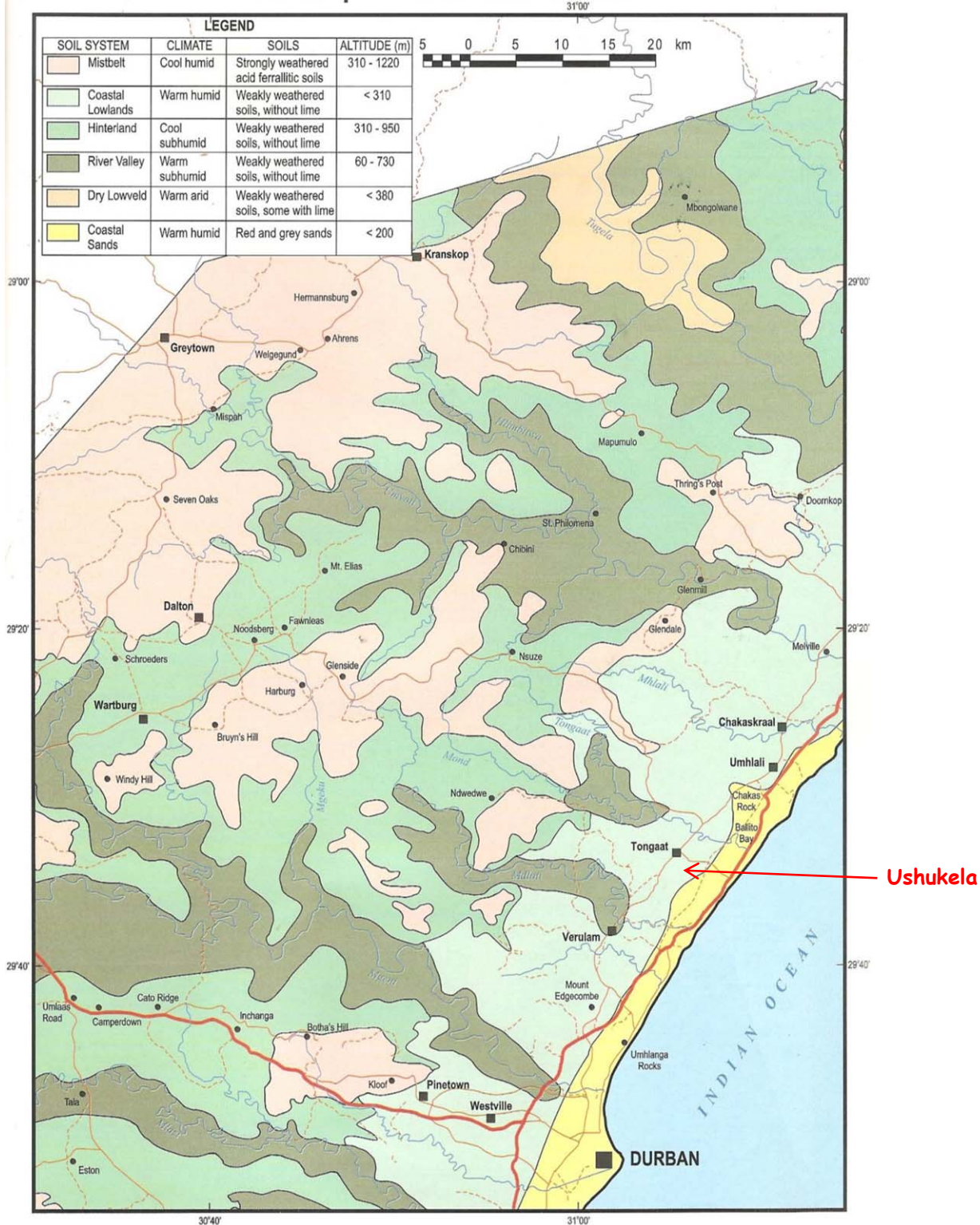


Figure 3 Soils of the South African Sugar Industry in and around the Estate

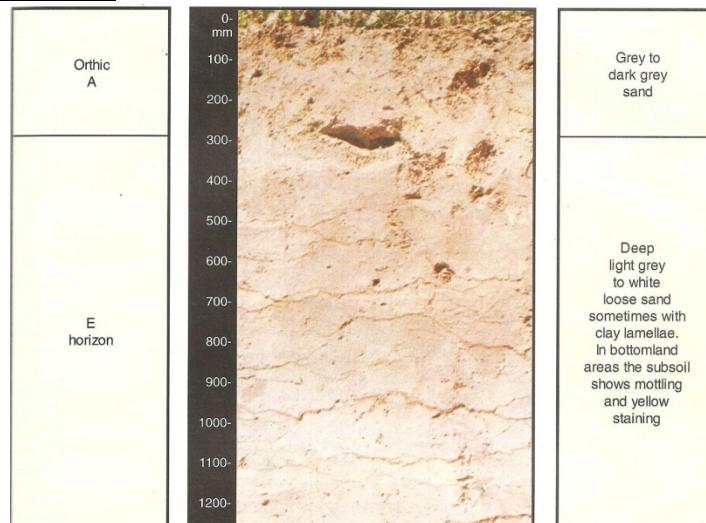
Table 1 Soil and Areas thereof on Ushukela Estate

FIELD	BLOCK	IRRIG	NON	Soil	FIELD	BLOCK	IRRIG	NON	Soil
	NO	AREA	IRRIG	Form/Series		NO	AREA	IRRIG	Form/Series
			AREA					AREA	
BEACH ROAD	1104	5.6		FERNWOOD					
DIXON'S HOUSE	1105	18.8		FERNWOOD					
DIXON'S HOUSE	1106	4.4		FERNWOOD					
STARLING	1107		11.4	FERNWOOD					
HERRWOOD	1108		9	FERNWOOD					
STARLING	1109		9.6	AVOCA					
STARLING	1110		15	FERNWOOD					
DALIGADU	1111		8.6	AVOCA					
DALIGADU	1112		6.6	AVOCA					
HERRWOOD	1113		5.7	AVOCA					
HERRWOOD	1114		9.9	AVOCA					
		28.8	75.8						

Table 2 Areas of Different Soil Forms on Ushukela Estate

Soil Form/Series	Non Irrig	Irrig	Total Area (ha)
AVOCA	40.4		40.4
FERNWOOD	26.4	28.8	55.2

3.1.1 Fernwood Soil Form

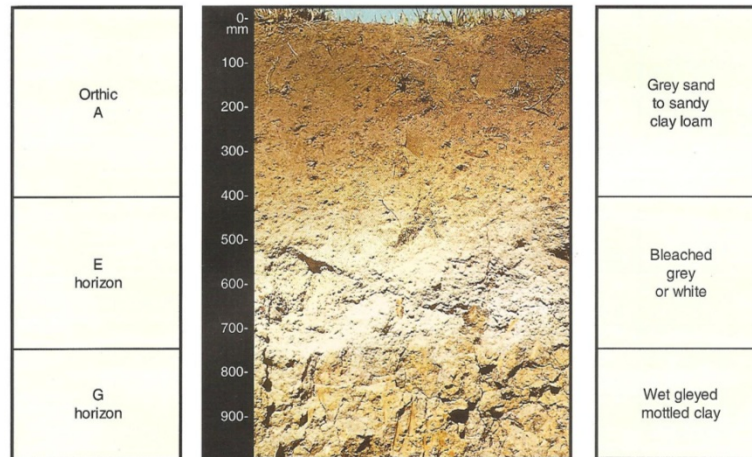


Part of the Coastal Sands Soil System these soils are derived from Grey Recent Sands and Recent Alluvium. They have a very high erosion hazard having a well-established E-horizon, are excessively drained, have a good infiltration rate and an available soil water content of less than 80 mm m⁻¹, with a rooting depth >1200mm. Their make-up is illustrated above. They are reasonably good irrigation soils but strict scheduling is required.

When cultivating these soils it is advisable to use minimum tillage and to ensure that good soil conservation structures are in place to control surface water and runoff. They normally have a low nutrient status with lime and zinc being normally required in addition to high levels of nitrogen, potassium and possibly phosphorus. If over-limed or if excessive filter cake is used, iron chlorosis may result.

They experience a high nematode problem and it is essential to apply nematicides.

3.1.2 Kroonstad Soil Form (Avoca Series)



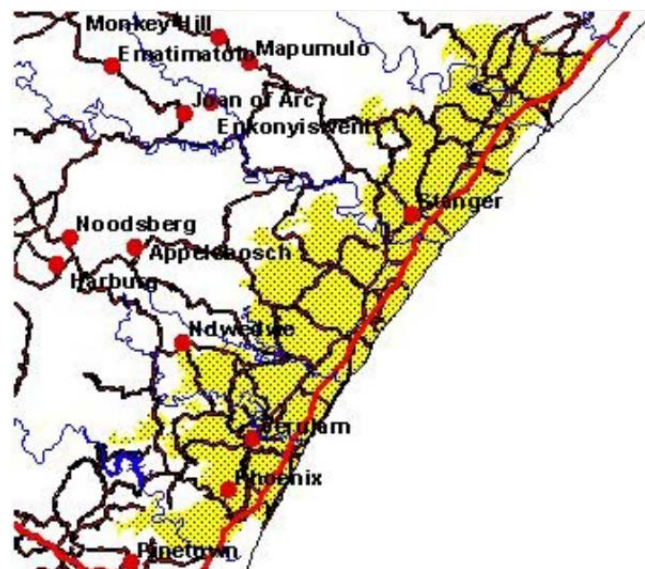
Part of the Coastal Lowlands System these soils are derived from the Vryheid Sediments and Alluvium. These soils have a very high erosion hazard, poor drainage, medium to poor infiltration rate and an available soil water content of 100 to 140 mm m⁻¹.

The Avoca Series is a medium sandy loam with a moderate base status and moderate salinity/Sodicity hazard. If they <400 mm deep they should not be cultivated and when deeper minimum tillage must be practiced. They are not good irrigation soils. They compact easily when wet and cap when dry. They have a low nutrient status and split applications of nitrogen and potassium are recommended. High levels of nitrogen may be required to offset denitrification and leaching. One must ensure that good soil conservation structures are in place to control surface water and runoff.

3.2 Plants

The Estate falls within BioResource Unit (BRU) Ya 14. This Ya14 BRU is found in BioResource Group 1 (BRG subgroup 1.3) that is defined as 'Moist Coastal Forest, Thorn and Palm Veld'. The vegetation consists of bushed grassland and bushland thicket.

Indicator species are *Syzygium cordatum* (Water Berry) and *Strelitzia nicolae* (Natal Wild Banana). Map 1 below indicates the locality of BRU Ya14 in KwaZulu Natal.



Map 1 Locality of BRU Ya14 in KwaZulu Natal

This BRU can have a high crop production potential and this is dependent upon soil, temperature and rainfall. Numerous crops can be grown in this area as is discussed later in the report.

The average grazing capacity in this BRU is 1 AU ha⁻¹ for a 275 day grazing cycle and thus supplementary grazing will be required in the 90 day dormant season.

Several predictive yield models have been developed for certain of the more well-known crops that might be suitable in this BRU Ya14 and Table 3 presents some of these crops that **could** be cultivated in the area and the expected yields thereof. These yields should be considered as a 10 year average expected over the long term by a good commercial farmer. These yields will not be used in any business plan for inexperienced or resource limited farmers.

It must also be noted that these yields are not what one would currently expect but are those that may occur in a two-degree global warming scenario.

Table 3 Modelled Crop Yields for BRU Ya14 - North Coast

Crop	Average Yield - No Global Warming	Average Yield (2° GW)	Maximum Yield (2° GW)	Minimum Yield (2° GW)
	† ha ⁻¹	† ha ⁻¹	† ha ⁻¹	† ha ⁻¹
Bananas Irrigated - Plant	29.2	34.1	37	22.2
Bananas Irrigated - Ratoon	36.5	39.1	42.5	25.5
Cabbage - transplant	66.1	52	55.6	47.3
Carrot - hybrid	56.8	47.8	52.8	37
Cotton - dryland		2.1	2.2	1.8
Cotton - irrigated		3.4	3.6	3.3
Potatoes		22	23.9	19.1
Star Grass - dryland	9	8.4	10.2	5.1
Star Grass - irrigated	11.2	10.5	12.5	7.5
Sugarcane - dryland	58.8	75.3	82.3	65.8
Sugarcane - irrigated	81.7	104.6	114.3	91.5
Tomato - transplant		76.2	82.2	65.7

There are of course other horticultural crops that do well in this BRU and these are dealt with later in the report.

3.3 Climate

Table 4 presents the climate that is experienced in BRU Ya14 and subsequently the Estate.

Table 4 Climate of BioResource Unit Ya14 - North Coast

	Annual	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	973	117	115	105	56	36	17	16	28	51	84	103	107
Effective Rain (mm)	778	94	92	84	45	29	14	13	22	41	67	82	86
Mean Temp (deg C)	19.9	23.3	23.5	22.7	20.7	18.4	16	15.8	16.9	18.6	19.7	20.8	22.6
Max Temp (deg C)	24.8	27.3	27.5	26.9	25.7	24	22.5	22.2	22.8	23.5	24.1	24.9	26.8
Min Temp (deg C)	15	19.2	19.4	18.5	15.8	12.7	9.7	9.6	11.2	13.6	15.2	16.6	18.4
Mean Daily Relative Humidity (%)	73	78	77	76	73	69	66	66	68	73	75	77	77
Mean Daily Solar Radiation (MJ/sq m/d)		23.9	22.8	20.8	18.3	15.7	14.3	14.9	17.4	19.8	22.1	23.2	24.4
Heat Units Base 10		412.0	378.0	394.0	321.0	260.0	180.0	180.0	214.0	258.0	301.0	324.0	391.0
Heat Units Base 12		350.0	322.0	332.0	261.0	198.0	120.0	118.0	152.0	198.0	239.0	264.0	329.0
Pan Evap (mm)	1690	183	160	161	126	108	90	100	120	131	161	165	165

The mean annual sunshine is 6.5h d⁻¹ and there is no frost severity. Between October and March, the main growing season, mean daily sunshine hours is 6.

For sugarcane production the base temperature for heat units is 12 degrees the total must not be less than 1750 HU annum⁻¹. This BRU experiences an average of 2883 HU annum⁻¹.

Although predominantly a summer rainfall area, the climate experienced can sustain crops throughout the year especially if supplemented with irrigation. Humidity is relatively high and thus crop evaporation will be correspondingly low.

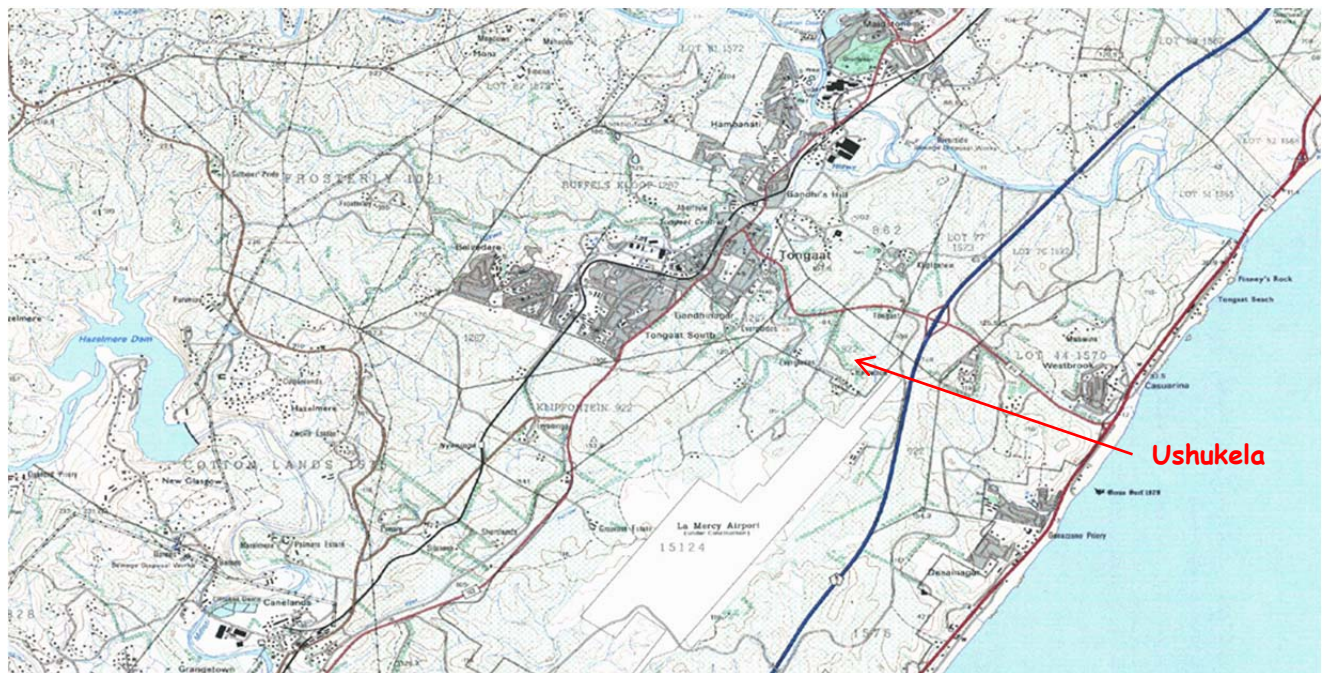
The Estate has a climate capability classification of C1 and this indicates that the climate will support a wide range of adapted crops.

3.4 Water Resources

The Tongaat River north of the Estate and the Mdhloti River south of the Estate are two good sources of water. Each river has a dam in their respective catchments, viz. Dudley Pringle Dam and the Hazelmere Dam respectively. The Wewe River runs into the Dudley Pringle Dam and thereafter into the Tongaat River.

Albeit that these dams were built predominantly for domestic supply the rivers can supply irrigation water. As can be seen from Map 2 below there are numerous tributaries to these rivers.

The rivers are relatively far from the Estate but water could be obtained therefrom if deemed economic. Currently the areas under irrigation receive wastewater from the sugar mill near Tongaat.



3.5 Terrain

The Estate comprises of rolling hills with steep slopes and with heights above sea level varying between 30 and 105m. Drainage lines run in various directions leading into the tributaries of both rivers, predominantly the Tongaat River.

There is a need for contours and minimum tillage to minimise runoff and erosion from the steep cultivated slopes.

Approximately 30% of the Estate comprise of slopes >12% most of which is under sugarcane, and these slopes tend toward a Class IV Land Capability Class.

The remainder of the Estate comprises of 3 to 7% slopes and could be classified as Class II but depending upon the position in the landscape can be down rated to Class III and IV.

5 AGRONOMIC AND HORTICULTURAL CROP SUITABILITY

The following crops could be grown in the area and each are discussed with respect to the conditions on the Estate and their advantages and disadvantages:

- Sugarcane
- Bananas
- Macadamia Nuts
- Grasses for instant lawn, including pastures
- Vegetable crops
- Cut flowers, potted plants and medicinal plants

5.1 Sugarcane

Sugarcane is being produced on the Estate with reasonable success. The main soils are Fernwood and Avoca. Yields to-date have varied and are on average over the last 8 years, deemed poor yields. Even with improved management especially on irrigated areas it will be difficult to obtain significantly higher yields due mainly to soil restrictions.

Canesim, a sugarcane crop growth simulation model adopted by SASRI for crop yield estimation, was used to predict potential yields that might be obtained on Ushukela. The yields predicted for Ushukela varies from 107 to 135 t ha⁻¹ annum⁻¹ for dryland and irrigated production respectively. Due to the restrictions that exist on the Estate it is doubtful that such yields could be obtained let alone sustained.

The current RV price per tonne (August) for sugarcane is R 3 157.

Assuming a potential yield of 50 t ha⁻¹ annum⁻¹ and a potential RV of 12% the Estate comprising of 95.6ha could produce 573.6tonnes RV sugarcane with a value of R 1 810 855.

With the current costs of production being R 25 541 ha⁻¹ for plant cane and R 15 959 ha⁻¹ for ratoon cane and assuming 12.5% plant cane each year (8 year rotation) the annual production costs for the Estate are R 1 640 664 (COMBUD and Cane Growers, 2012)

Thus in normal rain seasons with an average annual yield per hectare of 50 tonnes, an expected profit before Capex, tax, interest, etc. could be R 170 190 or R 1 780ha⁻¹. The break-even yield on this Estate is 55 t ha⁻¹ annum⁻¹.

If irrigation was improved on 28ha, and yields of 100 t ha⁻¹ annum⁻¹ were obtained, the expected profit could rise.

5.2 Bananas

Bananas required a well-drained soil with good soil water retention characteristics. They have a high water requirement throughout the year and thus on this Estate supplementary irrigation is essential. This could be possible with the current water resources that exist nearby the Estate, but the probability that DWA would not issue a licence to irrigate from the river rules this option out.

5.3 Macadamia Nuts

Macadamias are ideally suited to a mild frost free climate with high rainfall distributed throughout the year. Although once mature they are hardy trees, they are susceptible to wind damage when young and, wind also affects pollination and fruit set. Flowers are borne on long narrow racemes and the most effective pollination is carried out by bees. Thus wind breaks are essential.

They require a well-drained soil. Their dense clusters of short lateral rootlets are well defined in rows around the parent root axis. They will penetrate stony soils providing there is sufficient water and drainage.

Trees mature in approximately 8 years, although under good growing conditions some fruit may be expected from the 2nd year onward.

Assuming a plant population of 312 trees ha⁻¹, a 'dry in shell' yield of 24 kg tree⁻¹, a Style = 3, and a 30% recovery of sound kernel, a selling price of R 15 kg⁻¹, one can expect a gross income from 50ha of macadamias to be approximately R 1 684 800. The cost of production on this same area would be approximately R 154 800 ha⁻¹ establishment costs, and thereafter approximately R 36 667 annum⁻¹ for the next 5 years

In the tenth year the macadamia crop would provide a profit of approximately R 170 000 ha⁻¹ annum.

The Estate would only be suitable for the production of Macadamia nuts if irrigation was installed on all good soils. Extensive windbreaks would have to be established, and an intensive surface drainage system installed. The likelihood of a substantial increase in the rateable value of the Estate would render this alternative not financially viable.

5.3 Grasses

Most grass species will do well in this climate and on these aspects. Instant lawn is considered as with all the development in the area there is a market in the short and medium term.

Instant lawn could be cultivated on some of the flatter lands that are deeper and with no drainage problems. Sufficient water is available for say 10ha.

Current production cost of 'instant lawn' grass is R 150 000 ha⁻¹, and the selling price is between R 240 000 and R 270 000 ha⁻¹ laid. Thus excluding capital costs to purchase equipment, and two crops per year, one could expect R 900 000 from 10ha of land.

Without irrigation this is not a possibility and it is a short to medium term enterprise. The likelihood of a substantial increase in the rateable value of the Estate would render this alternative not financially viable.

5.4 Vegetable Crops

Certain vegetable crops, especially in winter months, could be grown on the Estate with irrigation and provided that secure fencing, and wind breaks were installed/established.

These crops are reasonably labour intensive and would provide employment to the local populace. It is estimated that 2 labourers would be required for each hectare planted under external conditions. With controlled environments this figure would rise to at least 10 per hectare.

Again selection of suitable lands, rotation practices and growing season would significantly affect this enterprise.

High value, niche market vegetables could be grown especially under controlled environment conditions. There is a good market for perishable. The likelihood of a substantial increase in the rateable value of the Estate would render this alternative not financially viable.

5.5 Medicinal Plants and Trees

The Durban Metropolitan Area is the main regional trading area in addition to a possible small local market. The current demand for the numerous species used in indigenous medicines

exceeds supply and as a result several species, e.g. wild ginger and pepper-bark tree have become extinct outside KZN. Little cultivation is carried out due mainly to lack of knowledge of indigenous plant cultivation and the economics of associated markets.

From current experience, it will be necessary to have irrigation to establish a small nursery of the selected medicinal plants and to ensure that transplants survive in the ground. Many medicinal plants grow in afforested areas, thus the choice on this Estate is minimal. The growing areas and handling facilities would also have to be secure.

Experience has shown to-date that a grower needs to involve at least a herbalist in the operation, to ensure a market. The presentation and marketing of traditional medicine has its own culture and *modus operandi*.

This industry of cultivated medicinal plants is still in relative infancy and one would need to build up a stock in a nursery. This facet will be dealt with in the following paragraph.

5.6 Cut flowers and potted plants, including indigenous trees

If one has access to land and finance, then the option of growth houses can be utilised on land that is not necessarily suited for open-air cultivation.

As this Estate is not situated in lower lying areas, sturdy structures would have to be erected to contend with wind conditions.

A high level of management will be required for production, sanitation, harvesting, packing and marketing. There is potential competition in this market at Dube Trade Port, however if selected niche products were chosen and produced, and finance was not limiting, this could be an option. The likelihood of a substantial increase in the rateable value of the Estate might render this alternative not financially viable.

6 SUMMARY

The Estate falls within BioResource Unit (BRU) Ya 14. This Ya14 BRU is found in BioResource Group 1 (BRG subgroup 1.3) that is defined as 'Moist Coastal Forest, Thorn and Palm Veld'. The vegetation consists of bushed grassland and bushland thicket.

Indicator species are *Syzygium cordatum* (Water Berry) and *Strelitzia nicolae* (Natal Wild Banana).

The terrain comprises of rolling hills to steep slopes with an altitude range from 30 to 105m above sea level and has a potential surface erosion hazard with some of the soils.

The soils are predominantly Milkwood, Shortlands, Windermere and Avoca soil, and apart from Shortlands these have poor soil water characteristics and a moderate to low potential in good seasons. Good seasons include well distributed rainfall and sufficient incoming solar radiation.

Poor sugarcane yields have been obtained, ranging from 56 to 76 t ha⁻¹ annum⁻¹ under dryland and irrigated production over the past eight years. There was no significant difference between the irrigated and dryland production except in the dry seasons, over this period. In addition to the soil restrictions this could be due to a number of reasons, high input costs, old and faulty irrigation systems, poor irrigation scheduling, etc.

Canesim predicts yields from 107 to 135 t ha⁻¹ annum⁻¹ for dryland and irrigated production provided all growth conditions are met but due to inherent soil restrictions for crop production such yields will not be attained.

The climate capability rating is C1, where the local climate is favourable for a wide range of adapted crops and an all year round growing season. Low rainfall not well distributed throughout the year and lack of water resources on the Estate, are severe limitations on the dryland production areas. There is a supply of water, both fresh and wastewater that is suitable for supplementary irrigation on some 25% of the Estate.

There is electricity on the Estate and the road infrastructure to and from the Estate is excellent. The in-field road network is very good.

There is existing agricultural infrastructure (sheds, workshops, offices, dwellings for staff, etc.) on the Estate but need to be maintained and in some cases refurbished.

The Estate is close to local markets, the iDube Trade Port and to the international airport, King Shaka International.

7 CONCLUSIONS

Having considered the cropping and land use options on this Estate together with the inherent limitations (high input costs and moderate to poor sugarcane yields), and the need for development in the growth corridor that has been identified by Province and the eThekweni Municipality, the development of this Estate for industry and residential will:

- Fulfil the planned expansion of the Northern Node of eThekweni Municipality
- Provide infill development in this node
- Comply with Provincial and Municipal strategic planning
- Comply with local planning
- Make effective and efficient use of existing infrastructure and resources
- Create positive employment and socio-economic benefits

DAEARD recognise the need for development in growth corridors and would like to ensure that it is appropriately managed. Together with TH they are working toward understanding the agricultural potential in the Western and Northern corridors.

In KZN the land used for sugarcane production has increased over the last 3 years by 17 835ha, an increase of 15% and this includes land taken out for urban development. Thus the impact of urban development on sugarcane production is insignificant.

Tongaat Hulett only owns 8% of the total quantum of land that supplies cane to its mills so even a total loss of this 8% is insignificant.

What is very significant is the fact that Tongaat Hulett commenced with new sugarcane areas in 2009 and by the end of the 2012/13 season this will be 9 506ha. In 2013/14 a further 10 000ha is to be identified and developed and 7 000ha in 2014/15. Therefore at the end of 3 years Tongaat Hulett will have developed an additional 26 506ha of new sugarcane land. This together with the existing 17 835ha increment will produce a 44 341ha increase from 2009, and increase of 37%.

Apart from this fact it is noteworthy that the new areas being developed are in the rural hinterland. This combined with a rural development and food security strategy of new sugarcane development providing an anchor for services, investment, training, etc., allows for other more intensive food related crops to be grown for local consumption.

Thus removing these properties from agricultural production will have little or no impact on Food Security in the region.

Dr Roy Mottram
12 December 2012

8 APPENDICES

8.1 Appendix I - Sugar Cane Establishment Gross Margins - Mechanical Land Preparation

SUGAR CANE ESTABLISHMENT COSTS				Mechanical Land Preparation		2012 - 2013		
References: COMBUD, CaneGrowers								
				Unit	Price Per Unit	Qty	Per Ha	Value Per Yield Unit
GROSS INCOME							18942.00	378.84
Product Income (Crops)								
Sugar Cane RV =	12%			ton RV	3157.00	50.00	18942.00	378.84
MARKETING COSTS							0.00	0.00
GROSS INCOME minus MARKETING COSTS							18942.00	378.84
ALLOCATABLE VARIABLE COSTS							25541.21	510.82
Directly Allocatable Variable Costs							14752.71	472.42
PRE HARVEST COST							14752.71	295.05
Seedbed Preparation								
	Ploughing			hours	246.88	3.27	807.30	16.15
	Harrowing (2X)			hours	240.57	2.56	615.86	12.32
	Ridging			hours	224.11	2.06	461.67	9.23
	Contour structures			hours	246.88	2.00	493.76	9.88
Plant Material	Seed cane			ton	513.87	10.00	5138.70	102.77
Fertilizer	DAP (38)+ 0.5%Zn			ton	6020.00	0.20	1204.00	24.08
	1.0.1 (48)			ton	5230.00	0.40	2092.00	41.84
	Labour (Split in furrow and topdress)			days	84.06	2.00	168.12	3.36
Herbicides	Pre-emergent							
	Acetachlor			litres	40.89	2.00	81.78	1.64
	Diuron			litres	66.74	2.50	166.85	3.34
	Paraquat			litres	60.16	1.00	60.16	1.20
	Post-emergent							
	Ametryn			litres	38.31	4.00	153.24	3.06
	MCPA			litres	40.42	3.50	141.47	2.83
	Wetting agent			litres	65.80	0.50	32.90	0.66
	Spot Spray							
	Ametryn	5%		litres	38.31	0.20	7.66	0.15
	MCPA	5%		litres	40.42	0.18	7.07	0.14
	Wetting agent	5%		litres	65.80	0.03	1.65	0.03
	Tractor and Boom Spray			hours	147.02	1.20	176.42	3.53
Casual Labour	Planting			days	84.06	25.00	2101.50	42.03
	Hoeing/Spraying			days	84.06	10.00	840.60	16.81
Irrigation				hectares	0.00	3.00	0.00	0.00
MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS							4189.29	-93.58
Indirectly Allocatable Variable Costs							1920.00	38.40
PRE HARVEST COST							1920.00	38.40
	Energy			litres	10.00	120.00	1200.00	24.00
	Repairs and Maintenance						720.00	14.40
TOTAL PRE HARVEST COSTS							16672.71	333.45
TOTAL HARVEST COSTS							8868.50	177.37
	Labour (cut and stack on ground)			tons	35.16	50.00	1758.00	35.16
	Bell Loader			tons	10.36	50.00	518.00	10.36
	Transport (40kms)			tons	131.85	50.00	6592.50	131.85
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS							-6599.21	-131.98

8.2 Appendix II - Sugarcane Establishment Gross Margins - Minimum Tillage

SUGAR CANE ESTABLISHMENT COSTS				Minimum Tillage	2012 - 2013			
References: COMBUD, CaneGrowers								
				Unit	Price Per Unit	Qty	Per Ha	Value Per Yield Unit
GROSS INCOME							18942.00	378.84
Product Income (Crops)								
Sugar Cane RV =	12%			ton RV	3157.00	50.00	18942.00	378.84
MARKETING COSTS							0.00	0.00
GROSS INCOME minus MARKETING COSTS							18942.00	378.84
ALLOCATABLE VARIABLE COSTS							24719.40	494.39
Directly Allocatable Variable Costs							22799.40	455.99
PRE HARVEST COST							13930.90	278.62
Seedbed Preparation	Full cover spray with Glyphosate							
	Min Till with disc ridger in interrow							
				litres	30.08	8.00	240.64	4.81
				hours	415.34	2.00	830.68	16.61
				hours	246.88	2.00	493.76	9.88
Plant Material	Seed cane			ton	513.87	10.00	5138.70	102.77
Fertilizer	DAP (38)+ 0.5%Zn			ton	6020.00	0.20	1204.00	24.08
	1.0.1 (48)			ton	5230.00	0.40	2092.00	41.84
	Labour (Split in furrow and topdress)			days	84.06	2.00	168.12	3.36
Herbicides	Pre-emergent							
		Acetachlor		litres	40.89	2.00	81.78	1.64
		Diuron		litres	66.74	2.50	166.85	3.34
		Paraquat		litres	60.16	1.00	60.16	1.20
	Post-emergent							
		Ametryn		litres	38.31	4.00	153.24	3.06
		MCPA		litres	40.42	3.50	141.47	2.83
		Wetting agent		litres	65.80	0.50	32.90	0.66
	Spot Spray							
		Ametryn	5%	litres	38.31	0.20	7.66	0.15
		MCPA	5%	litres	40.42	0.18	7.07	0.14
		Wetting agent	5%	litres	65.80	0.03	1.65	0.03
Casual Labour	Planting			days	84.06	25.00	2101.50	42.03
	Hoeing/Spraying			days	84.06	12.00	1008.72	20.17
Irrigation				hectares		3.00	0.00	0.00
MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS							-3857.40	-77.15
Indirectly Allocatable Variable Costs							1920.00	38.40
PRE HARVEST COST							1920.00	38.40
	Energy			litres	10.00	120.00	1200.00	24.00
	Repairs and Maintenance						720.00	14.40
TOTAL PRE HARVEST COSTS							15850.90	317.02
TOTAL HARVEST COSTS							8868.50	177.37
	Labour			tons	35.16	50.00	1758.00	35.16
	Bell Loader			tons	10.36	50.00	518.00	10.36
	Transport (40kms)			tons	131.85	50.00	6592.50	131.85
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS							-5777.40	-115.55

8.3 Appendix III - Sugarcane Ratoon Gross Margins - Dryland - Burnt Early Harvest

SUGAR CANE RATOON COSTS				Dryland - Burnt Early Harvest		2012 - 2013		
References: COMBUD, CaneGrowers								
				Unit	Price Per Unit	Qty	Per Ha	Value Per Yield Unit
GROSS INCOME							18942.00	378.84
Product Income (Crops)								
Sugar Cane RV =	12%			ton RV	3157.00	50.00	18942.00	378.84
MARKETING COSTS							0.00	0.00
GROSS INCOME minus MARKETING COSTS							18942.00	378.84
ALLOCATABLE VARIABLE COSTS							15959.23	319.18
Directly Allocatable Variable Costs							14039.23	280.78
PRE HARVEST COST							5170.73	103.41
Trash								
		Spread Tops and clean up		days	84.06	2.00	168.12	3.36
Verge								
		Tractor and Slasher (4X)		hours	194.87	1.00	194.87	3.90
Fertilizer								
		1.0.1 (48)		ton	5230.00	0.57	2954.95	59.10
		Topdress		hours	231.25	0.60	138.75	2.78
		Labour (Conductor)		days	84.06	1.00	84.06	1.68
Herbicides								
		Pre-Emergent						
		Acetochlor 960g/l		litres	38.44	2.80	107.63	2.15
		Ametryn 500g/l		litres	36.01	3.00	108.03	2.16
		Tractor and Boom Sprayer		hours	191.48	0.62	118.72	2.37
		Labour (Conductor)		days	84.06	1.00	84.06	1.68
		Post-emergent						
		Ametryn 500g/l		litres	38.31	4.50	172.40	3.45
		MCPA		litres	37.99	3.50	132.97	2.66
		Volcano Blend (Adjuvant)		litres	61.85	0.50	30.93	0.62
		Tractor and Boom Sprayer		hours	191.48	0.62	118.72	2.37
		Labour (Conductor)		days	84.06	1.00	84.06	1.68
Casual Labour								
		Hoeing		days	84.06	8.00	672.48	13.45
Irrigation								
				hectares	0.00	3.00	0.00	0.00
MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS							4902.77	98.06
Indirectly Allocatable Variable Costs							1920.00	38.40
PRE HARVEST COST							1920.00	38.40
		Energy		litres	10.00	120.00	1200.00	24.00
		Repairs and Maintenance					720.00	14.40
TOTAL PRE HARVEST COSTS							7090.73	141.81
TOTAL HARVEST COSTS							8868.50	177.37
		Labour		tons	35.16	50.00	1758.00	35.16
		Bell Loader		tons	10.36	50.00	518.00	10.36
		Transport (40kms)		tons	131.85	50.00	6592.50	131.85
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS							2982.77	59.66

8.4 Appendix IV - Sugarcane Ratoon Gross Margins - Dryland Burnt Late Harvest

SUGAR CANE RATOON COSTS				Dryland - Burnt Late Harvest		2012 - 2013		
References: COMBUD, CaneGrowers								
				Unit	Price Per Unit	Qty	Per Ha	Value Per Yield Unit
GROSS INCOME							19012.98	380.26
Product Income (Crops)								
Sugar Cane RV =	12%			ton RV	3168.83	50.00	19012.98	380.26
MARKETING COSTS							0.00	0.00
GROSS INCOME minus MARKETING COSTS							19012.98	380.26
ALLOCATABLE VARIABLE COSTS							15083.93	301.68
Directly Allocatable Variable Costs							13163.93	263.28
PRE HARVEST COST							4295.43	85.91
Trash								
		Spread Tops and clean up		days	84.06	2.00	168.12	3.36
Verge								
		Tractor and Slasher (4X)		hours	194.87	1.00	194.87	3.90
Fertilizer								
		1.0.1 (48)		ton	5230.00	0.57	2954.95	59.10
		Topdress		hours	231.25	0.60	138.75	2.78
		Labour (Conductor)		days	84.06	1.00	84.06	1.68
Herbicides								
Pre-Emergent								
		Acetochlor 960g/l		litres	38.44	2.80	107.63	2.15
		Ametryn 500g/l		litres	36.01	3.00	108.03	2.16
		Tractor and Boom Sprayer		hours	191.48	0.62	118.72	2.37
		Labour (Conductor)		days	84.06	1.00	84.06	1.68
Casual Labour								
		Hoeing		days	84.06	4.00	336.24	6.72
Irrigation								
				hectares	0.00	3.00	0.00	0.00
MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS							5849.05	116.98
Indirectly Allocatable Variable Costs							1920.00	38.40
PRE HARVEST COST							1920.00	38.40
		Energy		litres	10.00	120.00	1200.00	24.00
		Repairs and Maintenance					720.00	14.40
TOTAL PRE HARVEST COSTS							6215.43	124.31
TOTAL HARVEST COSTS							8868.50	177.37
		Labour		tons	35.16	50.00	1758.00	35.16
		Bell Loader		tons	10.36	50.00	518.00	10.36
		Transport (40kms)		tons	131.85	50.00	6592.50	131.85
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS							3929.05	78.58

8.5 Appendix V Sugarcane Ratoon Gross Margin - Dryland - Trashed

SUGAR CANE RATOON COSTS				Dryland - Trashed		2012 - 2013	
References: COMBUD, CaneGrowers							
			Unit	Price Per Unit	Qty	Per Ha	Value Per Yield Unit
GROSS INCOME						18942.00	378.84
Product Income (Crops)							
Sugar Cane RV =	12%		ton RV	3157.00	50.00	18942.00	378.84
MARKETING COSTS						0.00	0.00
GROSS INCOME minus MARKETING COSTS						18942.00	378.84
ALLOCATABLE VARIABLE COSTS						14922.36	298.45
Directly Allocatable Variable Costs						13002.36	260.05
PRE HARVEST COST						4133.86	82.68
Trash							
	Spread Tops and clean up		days	84.06	4.00	336.24	6.72
Verge							
	Tractor and Slasher (4X)		hours	194.87	1.00	194.87	3.90
Fertilizer							
	1.0.1 (48)		ton	5230.00	0.57	2954.95	59.10
	Topdress		hours	231.25	0.60	138.75	2.78
	Labour (Conductor)		days	84.06	1.00	84.06	1.68
Herbicides							
	Post-emergent - Spot Spray						
	Ametryn 500g/l (2X)		litres	38.31	1.00	38.31	0.77
Casual Labour							
	Hoeing/Spraying		days	84.06	4.60	386.68	7.73
Irrigation							
			hectares		3.00	0.00	0.00
MARGIN ABOVE DIRECTLY ALLOCATABLE VARIABLE COSTS						5939.64	118.79
Indirectly Allocatable Variable Costs						1920.00	38.40
PRE HARVEST COST						1920.00	38.40
	Energy		litres	10.00	120.00	1200.00	24.00
	Repairs and Maintenance					720.00	14.40
TOTAL PRE HARVEST COSTS						6053.86	121.08
TOTAL HARVEST COSTS						8868.50	177.37
	Labour		tons	35.16	50.00	1758.00	35.16
	Bell Loader		tons	10.36	50.00	518.00	10.36
	Transport (40kms)		tons	131.85	50.00	6592.50	131.85
GROSS MARGIN ABOVE TOTAL ALLOCATABLE VARIABLE COSTS						4019.64	80.39

8.6 Appendix VI – Macadamia Production Costs and Returns

Production Costs and Returns of Macadamias under Irrigated Production - December 2011																			
Selling Price DIS@25% SKR 1.5%mc (ZAR) =					15					Cost of Plant Material per plant(ZAR) =					20				
Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13					
Trees/ha	312																		
Production and Sales																			
kg DIS/tree					1	1	4	7	11	13	15	18	20	22					
kg DIS/ha					156	312	1 248	2 184	3 432	4 056	4 680	5 616	6 240	6 864					
Sales ZAR/ha					2 340	4 680	18 720	32 760	51 480	60 840	70 200	84 240	93 600	102 960					
Direct Costs																			
Clearing	5 000																		
Land Prep. Rip/Plough	5 000																		
Drains & Contours	900																		
Plant material	6 240																		
Estab. Maint & Labour	2 500	1 100	850	850	850	850	850	850	850	850	850	850	850	850					
Fertiliser	1 500	600	700	800	900	1 000	1 100	1 200	1 300	1 400	1 500	1 500	1 500	1 500					
Pesticides & Herbicides	700	1 000	1 000	1 000	1 100	1 200	1 300	1 400	1 500	1 600	1 700	1 800	1 800	1 800					
Weed Control	1 000	1 000	1 000	1 000	800	800	700	700	700	700	700	700	700	700					
Irrigation (operating costs)	1 200	1 400	1 600	1 800	2 000	2 200	2 400	2 600	2 800	3 000	3 000	3 000	3 000	3 000					
Tree Training/Pruning		250	300	350	350	350	350	350	400	500	500	500	500	500					
Total Pre-Harvest	24 040	5 350	5 450	5 800	6 000	6 400	6 700	7 100	7 550	8 050	8 250	8 350	8 350	8 350					
Labour					125	166	333	437	549	541	535	642	713	784					
Dehusk/store/dry (R1.1/kg DIS)					172	343	1 373	2 402	3 775	4 462	5 148	6 178	6 864	7 550					
Contribution	-24 040	-5 350	-5 450	-5 800	-3 956	-2 230	10 314	22 821	39 606	47 788	56 267	69 071	77 673	86 275					
Cumul. Contribution		-29 390	-34 840	-40 640	-44 596	-46 826	-36 512	-13 691	25 915	73 702	129 970	199 040	276 713	362 988					
Overheads																			
Maint/Salaries/Depr	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000	2 000					
Production Surplus	-26 040	-7 350	-7 450	-7 800	-5 956	-4 230	8 314	20 821	37 606	45 788	54 267	67 071	75 673	84 275					
Cum. Prodn Surplus		-33 390	-40 840	-48 640	-54 596	-58 826	-50 512	-29 691	7 915	53 702	107 970	175 040	250 713	334 988					
Capital Expenditure																			
Tractor/Agnic Equip	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400	2 400					
Irrigation	18 000																		
Dehusking/drying bins					10 000			10 000											
Total CAPEX	20 400	2 400	2 400	2 400	12 400	2 400	2 400	12 400	2 400	2 400	2 400	2 400	2 400	2 400					
Total Funding	-46 440	-9 750	-9 850	-10 200	-18 356	-6 630	5 914	8 421	35 206	43 388	51 867	64 671	73 273	81 875					
Cumulative Funding		-56 190	-66 040	-76 240	-94 596	-101 226	-95 312	-86 891	-51 685	-8 298	43 570	108 240	181 513	263 388					
	SKR =	Sound Kernel Recovery Percentage																	
	DIS =	Dry in Shell																	
	mc =	percentage moisture content																	

Appendix 16: Terrestrial Ecological Study for Tongaat Hulelts Development: uShukela Highway

Ecology Report

Terrestrial Ecological Study for Tongaat Hulett's Development: uShukela Highway (eastern portion)



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EXECUTIVE SUMMARY

GroundTruth Water, Wetlands and Environmental Engineering (GroundTruth) was appointed by Tongaat Hulett's Development (THD) to undertake a high-level ecological assessment of the Watson Highway and Inyaninga properties currently owned by THD. The primary purpose of this study was to define the natural vegetation of the site, which will therefore inform the condition of available ecological features. Outcomes from this study identify and highlight ecologically significant areas to inform THD with regards to future development potential of the site based on ecological constraints and opportunities.

The study consisted of a desktop assessment and field work components of the eastern portion of the uShukela Highway property that makes up the study area situated just south east of Tongaat, KwaZulu-Natal north coast. The desktop assessment was carried out to determine the availability of habitat that characterise the reference and present vegetation communities on-site. This was based on spatial information obtained from the KZN land cover database and the Mucina and Rutherford (2006) vegetation types of South Africa, followed by the mapping of natural habitats using aerial imagery for the area. The field-based site visit was carried out on the 19th of March, 2010, with the objective of defining the floral species diversity of the study area as well as to determine whether any species of conservation importance are present.

Results from the study determined that the study area is largely transformed due to previous land use developments, primarily sugarcane. The only natural habitats available on-site are restricted to a few isolated patches of riparian vegetation along water courses situated along the western boundary of the property. These areas support indigenous woody vegetation (trees, shrubs and herbs), comprising a variety of plant species (~40 species), but also a large number of alien plants (~30 species), which in addition to familiar species includes a number of lesser known garden escapees. Essentially these ecological strips are remnants of riparian habitat that would have occurred here historically. Two notable plant species, protected according to national and provincial legislation, were recorded on-site, namely herbaceous plants *Scadoxus puniceus* and *Drimiopsus maculata*.

Although the natural vegetation of the uShukela Highway property is considered to be heavily degraded, it will be important to incorporate a detailed rehabilitation programme with any proposed development plans in future. The rehabilitation programme should include both alien plant eradication and indigenous planting, which should be defined according to habitat type and regional expectations. Rehabilitation efforts should also focus on the natural habitat areas that have been mapped, and based on the recommendations reported herein. Furthermore and to safeguard the riparian habitats from future development pressures, as well as to reinforce the results from rehabilitation/revegetation programmes, it will be important to ensure that adequate buffering is put in place.

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1. INTRODUCTION

1.1 Background

GroundTruth Water, Wetlands and Environmental Engineering (GroundTruth) was appointed by Tongaat Hulett's Development (THD) to undertake a high-level ecological assessment of the eastern portion of the uShukela Highway property currently owned by THD. The primary purpose of this study was to define the natural vegetation of the site, which will therefore inform the condition of available ecological features. This information forms the basis for defining ecosystem components, for example diversity of fauna and flora.

1.2 Objectives

The following objectives were considered for the purpose of this ecological study:

- Identify and map the presence of habitats considered important in terms of ecological processes and biodiversity;
- Highlight which habitat areas are important for supporting significant flora; and
- Ensure adequate protection and preservation of habitats and vegetation communities on-site to limit further degradation and loss of habitat.

Outcomes from this study will therefore identify and highlight ecologically significant areas to inform THD with regards to future development potential of the site based on ecological constraints and opportunities.

1.3 Study area

The study area comprises the eastern portion of the uShukela Highway property which covers an area of approximately 1.4km² (Figure 1). The study area is situated just south east of Tongaat, a town situated on the north coast of KwaZulu-Natal (KZN).

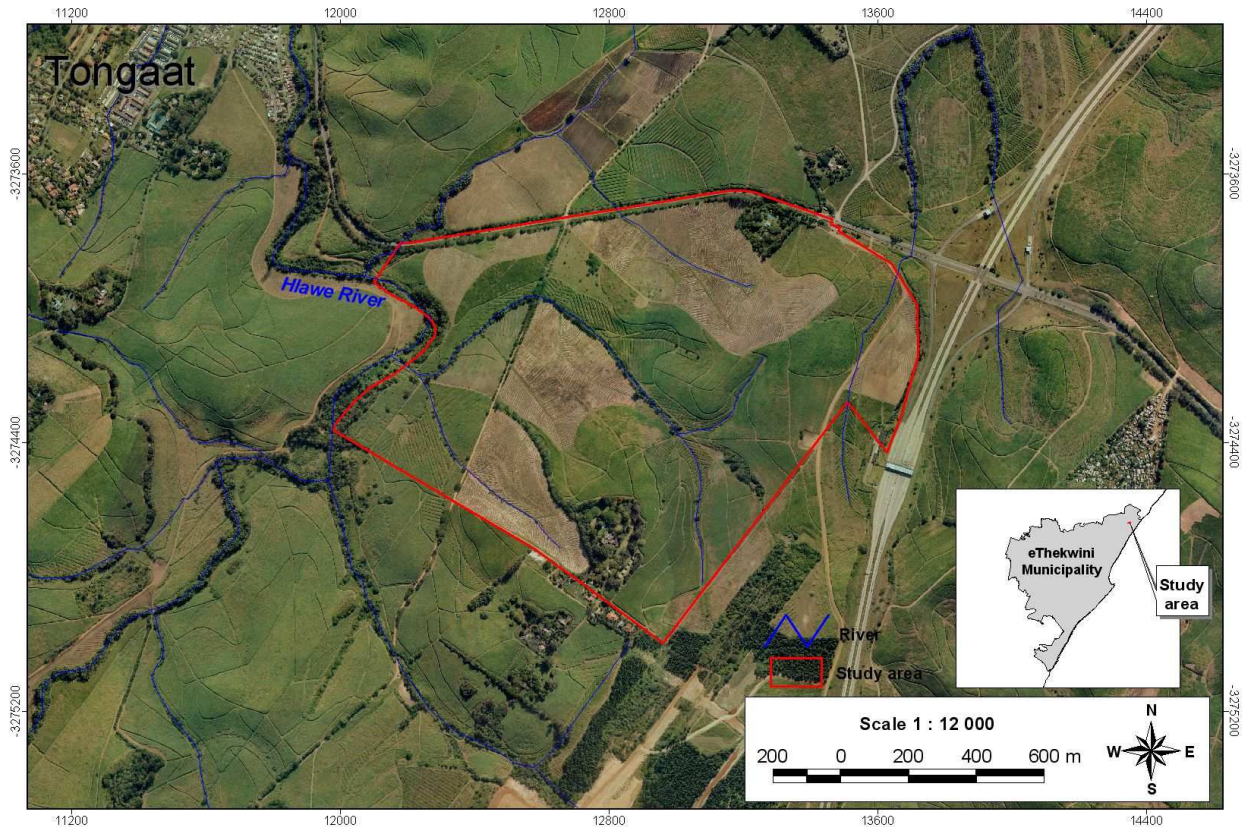


Figure 1 Site map showing the eastern portion of the uShukela Highway property

2. METHODOLOGY

This ecological study comprised two components, namely a desktop analysis and field site visit; these are discussed accordingly.

2.1 Desktop assessment

A desktop study was carried out to determine the following:

- **The reference vegetation for the area** – This was assessed using the Mucina and Rutherford (2006) vegetation type classification and map for South Africa. The classification system provides useful information in terms of expected flora taxa and conservation status and importance.
- **Land cover and natural habitat extent** – The KZN land cover database (DEAT and EKZNW, 2008) was used to characterise dominant land cover for the area. The database was used to determine the degree of habitat transformation that has occurred in the area due to land use activities as well as to identify and map the presence of natural habitats considered to be potentially important in terms of ecological processes and biodiversity.

2.2 Field site visit

A site visit was undertaken on the 19th of March, 2010, to assess the vegetation of the study site as well as to verify the extent of natural habitats comprising important vegetation communities. A list of indigenous and alien plant species was taken during

the course of the site visit. Any notable species were mapped using a Global Positioning System (GPS).

3. RESULTS

3.1 Baseline vegetation

Historically, the study area would have comprised habitats typical of that of the KwaZulu-Natal Coastal Belt vegetation type as described by Mucina and Rutherford (2006). Therefore prior to the transformation this area would have been represented by a complex of species-rich grasslands and subtropical forests. However, at present, the KwaZulu-Natal Coastal Belt as a whole is classified as **Endangered** due to the extremely high levels of transformation and habitat degradation associated with the development of extensive sugarcane fields and timber plantations, urbanisation, building of roads and alien plant infestations.

3.2 Habitat availability

With reference to the KZN land cover database, developed by the Department of Environmental Affairs and Tourism (DEAT) and Ezemvelo KZN Wildlife (EKZNW), approximately 85% of the study area consists of sugarcane (DEAT and EKZNW, 2008). Thus a significant proportion of the native vegetation of this area has been lost through previous land use developments and transformations.

The extent of sugarcane was confirmed through verification of the aerial imagery of the area as well the by the site visit (see Figure 1 and Appendix 1, Photograph 1). The only natural vegetation present was found to be limited to a few isolated patches along drainage lines, streams and rivers. Within the natural habitat areas there is persistence of both indigenous woody vegetation (trees, shrubs and herbs) and occurrence of alien vegetation, which in addition to familiar species includes a number of lesser known garden escapees (see Appendix 1, Photograph 2). Essentially these ecological strips are remnants of riparian habitat that would have occurred here historically.

Appendix 2 shows the natural habitat areas mapped for the protection of remnant available vegetation communities.

3.3 Floral species

The remnant riparian habitat present has the potential to support various important flora taxa; these include (after Mucina and Rutherford, 2006):

- **Grasses** – *Cymbopogon caesius*, *C. nardus*, *Digitaria eriantha*, *Hyparrhenia filipendula* and *Panicum maximum*;
- **Herbaceous plants** – *Alepidea longifolia*, *Cephalaria oblongifolia*, *Conostomium natalense*, *Crotalaria lanceolata*, *Cyanotis speciosa*, *Disa polygonoides*, *Dissotis canescens*, *Gerbera ambigua*, *Helichrysum cymosum* subsp. *cymosum*, *Hibiscus pedunculatus*, *Hybanthus capensis*, *Ledebouria floribunda*, *Pachycarpus*

asperifolius, *Senecio albanensis*, *Schizocarphus nervosus*, *Sisyranthus imberbis*, *Stachys aethiopica* and *S. nigricans*;

- **Climbers** – *Asparagus racemosus*, and *Smilax anceps*;
- **Shrubs** – *Clusia pulchella*, and *Tephrosia polystachya*; and
- **Trees** – *Acacia natalitia*, *Albizia adianthifolia*, *Antedasma venosum*, *Bridellia micrantha*, *Phoenix reclinata* and *Syzygium cordatum*.

Over 40 species of indigenous plant species were recorded during the site visit; 23 of these comprised tree species, some of which are fairly common to the KZN Coastal Belt, e.g. *Acacia robusta*, *Apodytes dimidiata*, *Bridellia micrantha*, *Syzygium cordatum*, and *Trichilia dregeana* (Appendix 4). However, a significant number of alien plant species (~30 species) were noted on-site, particularly along the Hlawe River.

3.4 Protected species

No threatened species (i.e. Critically Endangered, Endangered, and Vulnerable) as defined by the International Union for the Conservation of Nature (IUCN)² were found during the site visit, although some of the plants that were recorded are protected according to provincial conservation legislation. These include two herbaceous plant species, namely *Drimiopsis maculata* and *Scadoxus puniceus*. Despite this protection, these species are not rare.

3.5 Ecological status of natural habitat areas

The indigenous vegetation present within the study area has been severely impacted upon by historical and current agricultural activity which has primarily been the cause of continual disturbance along the habitat edges over a long period. Additional disturbance has occurred due to invasion by alien plants, which are evidently not controlled.

The proportion of indigenous vegetation varies across the site and is significant for certain habitat patches (e.g. greater than 50%). Although the diversity of species is not large, it does include large indigenous trees which are important in terms of other biodiversity components (e.g. mammals, birds, reptiles, insects, etc.). These areas also support herbaceous elements ordinarily found in less disturbed woody vegetation along this part of the KwaZulu-Natal coast. Hence attempts to remove and control alien plants could drastically improve the biodiversity value of the area through ecological restoration whereby the vegetation may recover to a much better state. There are certain areas where the woody vegetation constitutes higher diversity or more uniform growth of indigenous trees (e.g. *Syzygium cordatum*); such areas could be described as forest habitat. This floral diversity is supported by the list of species given in Appendix 3.

² **IUCN Categories:**

Critically Endangered (CR) – the species is considered to be facing an extremely high risk of extinction in the wild, based on IUCN criteria

Endangered (EN) – the species is considered to be facing a very high risk of extinction in the wild, based on IUCN criteria

Vulnerable (VU) – the species is considered to be facing a high risk of extinction in the wild, based on IUCN criteria

The riparian habitat situated along the Hlawe River was found to be heavily impacted by alien plant infestations. Exotic species noted as being particularly problematic along the Hlawe River include large species such as bamboo (*Bambusa sp.*), gum (*Eucalyptus sp.*) and syringa (*Melia azedarach*).

Based on the findings regarding the condition of vegetation on-site, the mapped natural habitats shown in Appendix 2 were then characterised according to the magnitude of alien plant infestations and distribution of important flora. Consequently, riparian habitat areas that are heavily infested and with no notable plant species present are classed as “moderate” whereas habitats with limited alien plant infestation and which are known to support important plant taxa are classed as “good”. All of the natural vegetation mapped within the study area were defined as “moderate” (Appendix 2).

4. DISCUSSION

The area comprising the two TDH properties was found to be largely transformed due to previous land use activities and associated impacts that have affected the natural habitat of the area. Consequently, the habitat supporting local ecological functionality has become reduced to narrow, longitudinal strips of riparian habitat restricted to water courses. Over the years these remaining patches of habitat have been subjected to various natural (e.g. hydrological and geomorphological) and anthropogenic stresses thus resulting in continued habitat deterioration. As a result, the riparian habitat areas have become severely infested by a large number of alien plant species.

Despite being classed as highly degraded, the remaining patches of riparian habitat retain reasonable and important ecological value due to the presence of protected plant species but also because of the valuable functions offered by riparian systems (e.g. controlling and regulating hydrological processes, reducing impacts such as erosion and sedimentation of rivers, water quality purification, maintenance of ecological corridors, etc.). Therefore it is important that any future development plans for the site make provision to maintain and restore the ecological integrity of the remaining riparian habitat. The following recommendations are therefore suggested for the riparian areas situated within the Watson Highway and Inyaninga properties:

- **Alien plant eradication** – Although alien plant eradication efforts have already commenced on-site, it will be important to continue the eradication across the site, particularly along the Hlawe River. It will also be useful to engage with neighbouring land owners regarding upstream/downstream alien plant issues to ensure that the efforts on site are not in vain.
- **Indigenous plant revegetation** – It will be important that alien eradication programmes include revegetation with suitable indigenous plants. This is crucial to ensure that the rehabilitated areas are properly vegetated in order to limit any further alien plant encroachment, as well as to improve local biodiversity and ecological processes. In doing so it will be useful to select plant species of both indigenous species already occurring on-site and species which could be expected to occur within the riparian areas that could have been lost due to the site’s particular disturbance history.

- **Ecological buffers** – The vegetation should be buffered to a standard of at least 40 metres in order to protect these areas from impacts arising from adjacent land-use pressures. The appropriate buffer areas are shown in Appendix 2 for the study area.

Maintaining ecological corridors is a vital step to promoting ecological connectivity in the landscape. The condition of available habitats may be greatly improved by adopting standard, best management practice, i.e. restoring and rehabilitating habitats to an improved level of functionality and ensuring sufficient buffering to protect the future integrity of restored riparian habitats. This in turn will promote biodiversity and productivity for fauna and flora that may inhabit the indigenous vegetation thus creating viable ecological corridors. However, such efforts would require an investment in rehabilitation into the future, and institutional arrangements would need to be put in place to ensure that the programme has a long-term management objective.

It is also worth mentioning that the study area supports wetland habitat. These wetland areas are essentially extensions to the woody riparian habitats and are therefore fundamental for supporting the principle of ecological connectivity. Thus it will be important that these wetlands areas and their required buffers are integrated into the overall planning and management of potential future developments. This will help to facilitate and improve the longitudinal connection of habitats in the landscape therefore protecting natural through-flow processes, e.g. sedimentation, water flows, etc. Furthermore, given the local development context (notably the development of King Shaka International airport), and consequently the projected developments that can be expected in response to recent developments, it will be useful, from an ecological perspective, to ensure that habitat corridors and buffers are maintained on a larger scale. Therefore it is important that best attempts are made to connect habitats across catchments boundaries in an attempt to restore vegetation back to its reference state. This would require the rehabilitation of grassland habitat to create natural areas that aid latitudinal connectivity, i.e. linking riparian and wetland habitats in neighbouring catchments. Effectively this would promote a much more rigorous ecological landscape that allows not only for a connection of vital processes but also improving species diversity with viable population dynamics.

5. CONCLUSION

Although the natural vegetation of the uShukela property is considered to be heavily degraded, the regional pressures and limited remnant areas of this habitat necessitate the importance of incorporating a detailed rehabilitation programme with any proposed development plans in future. The rehabilitation programme should include both alien plant eradication and indigenous planting, which should be defined according to habitat type and regional expectations. Rehabilitation efforts should also focus on the natural habitat areas that have been mapped, and based on the recommendations reported herein. Furthermore and to safeguard the riparian habitats from future development pressures, as well as to reinforce the results from rehabilitation/revegetation programmes, it will be important to ensure that adequate buffering is put in place.

6. ACKNOWLEDGMENTS

David Styles is acknowledged for his input to this study and particularly for his plant species identifications.

7. REFERENCES

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Appendix 1: Selection of photographs taken during the site visit, 19 March, 2010

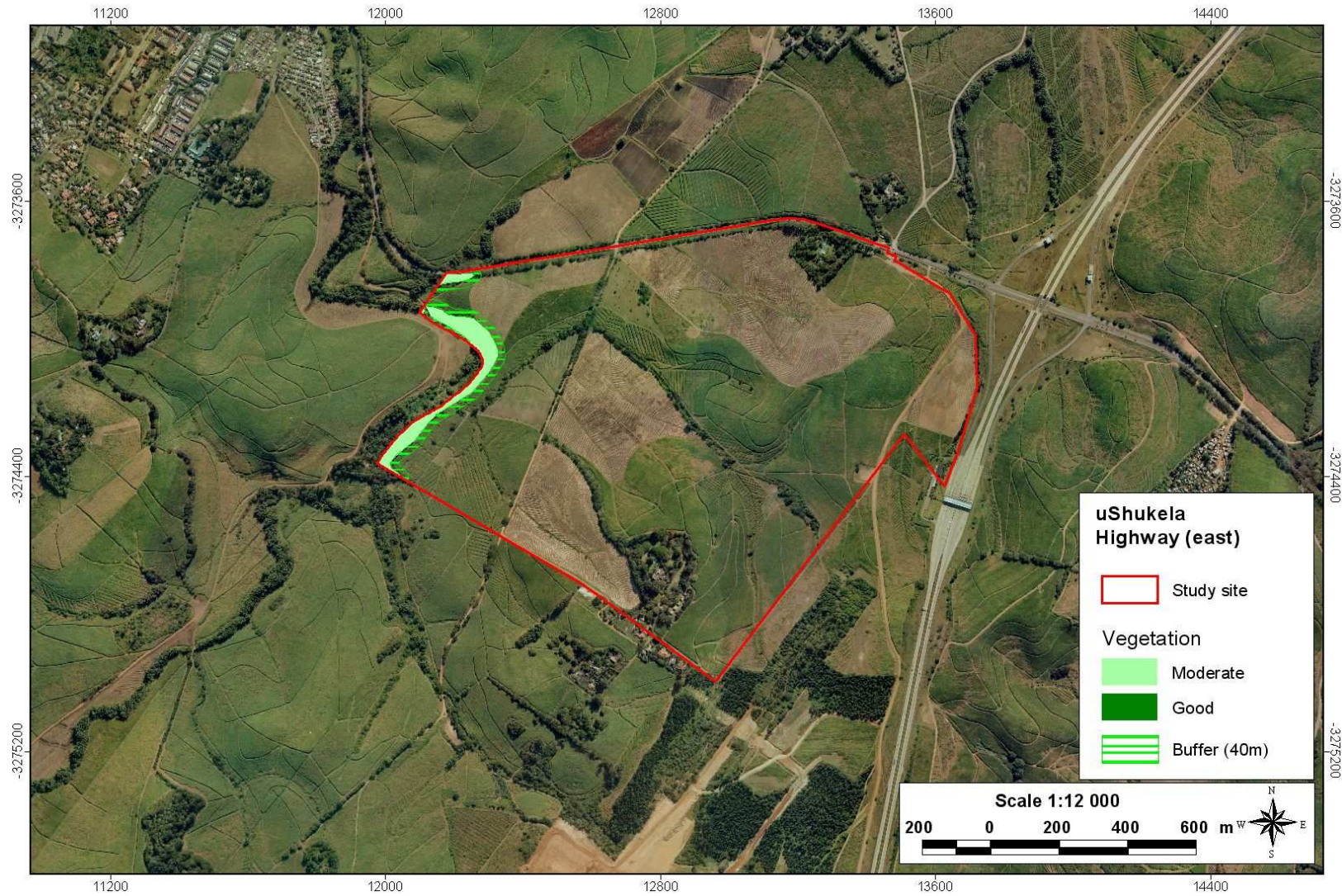
Photo 1: Typical land cover situation for the uShukela Highway property where the landscape is dominated by sugarcane and the natural vegetation is restricted to a few, isolated riparian strips.



Photo 2: Example of the natural vegetation found along the Hlawe River, a composite of indigenous trees and herbaceous plants and a high density of alien invasive plants.



Appendix 2: Distribution of natural habitat with recommended buffers for the eastern portion of the uShukela Highway property



Appendix 3: List of indigenous and alien flora located within the study area

Indigenous species		Exotic species
Trees	Herbaceous plants	
<i>Acacia robusta</i>	<i>Asparagus falcatus</i>	<i>Anredera cordifolia</i>
<i>Apodytes dimidiata</i>	<i>Asystasia gangetica</i>	<i>Ageratum conzyoides</i>
<i>Barringtonia racemosa</i>	<i>Aneilema aquinoctiale</i>	<i>Ageratum houstonianum</i>
<i>Bridelia micrantha</i>	<i>Berkheya bipinnatifida</i>	<i>Arundo donax</i>
<i>Celtis africana</i>	<i>Cissus fragilis</i>	<i>Bauhinia sp.</i>
<i>Clerodendrum glabrum</i>	<i>Commelina africana</i>	<i>Bidens sp.</i>
<i>Crotalaria capensis</i>	<i>Commelina benghalensis</i>	<i>Bougainvillea sp.</i>
<i>Deinbollia oblongifolia</i>	<i>Commelina erecta</i>	<i>Canna indica</i>
<i>Desmodium incanum</i>	<i>Cynanchum schistoglossum</i>	<i>Cestrum laevigatum</i>
<i>Dicliptera heterostegia</i>	<i>Dalechampia</i>	<i>Chromolaena odorata</i>
<i>Dovyais rhamnoides</i>	<i>Ipomea ficifolia</i>	<i>Coix lacryma-jobii</i>
<i>Ficus lutea</i>	<i>Hewittea malabarica</i>	<i>Colocasia sp.</i>
<i>Millettia grandis</i>	<i>Ipomea cairica</i>	<i>Delonix regia</i>
<i>Raphia australis (planted)</i>	<i>Laportea peduncularis</i>	<i>Eucalyptus spp.</i>
<i>Rauvolfia caffra</i>	<i>Pupalia lappacea</i>	<i>Euphorbia</i>
<i>Rhinacanthus gracilis</i>	<i>Melianth... composite</i>	<i>Ipomea purpurea</i>
<i>Rhus chirindensis</i>	<i>Momordica balsamica</i>	<i>Lantana camara</i>
<i>Sesbania sesban</i>	<i>Neonotonia wightii</i>	<i>Mangifera indica</i>
<i>Sphagneticola trilobata</i>	<i>Rhinacanthus gracilis</i>	<i>Melanthera scandens</i>
<i>Syzygium cordatum</i>	<i>Asparagus falcatus</i>	<i>Melia azedarach</i>
<i>Trema orientalis</i>	<i>Asystasia gangetica</i>	<i>Morus alba</i>
<i>Trichilia dregeana</i>		<i>Passiflora suberosa</i>
<i>Trimeria grandifolia</i>		<i>Passiflora subpeltata</i>
		<i>Pennisetum purpureum</i>
		<i>Psidium x durbanensis</i>
		<i>Psidium guajava</i>
		<i>Ricinus communis</i>
		<i>Rivina humilis</i>
		<i>Schinus terebinthifolius</i>
		<i>Senna sp.</i>
		<i>Solanum mauritianum</i>
		<i>Spathodea campanulata</i>
		<i>Syzygium cumini</i>
		<i>Thevetia peruviana</i>

Appendix 17: Specialist Avifauna Assessment for the Proposed uShukela Highway Business and Office Park Development

**Specialist Avifauna Assessment for the Proposed Ushukela
Highway Business and Office Park Development**

Performed for Kerry Seppings Environmental Specialists cc



Final Report

Prepared by James Harvey

September 2011

DECLARATION OF INDEPENDENCE BY THE SPECIALIST CONSULTANT

<u>Biodiversity Specialist</u>			
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I, James Harvey declare that I

- am an independent specialist consultant in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2010;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- declare that there are no circumstances that may compromise my objectivity in performing such work;
- have appropriate expertise in conducting biodiversity assessments;
- will provide the competent authority with access to all information at my disposal regarding this application, whether such information is favourable to the applicant or not;
- declare that all the particulars furnished by me in this form are true and correct;
- realise that a false declaration is an offence in terms of regulation 71 of the EIA Regulations, 2010 and is punishable in terms of section 24F of the National Environmental Management Act, 1998 (Act 107 of 1998); and
- will comply with all the requirements as indicated in the National Environmental Management Act, 1998 (Act 107 of 1998) and Environmental Impact Assessment Regulations, 2010.



Signature of the specialist consultant

James Harvey
Name of specialist consultant

1 September 2011
Date

James Harvey
Ecological Consultant

01/09/2011

EXPERTISE

James Harvey has twelve years experience with biodiversity-related work and six years experience in ecological consulting in sub-Saharan Africa. He is experienced and knowledgeable concerning species identification, ecology, conservation issues and methods for surveying vertebrate fauna, and has performed avifaunal work widely in KwaZulu-Natal (see profile in Appendix 2).

1. INTRODUCTION

Kerry Seppings Environmental Specialists cc have been appointed to undertake the environmental investigations associated with the proposed development of uShukela Highway Business and Office Park, immediately north of Dube Tradeport and King Shaka International Airport. As part of this process, James Harvey was appointed to perform a specialist assessment of the avifauna occurring on the property.

The objectives of the assessment were:

- Assess and describe the avifauna associated with the study area, with particular emphasis on rare and threatened species;
- Identify potential impacts of the proposed development on avifauna, and
- provide comment and recommendations concerning the impact of the proposed development on the avifauna within the study area.

2. METHODS

2.1 Survey Methods

The following methods were used to assess the fauna of the study area:

- A single site visit was undertaken on 14th June 2011. The purpose of this survey was to evaluate the diversity and suitability of habitats present within the study area for supporting various avifaunal species, and to perform an initial baseline survey of the avifaunal communities present on site.
- A review of the literature, databases and other available information was performed to supplement fieldwork findings. A good deal of data is available for the area, as a result of detailed surveys performed a) for the environmental impact assessment report for the Dube Tradeport (Piper 2006) and b) from focussed atlassing performed as part of the ongoing South African Bird Atlassing Project 2 (SABAP2) (sabap2.adu.org.za). SABAP2 atlassing is performed at the pentad resolution; the study site falls into two pentads - 2935S_3105E and 2930S_3105E. For the purposes of this study, bird data from both these pentads was used (this is an area of roughly 18km by 8km, extending from the Umdloti River in the south to just north of Dudley Pringle Dam in the north)
- All rare and threatened species occurring or potentially occurring were identified (see next section) and the importance of the site for these species was evaluated.

Limitations and assumptions

1) The purpose of the field assessment was not to perform a complete avifaunal species inventory. This would require multiple trips to the site, given that certain birds are

- cryptic, and not easily detected,
- summer migrants to South Africa and therefore absent from the study area at the time of the visit, and
- highly mobile and often transitory in their use of any single location.

However, in this case, it was anticipated that a large proportion of the species present would be detected and, if species are not detected, an evaluation of their likelihood of occurrence could be made, based on the type and condition of habitats present, known historical distribution, and the availability of additional datasets described above.

2) All conclusions and recommendations made are made solely in terms of their relevance to avifauna; the importance and requirements of other faunal and floral groups on site has not been considered here

2.2 Rare and Threatened Species

Using available information, all species considered of conservation importance that could occur on site were identified and are discussed. These are divided into two categories:

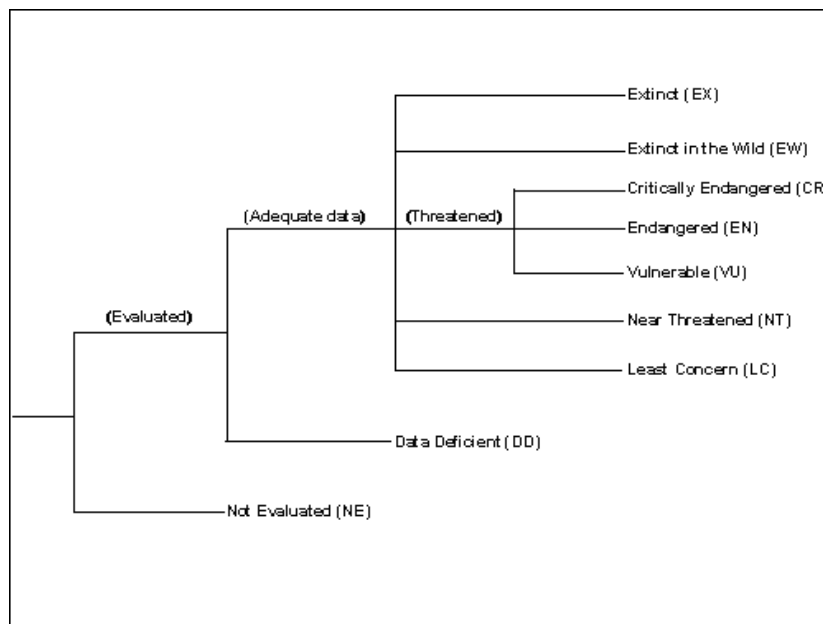
1) Red Data Species: Species that have been classified as under threat or potentially under threat, according to the International Union for the Conservation of Nature (IUCN) Redlisting system (See Box 1 and definitions below). For the most part, these are based on published Red Data Books; in the case of birds, the latest national Red Data classification is provided by Barnes (2000).

2) Other notable species: These species have not been classified as Threatened or Near Threatened according published Red Data Books, but are considered notable for various reasons:

- Naturally rare
- Localised distributions
- Specialised habitat requirements
- May be close to threatened and their Red Data status could be re-evaluated in a forthcoming conservation assessment of the fauna group

Box 1: The Red List and Red Data Species.

The Red List and Red Data species system is an approach developed by the International Union for the Conservation of Nature (IUCN) for evaluating the conservation status of species and in particular for identifying and documenting those species most in need of conservation attention (IUCN 2008). In this system, species are evaluated against a series of objective criteria (available at iucn.org), and based on those criteria are placed in one of eight categories (see below). Species that fall within the Threatened and Near Threatened categories are known as Redlisted or Red Data Species.



Structure of IUCN Categories (from iucn.org)

IUCN Categories

Extinct – there is no reasonable doubt that the last individual of the species has died

Extinct in the Wild – the species no longer occurs in the wild, and is only found in cultivation or in captivity

Critically Endangered – the species is considered to be facing an extremely high risk of extinction in the wild, based on IUCN criteria

Endangered – the species is considered to be facing a very high risk of extinction in the wild, based on IUCN criteria

Vulnerable – the species is considered to be facing a high risk of extinction in the wild, based on IUCN criteria

Near Threatened – when evaluated against IUCN criteria, does not qualify for a Threatened category but is close to qualifying for or is likely to qualify in one of those categories in the near future

Least Concern – when evaluated against IUCN criteria, does not qualify for any category as Threatened or Near Threatened. Widespread and abundant species fall in this category

Data Deficient – there is inadequate information regarding the species' population size, distribution or threats for an assessment to be made

3. RESULTS

3.1 Site Characteristics and Habitat Diversity

The project area is situated immediately to the north of the King Shaka International Airport, and to the east of the town of Tongaat (Figure 1). The uShukela Drive (formerly Watson Highway) forms the northern boundary of the site. It is approximately 137ha in extent and ranges between 30 -90masl. The topography is undulating with a number of river valleys draining north into the Hlawe River, a tributary of the Tongati River. Although the Hlawe River does not fall within the development footprint, it is situated immediately adjacent to the footprint, may be of importance from an avifaunal perspective and may potentially be impacted on by the proposed development – for these reasons, it is also considered in this study. From an avifaunal perspective, the following habitats are available:

Sugarcane – the large majority of the site is covered with commercial sugarcane (Figures 1 and 2).

Riparian forest and thicket – patches of riparian forest and thicket occur along the Hlawe River and some portions of tributaries. The vegetation associated with the Hlawe River is fairly disturbed and has a significant alien plant component, including species such as *Schinus teribinthifolius*, *Bambusia balcooa* and *Melia azedarach* (Figure 3). The riparian forest along sections of the tributary of Hlawe River is extremely restricted, being less than 20m wide in parts (Figure 4) and having been removed altogether in other sections.

Aquatic habitats – the Hlawe River provides rocky, riverine aquatic habitat, however, this is shallow and seldom more than a few metres wide (Figure 5). Some emergent vegetation and wetland habitat was seen along the eastern tributary (Figure 6)

Grassland – the only grassland available on site is a ca. 2ha patch between the brick road and sugarcane fields, immediately south of the uShukela Drive (formerly Watson Highway) (Figure 7).

Planted trees – congregations of planted trees along some of the roads and around buildings on site provide additional ‘treed habitat’.

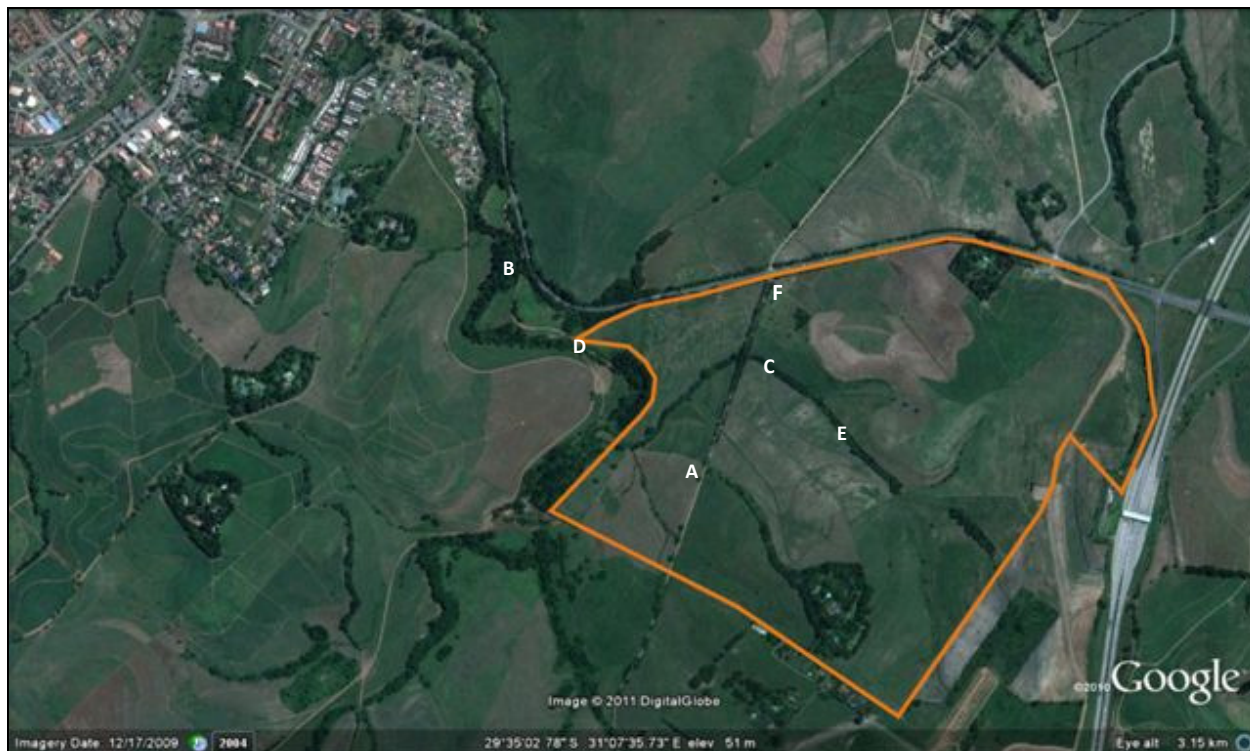


Figure 1. Aerial view showing study area (property outlined in orange). Points A-F corresponds to photo points below.



Figure 2. Looking west from Point A, showing the predominant landcover of the site, sugarcane fields, with fragmented riparian vegetation along the drainage line in the midground and riparian vegetation along the Hlawe River in the distance.



Figure 3. Looking West from Point B, showing riparian vegetation along the Hlawe River. This vegetation consists of a mix of indigenous and exotic vegetation, with alien *Solanum mauritanum* and *Eucalyptus* visible here.



Figure 4. Looking north-east from Point C, showing a narrow ribbon of riparian vegetation along a tributary of the Hlawe River, surrounded by sugarcane.

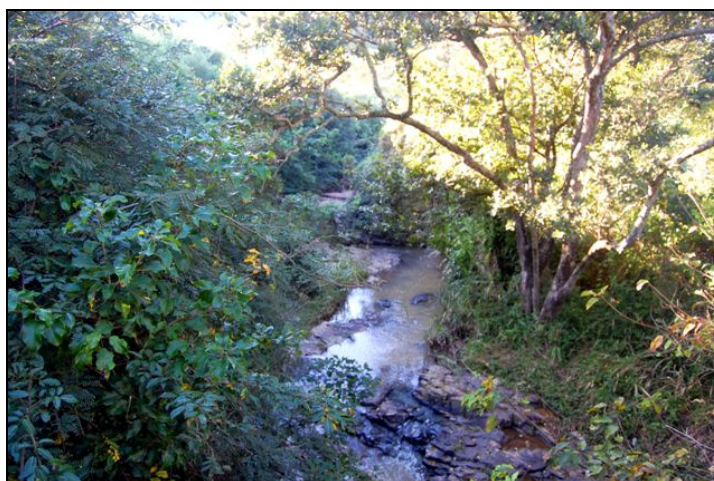


Figure 5. Looking east from Point D, showing aquatic habitat along the Hlawe River.



Figure 6. Looking north from Point E, showing *Phragmites* reed-dominated wetland along a tributary of the Hlawe River.



Figure 7. Looking east from Point F, showing a 2ha patch of grassland, the only such habitat on the property, surrounded by sugarcane.

3.2 Avifauna Diversity and Composition

A total of 214 bird species have been recorded from the area, based on 33 previous surveys (as defined as the pentads 2935S_3105E and 2930S_3105E)(sabap2.adu.org.za)(Appendix 1). During the field survey, 52 species were recorded on site, however, it is expected that the site will have 90-100 species occurring with some regularity. Those likely to occur are indicated in Appendix 1.

The vast majority of species are confined to those remaining areas of natural and semi-natural vegetation, which are found along the Hlawe River, tributaries of the Hlawe River and, to a lesser degree, in treed areas along roads and around existing buildings. The sugarcane fields provide habitat for very few species, and those few that use them are widespread, adaptable species.

The majority of those species found in the remaining natural habitats are widespread generalist species, capable of utilising a variety of woody habitats. Few species largely restricted to forest were present (e.g. Olive and Grey Sunbirds, White-eared Barbet) and many forest specialists that are fairly typical of forests in the broader area (e.g. Gorgeous Bush-Shrike, Square-tailed Drongo, Ashy Flycatcher, Yellow-bellied Greenbul) were not recorded. While some of these species may have been missed due to the rapid nature and season of the survey, it appears that the limited extent and degraded nature of the forest patches on site has resulted in many forest species being rare or absent.

The grassland on site is too small to support most grassland specialists; the only grassland bird recorded in this area during the site visit was Yellow-throated Longclaw.

3.2 Rare and threatened species

Several Red Data species are known to occur in the vicinity of the study area (Table 1). Eleven of these were recorded on the adjoining property, prior to construction of King Shaka International Airport (Piper 2006). However, the majority of these will not occur or are highly unlikely to occur on site – most of these require fairly extensive forest, grassland or aquatic habitats, habitat types which are either too limited, disturbed or completely lacking on site. Only four species, all currently listed as Near Threatened, may use the site with any regularity – these are discussed below:

Woolly-necked Stork – typically occurs close to aquatic habitats, such as rivers and wetlands, but can use a variety of landscapes. It has been recorded regularly on the adjacent airport property and has bred there (Piper 2006). Although currently list as Near Threatened, it is becoming more common and widespread in South Africa, and is adaptable to human-influenced environments. It is expected to occur widely on the property, particularly around the Hlawe River.

Lanner Falcon - found widely in South Africa, primarily in open areas. Although it is widespread, it appears to be undergoing declines in parts of its range and may be susceptible to agrochemicals. It was recorded regularly on the adjacent airport property and elsewhere in pentad 2935S_3105E, and is expected to do so on site, however it is unlikely to breed here as there is a lack of optimal breeding habitat.

Half-collared Kingfisher – restricted primarily to small, perennial rivers with fringing vegetation, and threatened by pollution, siltation and habitat loss, particularly along the KwaZulu-Natal coast (Hockey *et al.* 2005). There is a recent record of this species from pentad 2930S_3105E, and on site, the Hlawe River may support this bird.

Black-throated Wattle-eye – in South Africa, it is restricted to coastal forest, where it particularly occurs near streams with dense, overhanging vegetation. It is threatened by habitat loss, particularly along the central KwaZulu-Natal coast. There was a single record from the northern edge of the adjacent airport site during Piper's study (2006) and it has been regularly recorded in pentad 2935S_3105E. It is highly

likely to occur and possibly breed on site, where it would be restricted to dense woody vegetation along the Hlawe River and its tributaries.

One non-Redlisted species that is uncommon in South Africa, Palmnut Vulture, was recorded, with a pair observed in vegetation along the Hlawe River. In South Africa, it is largely confined to northern coastal KwaZulu-Natal, primarily at locations where the Kosi Palm *Raphia australis*, an important food source, has been established. However, the KZN population is peripheral to a large population occurring extralimitally through much of central and western Africa, and the local population is not considered of conservation significance. On site it would be confined to the vicinity of the Hlawe River.

Table 1. Red Data species known to occur in the region and their status on the study site.

(Note: * Denotes species previously recorded on the adjacent airport property by Piper (2006).

Common Name	Scientific Name	Red Data Status Barnes (2000)	Expected status on site
Black-rumped Buttonquail	<i>Turnix nanus</i>	Endangered*	Will not occur – insufficient habitat available
Spotted Ground-thrush	<i>Zoothera guttata</i>	Endangered	Will not occur – habitat currently too limited and disturbed
Pink-backed Pelican	<i>Pelecanus rufescens</i>	Vulnerable	Will not occur – no suitable habitat
Southern Bald Ibis	<i>Geronticus calvus</i>	Vulnerable	May occur irregularly, will not breed
Martial Eagle	<i>Polemaetus bellicosus</i>	Vulnerable*	May occur irregularly, unlikely to breed
African Marsh Harrier	<i>Circus ranivorus</i>	Vulnerable*	Will not occur – no suitable habitat
Grey Crowned Crane	<i>Balearica regulorum</i>	Vulnerable	Will not occur – no suitable habitat
Corncrake	<i>Crex crex</i>	Vulnerable*	Will not occur – insufficient habitat available
African Finfoot	<i>Podica senegalensis</i>	Vulnerable	Will not occur – no suitable habitat
African Grass-Owl	<i>Tyto capensis</i>	Vulnerable*	Will not occur – no suitable habitat
Mangrove Kingfisher	<i>Halcyon senegaloides</i>	Vulnerable	Unlikely, but may use forest patches during migration
Woolly-necked Stork	<i>Ciconia episcopus</i>	Near Threatened*	Likely to occur regularly
African Crowned Eagle	<i>Stephanoaetus coronatus</i>	Near Threatened	May occur irregularly
Lanner Falcon	<i>Falco biarmicus</i>	Near Threatened*	Likely to occur
Pallid Harrier	<i>Circus macrourus</i>	Near Threatened*	Will not occur – no suitable habitat
Black-bellied Bustard	<i>Lissotis melanogaster</i>	Near Threatened*	Will not occur – insufficient habitat available
Black Coucal	<i>Centropus grilli</i>	Near Threatened*	Will not occur – no suitable habitat
Half-collared Kingfisher	<i>Alcedo semitorquata</i>	Near Threatened	May occur on the Hlawe River
Black-throated Wattle-eye	<i>Platysteira peltata</i>	Near Threatened*	May occur in riparian forest along Hlawe River and tributary

4. DISCUSSION AND IMPLICATIONS OF THE PROPOSED DEVELOPMENT

4.1 Importance of the Site for Avifauna conservation

Overall, the site is of relatively low value for avifauna, given that much of it is covered by sugarcane fields which are of virtually no value. The natural and semi-natural vegetation along the Hlawe River and its tributaries is the highest value portion of the property and is currently considered of medium value, given that it supports a reasonable avifaunal community including some forest species and is likely to support a small number of Redlisted species.

4.2 Proposed Development and Potential Impacts

The proposed development footprint as shown in the final Scoping Report indicates that an open space system will be maintained that incorporates all drainage lines and links the Hlawe River and its tributaries to the east. The remainder of the property will be developed. The loss of the grassland patch is not considered a problem as it is too small and somewhat isolated from other areas of natural habitat to be of much avifaunal importance. As already explained, this would maintain the most important areas for birds on site, whilst utilising those areas considered to be of very low value. Potential negative impacts on these higher value areas could include:

- Further loss and degradation of remaining natural vegetation, through the intrusion of the development into these area, if appropriate buffers are not set and adhered to
- Changes in hydrology of aquatic systems as a result of increased runoff from impervious surfaces in the surrounding catchment
- Increased sedimentation of aquatic systems during construction and as a result of larger and more regular storm flows, caused by increased impervious surfaces
- Increased infestation of alien invasive plants in natural habitats, as a result of disturbance associated with construction and operation of the development
- Degradation of aquatic systems through release of effluents into the system during the operation phase

Assuming that these impacts are actively mitigated against, the overall effect on the local avifauna should be minimal.

5. CONCLUSIONS AND RECOMMENDATIONS

This assessment determined that the majority of the site is of low avifaunal value given its transformed and degraded nature. There are some areas that provide some value for avifauna and may provide habitat for a small number of Redlisted species, however, the footprint of the proposed development will largely avoid these. Overall, the effect of this proposed development on the local avifauna can be

kept to acceptably low levels, and the avifaunal value of the site could even be improved, if appropriate steps are taken. The following recommendations are made:

- Areas of natural vegetation along the Hlawe River and its tributaries should be kept undeveloped and managed for their biodiversity (and other) values. Appropriate buffers along these systems must be set and strictly adhered to.
- No details on the proposed widths of buffers have been provided to the specialist, however, examination of the layout in Figure 2 of the Scoping Report suggests that at points along the main eastern tributary of the Hlawe River (vicinity of C and E IN Figure 1 of this report), the proposed buffers may be 25m or less; it is important that the buffers are of sufficient size both to perform their core functions (e.g. sediment and nutrient removal, flow attenuation etc) and protect (and possibly allow for expansion of) existing avifaunal habitat. Although no single figure exists for buffers relating to bird fauna, increased buffer width is known to be an important factor for supporting forest specialist species (Lees & Perez 2008), and, where possible, the larger the area that can be given to these buffers the better.
- An appropriate stormwater management plan must be implemented to prevent changes to the hydrology of the receiving aquatic ecosystems. Included in this is that rehabilitation of the buffers will be required (e.g. re-establishment of vegetation) in order to prevent degradation of these areas by increased stormflow. It is important that the drainage lines are protected from increased flows and sediment inputs during the construction phase even if the buffers have not yet been fully rehabilitated. As such, it is recommended that sugarcane currently growing in the buffers is cordoned off and not harvested prior to or during the construction phase, so as to provide a vegetated buffer. Once other storm management systems are in place, the sugarcane can be removed and rehabilitation can take place.
- During construction, all efforts must be made to minimise disturbance to these open areas - no waste of any kind must be allowed to enter the open areas during construction and erosion prevention measures must be put in place to prevent sediment from entering the aquatic ecosystems
- There is opportunity to improve the avifaunal value of the open areas by encouraging the expansion of woody riparian vegetation. As indicated in Figure 1, the riparian vegetation component along the drainage line in the vicinity of C and E is particularly narrow, and has been completely removed between this area and the upper portion of the drainage line further east. It would be beneficial to allow this woody vegetation to expand away from the drainage line and re-establish in the gap between the two areas of woody vegetation along this drainage line, either through natural processes or preferably with supplementary planting of appropriate indigenous trees and grasses. Any such programme should be performed under the supervision of a local botanist

- Although the grassland patch is not currently considered of value specifically for grassland-specialist birds, it could be linked to the riparian area ca 60m south of it, as this area does have established natural vegetation which would contribute to the rehabilitation and general ecological functioning of the open area system.
- An alien plant control programme (including monitoring) should be designed and implemented for the open area system to prevent the disturbance associated with construction from encouraging the proliferation of alien plants, and to remove the alien vegetation currently on site
- Any alien plant clearance programmes should rely strongly on mechanical removal; if the use of chemicals is necessary, the chemicals used must be confirmed to have no negative effects of any indigenous biodiversity by an appropriate expert prior to their use.
- Indigenous plants (preferably locally indigenous) should be used as far as possible in the landscaping of the developed portions of the property

6. REFERENCES

- Barnes, K.N. (Ed.). 2000. The Eskom Red Data Book of birds in South Africa, Lesotho and Swaziland. BirdLife South Africa, Johannesburg.
- Hockey, P.A.R., W.R.J. Dean & P.G. Ryan. (Eds.). 2005. Roberts Birds of Southern Africa. Seventh Edition. The Trustees of the John Voelcker Book Fund, Cape Town.
- Lees, A.C. & C.A. Peres. 2008. Conservation value of remnant riparian forest of varying quality for Amazonian birds and mammals. *Conservation Biology* 22(2): 439-449.
- Piper, S.E. 2006. Avian biodiversity. Final report. Institute for Natural Resources, University of KwaZulu-Natal; Pietermaritzburg. Pp. 1 – 62. (Unpublished report).
- South African Bird Atlas Project 2. Available at sabap2.adu.org.za. Accessed on 21 June 2011.

APPENDIX 1. CHECKLIST OF ALL BIRD SPECIES RECORDED IN PENTADS 2935S_3105E AND 2930S_3105E AS OF JUNE 2011 (SABAP2.ADU.ORG.ZA), WITH AN INDICATION OF THE STATUS ON SITE. SPECIES RECORDED DURING THE SITE VISIT ARE IN BOLD.

Common name	Scientific name	Status on the property
Pink-backed Pelican	<i>Pelecanus rufescens</i>	Unlikely
White-breasted Cormorant	<i>Phalacrocorax carbo</i>	Unlikely
Reed Cormorant	<i>Phalacrocorax africanus</i>	Unlikely
African Darter	<i>Anhinga rufa</i>	Unlikely
Grey Heron	<i>Ardea cinerea</i>	Possible
Black-headed Heron	<i>Ardea melanocephala</i>	Likely
Goliath Heron	<i>Ardea goliath</i>	Unlikely
Purple Heron	<i>Ardea purpurea</i>	Unlikely
Little Egret	<i>Egretta garzetta</i>	Unlikely
Cattle Egret	<i>Bubulcus ibis</i>	Likely
Green-backed Heron	<i>Butorides striata</i>	Unlikely
Little Bittern	<i>Ixobrychus minutus</i>	Unlikely
Hamerkop Hamerkop	<i>Scopus umbretta</i>	Likely
African Openbill	<i>Anastomus lamelligerus</i>	Unlikely
Woolly-necked Stork	<i>Ciconia episcopus</i>	Likely
African Sacred Ibis	<i>Threskiornis aethiopicus</i>	Possible
Hadedda Ibis	<i>Bostrychia hagedash</i>	Confirmed
African Spoonbill	<i>Platalea alba</i>	Unlikely
Spur-winged Goose	<i>Plectropterus gambensis</i>	Unlikely
Egyptian Goose	<i>Alopochen aegyptiacus</i>	Confirmed
African Black Duck	<i>Anas sparsa</i>	Possible
Yellow-billed Duck	<i>Anas undulata</i>	Unlikely
Red-billed Teal	<i>Anas erythrorhyncha</i>	Unlikely
White-faced Duck	<i>Dendrocygna viduata</i>	Unlikely
White-backed Duck	<i>Thalassornis leuconotus</i>	Unlikely
Palm-nut Vulture	<i>Gypohierax angolensis</i>	Confirmed
Peregrine Falcon	<i>Falco peregrinus</i>	Unlikely
Lanner Falcon	<i>Falco biarmicus</i>	Likely
Yellow-billed Kite	<i>Milvus aegyptius</i>	Likely
Black-shouldered Kite	<i>Elanus caeruleus</i>	Possible

Long-crested Eagle	<i>Lophaetus occipitalis</i>	Likely
Martial Eagle	<i>Polemaetus bellicosus</i>	Possible
African Crowned Eagle	<i>Stephanoaetus coronatus</i>	Possible
Black-chested Snake-Eagle	<i>Circaetus pectoralis</i>	Unlikely
African Fish-Eagle	<i>Haliaeetus vocifer</i>	Unlikely
Jackal Buzzard	<i>Buteo rufofuscus</i>	Unlikely
Steppe Buzzard	<i>Buteo vulpinus</i>	Possible
Little Sparrowhawk	<i>Accipiter minullus</i>	Possible
Black Sparrowhawk	<i>Accipiter melanoleucus</i>	Likely
African Goshawk	<i>Accipiter tachiro</i>	Possible
Osprey Osprey	<i>Pandion haliaetus</i>	Unlikely
Natal Spurfowl	<i>Pternistis natalensis</i>	Confirmed
Common Quail	<i>Coturnix coturnix</i>	Likely
Helmeted Guineafowl	<i>Numida meleagris</i>	Possible
Crested Guineafowl	<i>Guttera edouardi</i>	Unlikely
Kurrichane Buttonquail	<i>Turnix sylvaticus</i>	Unlikely
Black Crake	<i>Amaurornis flavirostris</i>	Unlikely
Buff-spotted Flufftail	<i>Sarothrura elegans</i>	Possible
Common Moorhen	<i>Gallinula chloropus</i>	Unlikely
Grey Crowned Crane	<i>Balearica regulorum</i>	Unlikely
African Jacana	<i>Actophilornis africanus</i>	Unlikely
White-fronted Plover	<i>Charadrius marginatus</i>	Unlikely
Kittlitz's Plover	<i>Charadrius pecuarius</i>	Unlikely
Three-banded Plover	<i>Charadrius tricollaris</i>	Possible
Blacksmith Lapwing	<i>Vanellus armatus</i>	Possible
Little Stint	<i>Calidris minuta</i>	Unlikely
Ruff Ruff	<i>Philomachus pugnax</i>	Unlikely
Terek Sandpiper	<i>Xenus cinereus</i>	Unlikely
Common Sandpiper	<i>Actitis hypoleucos</i>	Possible
Common Greenshank	<i>Tringa nebularia</i>	Unlikely
Wood Sandpiper	<i>Tringa glareola</i>	Unlikely
Grey-headed Gull	<i>Larus cirrocephalus</i>	Unlikely
Common Tern	<i>Sterna hirundo</i>	Unlikely
Sandwich Tern	<i>Sterna sandvicensis</i>	Unlikely
Swift Tern	<i>Sterna bergii</i>	Unlikely
Little Tern	<i>Sterna albifrons</i>	Unlikely
Rock Dove	<i>Columba livia</i>	Possible

Red-eyed Dove	<i>Streptopelia semitorquata</i>	Confirmed
Cape Turtle-Dove	<i>Streptopelia capicola</i>	Unlikely
Laughing Dove	<i>Streptopelia senegalensis</i>	Likely
Namaqua Dove	<i>Oena capensis</i>	Unlikely
Tambourine Dove	<i>Turtur tympanistria</i>	Confirmed
African Green-Pigeon	<i>Treron calvus</i>	Possible
Purple-crested Turaco	<i>Gallirex porphyreolophus</i>	Confirmed
Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	Likely
Diderick Cuckoo	<i>Chrysococcyx caprius</i>	Likely
Burchell's Coucal	<i>Centropus burchellii</i>	Confirmed
Spotted Eagle-Owl	<i>Bubo africanus</i>	Possible
Fiery-necked Nightjar	<i>Caprimulgus pectoralis</i>	Possible
African Black Swift	<i>Apus barbatus</i>	Possible
White-rumped Swift	<i>Apus caffer</i>	Likely
Little Swift	<i>Apus affinis</i>	Likely
African Palm-Swift	<i>Cypsiurus parvus</i>	Likely
Speckled Mousebird	<i>Colius striatus</i>	Confirmed
Red-faced Mousebird	<i>Urocolius indicus</i>	Unlikely
Pied Kingfisher	<i>Ceryle rudis</i>	Possible
Half-collared Kingfisher	<i>Alcedo semitorquata</i>	Possible
Malachite Kingfisher	<i>Alcedo cristata</i>	Possible
African Pygmy-Kingfisher	<i>Ispidina picta</i>	Possible
Brown-hooded Kingfisher	<i>Halcyon albiventris</i>	Confirmed
Blue-cheeked Bee-eater	<i>Merops persicus</i>	Unlikely
Little Bee-eater	<i>Merops pusillus</i>	Confirmed
African Hoopoe	<i>Upupa africana</i>	Possible
Green Wood-Hoopoe	<i>Phoeniculus purpureus</i>	Possible
Trumpeter Hornbill	<i>Bycanistes bucinator</i>	Possible
Black-collared Barbet	<i>Lybius torquatus</i>	Confirmed
White-eared Barbet	<i>Stactolaema leucotis</i>	Confirmed
Red-fronted Tinkerbird	<i>Pogoniulus pusillus</i>	Possible
Yellow-rumped Tinkerbird	<i>Pogoniulus bilineatus</i>	Confirmed
Crested Barbet	<i>Trachyphonus vaillantii</i>	Confirmed
Scaly-throated Honeyguide	<i>Indicator variegatus</i>	Possible
Lesser Honeyguide	<i>Indicator minor</i>	Possible
Brown-backed Honeybird	<i>Prodotiscus regulus</i>	Possible
Golden-tailed Woodpecker	<i>Campethera abingoni</i>	Confirmed

Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	Confirmed
Red-throated Wryneck	<i>Jynx ruficollis</i>	Possible
Rufous-naped Lark	<i>Mirafra africana</i>	Possible
Barn Swallow	<i>Hirundo rustica</i>	Likely
White-throated Swallow	<i>Hirundo albigularis</i>	Possible
Wire-tailed Swallow	<i>Hirundo smithii</i>	Unlikely
Lesser Striped Swallow	<i>Hirundo abyssinica</i>	Likely
Rock Martin	<i>Hirundo fuligula</i>	Unlikely
Common House-Martin	<i>Delichon urbicum</i>	Unlikely
Brown-throated Martin	<i>Riparia paludicola</i>	Possible
Black Saw-wing	<i>Psalidoprocne holomelaena</i>	Likely
Black Cuckooshrike	<i>Campephaga flava</i>	Possible
Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	Confirmed
Square-tailed Drongo	<i>Dicrurus ludwigii</i>	Possible
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	Unlikely
Black-headed Oriole	<i>Oriolus larvatus</i>	Likely
Pied Crow	<i>Corvus albus</i>	Likely
White-necked Raven	<i>Corvus albicollis</i>	Possible
Southern Black Tit	<i>Parus niger</i>	Confirmed
Dark-capped Bulbul	<i>Pycnonotus tricolor</i>	Confirmed
Terrestrial Brownbul	<i>Phyllastrephus terrestris</i>	Possible
Yellow-bellied Greenbul	<i>Chlorocichla flaviventris</i>	Possible
Sombre Greenbul	<i>Andropadus importunus</i>	Confirmed
Kurrichane Thrush	<i>Turdus libonyanus</i>	Possible
Olive Thrush	<i>Turdus olivaceus</i>	Confirmed
African Stonechat	<i>Saxicola torquatus</i>	Confirmed
Red-capped Robin-Chat	<i>Cossypha natalensis</i>	Confirmed
Cape Robin-Chat	<i>Cossypha caffra</i>	Likely
White-browed Scrub-Robin	<i>Cercotrichas leucophrys</i>	Confirmed
Willow Warbler	<i>Phylloscopus trochilus</i>	Likely
Great Reed-Warbler	<i>Acrocephalus arundinaceus</i>	Unlikely
Lesser Swamp-Warbler	<i>Acrocephalus gracilirostris</i>	Possible
African Reed-Warbler	<i>Acrocephalus baeticatus</i>	Possible
Marsh Warbler	<i>Acrocephalus palustris</i>	Possible
Little Rush-Warbler	<i>Bradypterus baboecala</i>	Confirmed
Barratt's Warbler	<i>Bradypterus barratti</i>	Unlikely
Cape Grassbird	<i>Sphenoeacus afer</i>	Unlikely

Long-billed Crombec	<i>Sylvietta rufescens</i>	Unlikely
Bar-throated Apalis	<i>Apalis thoracica</i>	Likely
Yellow-breasted Apalis	<i>Apalis flavida</i>	Likely
Green-backed Camaroptera	<i>Camaroptera brachyura</i>	Confirmed
Rufous-winged Cisticola	<i>Cisticola galactotes</i>	Unlikely
Zitting Cisticola	<i>Cisticola juncidis</i>	Possible
Neddicky Neddicky	<i>Cisticola fulvicapilla</i>	Confirmed
Rattling Cisticola	<i>Cisticola chiniana</i>	Confirmed
Red-faced Cisticola	<i>Cisticola erythrops</i>	Possible
Croaking Cisticola	<i>Cisticola natalensis</i>	Possible
Lazy Cisticola	<i>Cisticola aberrans</i>	Unlikely
Tawny-flanked Prinia	<i>Prinia subflava</i>	Confirmed
Spotted Flycatcher	<i>Muscicapa striata</i>	Possible
African Dusky Flycatcher	<i>Muscicapa adusta</i>	Confirmed
Ashy Flycatcher	<i>Muscicapa caerulea</i>	Possible
Southern Black Flycatcher	<i>Melaenornis pammelaina</i>	Confirmed
Fiscal Flycatcher	<i>Sigelus silens</i>	Unlikely
Dark-capped Yellow Warbler	<i>Chloropeta natalensis</i>	Possible
Cape Batis	<i>Batis capensis</i>	Unlikely
Chinspot Batis	<i>Batis molitor</i>	Confirmed
Black-throated Wattle-eye	<i>Platysteira peltata</i>	Possible
African Paradise-Flycatcher	<i>Terpsiphone viridis</i>	Confirmed
African Pied Wagtail	<i>Motacilla aguimp</i>	Likely
Cape Wagtail	<i>Motacilla capensis</i>	Likely
African Pipit	<i>Anthus cinnamomeus</i>	Confirmed
Yellow-throated Longclaw	<i>Macronyx croceus</i>	Confirmed
Common Fiscal	<i>Lanius collaris</i>	Likely
Red-backed Shrike	<i>Lanius collurio</i>	Possible
Southern Boubou	<i>Laniarius ferrugineus</i>	Confirmed
Black-backed Puffback	<i>Dryoscopus cubla</i>	Possible
Southern Tchagra	<i>Tchagra tchagra</i>	Possible
Black-crowned Tchagra	<i>Tchagra senegalus</i>	Confirmed
Olive Bush-Shrike	<i>Telophorus olivaceus</i>	Possible
Orange-breasted Bush-Shrike	<i>Telophorus sulfureopectus</i>	Possible
Gorgeous Bush-Shrike	<i>Telophorus quadricolor</i>	Possible
Grey-headed Bush-Shrike	<i>Malaconotus blanchoti</i>	Unlikely
Common Starling	<i>Sturnus vulgaris</i>	Possible

Common Myna	<i>Acridotheres tristis</i>	Likely
Violet-backed Starling	<i>Cinnyricinclus leucogaster</i>	Possible
Cape Glossy Starling	<i>Lamprotornis nitens</i>	Possible
Black-bellied Starling	<i>Lamprotornis corruscus</i>	Confirmed
Red-winged Starling	<i>Onychognathus morio</i>	Possible
Greater Double-collared Sunbird	<i>Cinnyris afer</i>	Unlikely
White-bellied Sunbird	<i>Cinnyris talatala</i>	Confirmed
Grey Sunbird	<i>Cyanomitra veroxii</i>	Confirmed
Olive Sunbird	<i>Cyanomitra olivacea</i>	Confirmed
Collared Sunbird	<i>Hedypipna collaris</i>	Likely
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	Likely
Cape White-eye	<i>Zosterops virens</i>	Confirmed
House Sparrow	<i>Passer domesticus</i>	Likely
Dark-backed Weaver	<i>Ploceus bicolor</i>	Possible
Spectacled Weaver	<i>Ploceus ocularis</i>	Confirmed
Lesser Masked-Weaver	<i>Ploceus intermedius</i>	Unlikely
Village Weaver	<i>Ploceus cucullatus</i>	Confirmed
Cape Weaver	<i>Ploceus capensis</i>	Unlikely
Yellow Weaver	<i>Ploceus subaureus</i>	Possible
Southern Masked-Weaver	<i>Ploceus velatus</i>	Unlikely
Thick-billed Weaver	<i>Amblyospiza albifrons</i>	Confirmed
Red-billed Quelea	<i>Quelea quelea</i>	Possible
Red-headed Quelea	<i>Quelea erythrops</i>	Possible
Southern Red Bishop	<i>Euplectes orix</i>	Confirmed
Red-collared Widowbird	<i>Euplectes ardens</i>	Likely
Fan-tailed Widowbird	<i>Euplectes axillaris</i>	Confirmed
Bronze Mannikin	<i>Spermestes cucullatus</i>	Confirmed
African Firefinch	<i>Lagonosticta rubricata</i>	Confirmed
Red-billed Firefinch	<i>Lagonosticta senegala</i>	Unlikely
Orange-breasted Waxbill	<i>Amandava subflava</i>	Possible
Common Waxbill	<i>Estrilda astrild</i>	Confirmed
Pin-tailed Whydah	<i>Vidua macroura</i>	Likely
Dusky Indigobird	<i>Vidua funerea</i>	Possible
Yellow-fronted Canary	<i>Crithagra mozambicus</i>	Confirmed
Brimstone Canary	<i>Crithagra sulphuratus</i>	Likely
Southern Grey-headed Sparrow	<i>Passer diffusus</i>	Possible

APPENDIX 2. PROFILE OF SPECIALIST CONSULTANT

PROFILE

James Harvey

Ecological Researcher and Consultant

CONTACT DETAILS

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Cell 073 230 6188
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Physical/Postal Add 35 Carbis Road, Pietermaritzburg, 3201, South Africa

EDUCATION

2007 MEnvDev (Environmental Management), University of KwaZulu-Natal, Pietermaritzburg
2002 B.Sc. (Hons.) Hydrology, University of Natal, Pietermaritzburg
2001 B.Sc. Zoology and Hydrology, University of Natal, Pietermaritzburg

SKILLS AND EXPERIENCE

Twelve years of practical and theoretical experience with biodiversity issues within sub-Saharan Africa, and over six years in ecological consulting. Experienced and knowledgeable concerning species identification, ecology, conservation issues and methods for surveying in the following taxa:

- Amphibians
- Reptiles
- Birds
- Mammals

Also knowledgeable concerning fish, invertebrates and plants and broader ecological processes and functioning. Have performed ecological fieldwork in several locations in sub-Saharan Africa, including

James Harvey
Ecological Consultant

01/09/2011

South Africa, Botswana, Zimbabwe, Malawi and Democratic Republic of Congo, as well as Madagascar. In addition, have practical and theoretical experience with Integrated Environmental Management. Therefore able to perform specialist ecological assessments and detailed faunal surveys, and provide recommendations concerning priority areas and management recommendations.

Selected relevant previous and current projects and achievements include:

Commercial

- Member of a project team undertaking a biodiversity review for the proposed expansion of the Tenke Fungurume copper project, Katanga, southern Democratic Republic of Congo (2010-ongoing)
- Biodiversity assessment (mammals, birds, reptiles and amphibians) for Anglo-Ashanti in the Mongbwalu region, Orientale Province, north-eastern Democratic Republic of Congo (2010-2011)
- Baseline vertebrate fauna survey for Wildlands Conservation Trust, at the Buffelsdraai Landfill Site restoration project, Verulam (2010-2011)
- Specialist herpetological (reptiles and amphibians) assessment for the proposed Tonkolili iron ore mining project, Sierra Leone (2010)
- Specialist amphibian assessment of Adams Mission wetlands, forming part of the EIA for a proposed pipeline, south Ethekewini Municipal region, KwaZulu-Natal, South Africa (2010)
- Amphibian survey for Mondi Ltd on properties in the Mtunzini region, KwaZulu-Natal, South Africa (2010)
- Baseline faunal survey (mammals, birds, reptiles, amphibians) for Mondi Ltd on six sites of conservation importance in the Greytown and Richmond regions, KwaZulu-Natal, South Africa (2009-2010)
- Member of a project team performing a prefeasibility biodiversity assessment for Anglo Base Metals in Gamsberg, Northern Cape. Performed avifauna, reptile and amphibian surveys (2009)
- Member of a project team undertaking specialist faunal assessment for the proposed multi-circuit transmission Ariadne-Eros Eskom powerline, southern KwaZulu-Natal, South Africa (2009)
- Co-authored seven reptile family accounts and 24 genus accounts in the new South African Reptile Atlas and Red Data Book (In prep.), which will be published under the auspices of the South African National Biodiversity Institute (SANBI) (2009-2011)
- Specialist amphibian assessment of Cato Ridge wetlands, forming part of the EIA for the proposed Western Aqueduct, KwaZulu-Natal, South Africa (2009)

- Baseline faunal survey (mammals, birds, reptiles, amphibians) for Mondi Ltd on eight sites of conservation importance in the Richards Bay-Nyalazi region, KwaZulu-Natal, South Africa (2007-2009)
- Member of a project team performing a biodiversity assessment for FreePort Mining, on the Kisanfu Copper Project, Katanga, southern Democratic Republic of Congo. Responsible for reptile, amphibian and avifauna components, also performed ichthyfauna, mammal and macroinvertebrate work (2008)
- Member of a project team performing the aquatic biodiversity study for the EIA for the proposed upgrade of the Sani Pass road: Phase 2. Performed herpetofauna and ichthyfauna surveys, KwaZulu-Natal, South Africa (2008)
- Member of a project team performing a biodiversity assessment for Teal Mining, on Kalumines project, Lubumbashi, Katanga, southern Democratic Republic of Congo. Performed avifauna, ichthyfauna, mammal and macro invertebrate surveys (2008)
- Specialist assessment for the potential presence of Long-toed Tree Frog *Leptopelis xenodactylus* within the proposed Himeville-Underberg development, KwaZulu-Natal, South Africa (2008)
- Specialist faunal assessment for the proposed industrial development of Sub 592, sub 621 (of 592) of farm Vaalkop and Dadelfontein, No. 885, Ashburton, KwaZulu-Natal, South Africa (2008)
- Specialist herpetologist in multi-disciplinary ecological survey of protected areas of Botswana, focussing on Moremi Game Reserve, performed for the Botswana Department of Wildlife and National Parks. Also assisted with birds, mammals and epigaeic invertebrates (2007)
- Baseline faunal survey (mammals, birds, reptiles, amphibians) for Mondi Ltd on eight sites of conservation importance in the Melmoth-Babanango region, KwaZulu-Natal, South Africa (2006-2008)
- Ecological components of the Scoping and EIA for the proposed establishment of 22 community-owned plantations within the Mabanyeng tribal authority area, Matatiele, Eastern Cape, South Africa (2007)
- Comprehensive amphibian surveys for Hans Merenskey Timbers on their properties in the Umzimkulu region, southern KwaZulu-Natal, South Africa (2006-2007)
- Specialist amphibian study, forming part of the EIA for the proposed King Shaka International Airport and Dube Tradeport at La Mercy, KwaZulu-Natal, South Africa (2006-2007)
- Authored sections on bird and frog communities within the Greater St Lucia Wetland Park, KwaZulu-Natal, South Africa, to form components of a training manual for training local guides (2006)

- Commissioned study on the Critically Endangered Mistbelt Chirping Frog *Anhydrophryne ngongoniensis* on Sappi-owned sites, including provision of management guidelines, in southern KwaZulu-Natal, South Africa, for Sappi Forest Products (2005-2006)
- Comprehensive amphibian surveys for Hans Merenskey Timbers on their properties in the Donnybrook-Bulwer, Dargle and Weza regions, southern and central KwaZulu-Natal, South Africa (2004-2005)

Non-commercial

- Collected first-ever records of Pan Hinged Terrapin *Pelusios subniger* in KwaZulu-Natal, and third ever record in South Africa (publication in prep) (2011)
- Team leader of a survey to attempt to relocate the Cave Squeaker frog (*Arthroleptis troglodytes*), a species confined to the Chimanimani Mountains, eastern Zimbabwe, and not recorded since 1962. Survey formed part of the 'Lost Amphibians' programme, funded and coordinated by Conservation International (2010)
- Team member of a survey to attempt to relocate the Amatola Toad (*Vandijkophrynus amatolicus*), a species confined to the Amathola, Winterberg and Katberg Mountains, Eastern Cape, and not recorded since 1998. Survey formed part of the 'Lost Amphibians' programme, funded and coordinated by Conservation International (2010)
- Formed part of a research team, performing an intensive field survey of the reptiles and amphibians of the Mt Mulanje Massif, Malawi (2009)
- Member of the South African Amphibian Assessment group: working with other amphibian experts under the auspices of the South African National Biodiversity Institute (SANBI), to perform a re-assessment of the conservation statuses (as defined by the IUCN) of all South African Frogs (species profiles available on www.iucn.org) (2009-2010).
- Co-authored chapters in Measey, G.J. (Ed) 2011. *Ensuring a future for South Africa's frogs: a strategy for conservation research*. SANBI Biodiversity Series 19. SANBI, Pretoria.
 - Channing, A, G.J. Measey, L. Minter & J. Harvey. Understanding and documenting species diversity.
 - Measey, G.J., C. Weldon, D. Morgan, A. Channing, J. Harvey & A. Turner. Conservation and ecological studies.
 - Tolley, K., L. Minter, J. Harvey, J. Tarrant & G.J. Measey. Education, awareness and capacity-building.
- Involved in the South African Reptile Conservation Assessment (SARCA), through: contribution of personal specimen records, team member of an intensive reptile field survey in the Lebombo mountains, north-eastern KwaZulu-Natal, editing of sections, contribution to and review of 54 species accounts for the up and coming South African Reptile Atlas and Red Data Book (in prep.) (2009-ongoing)

- Contributed to and reviewed 'A Complete Guide to the Frogs of Southern Africa' by du Preez and Carruthers, (2009)
- Formed part of an international research team, performing taxonomic and emerging disease surveys on frogs, in the Adasibe-Mantadia region of Madagascar (2008)
- Participated in Priority Southern African Amphibian Species Husbandry Workshop, held at Johannesburg Zoo, South Africa (2008)
- Masters thesis: 'Distribution and Global Population Size Estimation of the Critically Endangered Mistbelt Chirping Frog *Anhydrophryne ngongoniensis*, and the Development of Guidelines for the Management of its Habitat' (2007)
- Contributed to taxonomic studies on several herpetofaunal groups, including *Zygaspis* worm lizards, *Pelusios* terrapins, *Kinixys* tortoises, *Bradypodion* dwarf chameleons *Leptotyphlops* thread snakes, *Ptychadena* grass frogs, *Amietia* river frogs, *Hyperolius* reed frogs and *Cacosternum* Caco frogs (2006-ongoing)
- Member of the Herpetological Association of Africa (HAA)
- Experienced birdwatcher, having seen over 500 species in KwaZulu-Natal and over 700 species in southern Africa
- Assisted with a survey of Nile Crocodile *Crocodylus niloticus* populations in Lake Sibaya, northern KwaZulu-Natal (2003)
- Selected presentations include:
 - 'The Mistbelt Moss Frog *Arthroleptella ngongoniensis*: Distribution, adult population size and conservation of a highly threatened South African endemic' presented at the 8th Herpetological Association of Africa Symposium, held in Potchefstroom, South Africa, 24-27 November, 2006.
 - 'Confirmation of the presence of amphibian chytrid on the Mulanje massif, Malawi', presented at the 10th Herpetological Association of Africa Symposium, held in Cape Town, South Africa, 11-14 January, 2011
 - 'Threatened Frogs in KwaZulu-Natal, South Africa: Recent findings and contributions to their conservation' presented at the 14th African Amphibian Working Group meeting, Cape Town South Africa, 2-4 June 2010, and at the KZN Conservation Symposium 2010, held in Pietermaritzburg, South Africa, 19-21 October 2010.
- Assisted in vegetation analysis to assess the impacts and dietary changes of translocated African Elephant *Loxodonta africana* populations in protected areas, in Mkhuze, Phinda and Madikwe Game Reserves, South Africa (2000-2001)

REFERENCES

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Appendix 18: uShukela Highway Development: Socio Economic Impact Assessment of the Development on Tongaat and Verulam

USHUKELA HIGHWAY DEVELOPMENT

Socio Economic Impact Assessment of the Development on Tongaat and Verulam

December 2010

FINAL

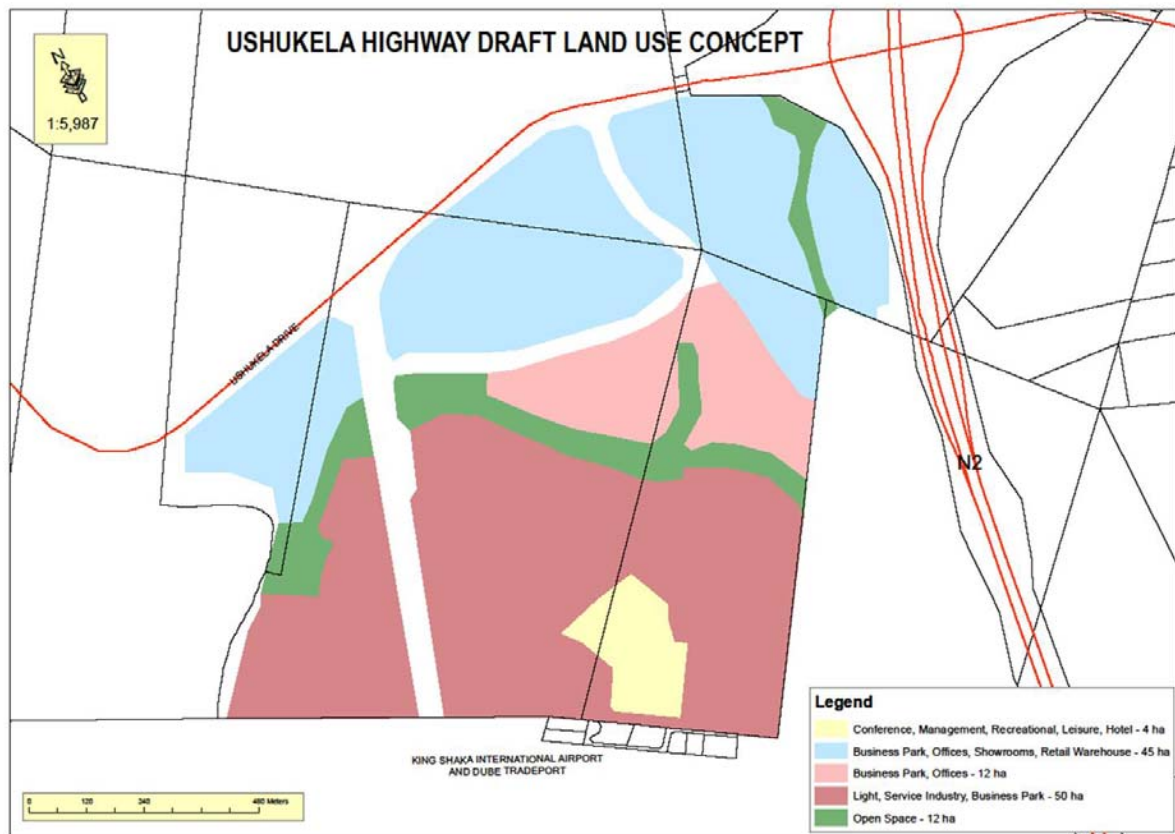


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EXECUTIVE SUMMARY

The assessment undertaken for this report relates to the proposed Ushukela Highway Development site, which is 25kms north of Durban CBD, in northern eThekweni Metropolitan Municipality.

The purpose of the assessment is to determine the potential impacts of the proposed development on the surrounding local nodes of Tongaat which is roughly 4k North West of the development and Verulam which is roughly 10km South East of the development site.

The methodology of the assessment was to separately identify and isolate potential socio economic impacts/ implications of the proposed development. The impact areas were then identified in three main categories- the primary impact area, the secondary impact area, and the tertiary impact area. The primary impact area was identified as the Tongaat node, as well as Dube Trade Port/ King Shaka Airport and to a lesser extent the Verulam node. The main secondary impact area was identified as the western rural areas/ Ndwedwe Local Municipality's eastern bordering sub-places. The collective impact of the development on the primary node of Tongaat and the secondary node of Verulam was found to be regional in nature, and therefore the northern region of eThekweni/ south of KwaDukuza were identified as a tertiary impact area. A socio economic situation analysis of the identified primary and secondary impact areas was conducted. The implications of the proposed development were then applied within the context of each impacted location respectively, and potential resulting negative and positive impacts were identified.

Thereafter, the identified potential impacts were rated by means of the Impact Rating Method. Through this method, the main impacts of the proposed development were isolated. The main impacts were assessed for their significance. Where impacts were identified as being negative, mitigating measures have been recommended.

The main population, employment and facilities implications¹ of the proposed development were identified as being:

- ✓ large scale business activity
- ✓ The project will produce 139,909 jobs over ten years, 54,544 jobs will be permanent (construction and construction related), 61,140 will be temporary (construction and construction related) (Gabhisa Planning and Investments, 2010)
- ✓ 23,225 are secondary (construction and construction related)
- ✓ The total outlays for the Ushukela Highway Development is estimated at R10.95 billion, (Infrastructure Investment of approximately R2.07 Billion and Building/top-structure investment of approximately R8.88 Billion). The spending of this CAPEX of approximately **R10.95 Billion** on capital goods and projects at once is expected to unlock the purchase of new goods and services of approximately **R31 Billion over the period 2012-2022** (10 years or a decade-long construction). This translates to approximately **R3.1 Billion per annum for 10 years** or investment returns of approximately **R2.83 per R1 investment** over ten years.

¹ Required number of social facilities were determined using the KZN Town Planning Standards for a population of 37 000 persons and employment opportunities as indicated in the economic impact assessment study.

When these implications were applied to the primary, secondary and tertiary impact areas, the following main impacts areas were identified:

✓ Nodal and regional economic development and expansion:

It was found that Tongaat has been spatially restricted from further social, business and commercial development, and the proposed development provides a much needed unlocking of land required for this.

The proposed development was found to provide opportunity for the expansion of existing businesses, through opportunities for the creation of value chains and business links between the proposed development and existing businesses, and increased exposure of existing business to a growing market. The R102 corridor and Ushukela drive were identified as being key in drawing a growing market to primarily Tongaat but also Verulam's existing businesses, as the proposed development expands.

The proposed development was also found to be aligned with broader eThekweni economic development- particularly the Draft North Spatial Economic Development Framework.

Nodal and regional poverty reduction:

It was found that both the labour markets of Tongaat and Verulam put together would not be big enough to provide the jobs generated by the development, and there is expected to be a surplus of jobs when the development is operating at full capacity. It is expected that this will result in a large positive spill over into the northern region. It was found that the development will therefore result in a significant drop in unemployment both in the primary node of Tongaat as well as the secondary node of Verulam, and the entire northern region.

✓ Potentially reduced revenue of existing businesses due to competition:

This was found to be largely offset by the positive impacts of the proposed development on existing businesses.

MITIGATING MEASURE:

However, it was recommended that the proposed development's steering committee enter into dialogue with existing business chambers and forums in Tongaat and Verulam, to discuss the provision of incentives packages for new firms in the proposed development to source start up supplies from them.

Finally, it was found that the positive impacts of the development are of high significance, and far outweigh its negative impacts. It was therefore recommended that the proposed development proceed as planned.

1. INTRODUCTION

1.1. Background and Purpose

Tongaat Hulett Developments commissioned this socio-economic impact assessment of the proposed Ushukela Highway development to identify the major social impacts likely to occur as a result of the development on the neighbouring nodes of Tongaat and to a lesser extent Verulam. The study examines and provides a communal economic context for the range of social impact areas identified. Detailed impacts on these key indicators have been modelled and these are described in detail in the sections that follow.

The proposed site is located in northern eThekweni Metropolitan Municipality in KwaZulu-Natal, and is situated on previously agriculturally zoned land- South East of the existing local node of Tongaat. The currently unzoned site is 123ha (bulk) in size and is currently being used for commercial farming and sugarcane plantations. It is planned for mixed use- including logistics / industrial zoning, trade / business zoning, and mixed use commercial zoning. The development plans are largely conceptual at this time, as the site is exceptionally large and detailed planning is still to be completed for the long term development path. It is anticipated that the actual development, will be constructed in phases, over an estimated time frame of a decade. While the impact assessment is conducted on the proposed total conceptual development, the construction of each feature will be demand based, and therefore is subject to change.

The report isolates the impact of the development on the following major socio economic indicators:

- population,
- employment/ unemployment,
- commercial and business activity,
- tourism,
- poverty,
- skills development,
- black economic empowerment, and
- SMME development.

As the site is located 4km South East of Tongaat and 10km North East of Verulam, and on the Northern border of the Dube Trade Port/ King Shaka Airport, these areas were identified as first order impact zones, and the core focus of this assessment. As the development is very sizable, some comment is also provided on the impact on the northern precinct of eThekweni to provide a regional context to the impacts.

1.2. Sources of Information

Information for the report was collected and analysed mainly through desktop research, interviews and consultation, from the following sources:

- ✓ Quantec online data
- ✓ Tongaat Local Economic Development Plan
- ✓ Verulam Local Economic Development Plan
- ✓ eThekweni Spatial Development Framework
- ✓ North eThekweni Spatial Development Plan

- ✓ Detailed interview with the eThekweni Spatial Planning Department
- ✓ The Economic Impact Assessment report by Gabhisa Planning and Investments

1.3. Methodology

For the purposes of this report, the methodology applied is to assess the development separately, and determine its effect on socio economic impact indicators. These are then applied within the current context of the region, and a location specific impact assessment is conducted. For the purposes of this report, mainly the impact of the *completed* development is applied to the surrounding nodes, assuming their *current* socio-economic status quo. As earlier mentioned, the focus areas are the nodes of Tongaat and to a lesser extent Verulam.

Due to both the conceptual nature of the addressed impacts, and because the proposed development is still currently in its early planning phase, some impacts are qualitatively assessed. All impacts are thereafter quantified by means of the Impact Rating Assessment. Where further detail on the development has not been made available, assumptions are made. These assumptions include:

- ✓ A quarter of all permanent jobs created by the development from 2022 will be taken by existing residents of Tongaat. The remaining 75% will be sourced from Verulam, the greater Durban area, Ballito, Umhlanga, western rural areas, and possibly as far as Gauteng.

1.4. Structure of the Report

The report is structured as follows:

Section one: Introduction

This introduces the report as above.

Section two: Description and Implications of the Development

This section addresses the development abstractly, and the general implications of the development on indicators such as employment, population and facilities.

Section three: Geographical Impact Areas

This section delineates the areas of impact, and distinguishes between primary, secondary and tertiary impact areas. An overview of the socio economic status quos is provided, as a backdrop by which to assess the impact of the proposed development.

Section four: Impact Assessment

This section assesses the impact by identifying the impacts on the development. This section focuses on the primary impact areas of Tongaat and to a lesser extent Verulam, but also identifies impacts in the western rural areas, and in the northern eThekweni/ south KwaDukuza region in general.

Section five: Impact Quantification

This section isolates the above identified impacts, and quantifies them by means of the Impact Rating Method. The main impacts are therefore identified.

Section six: Summary and Recommendations

This last section summarises the overall impact of the development. Where possible negative externalities have been identified, detailed measures and associated mitigating actions necessary are recommended to support the positive impact of the proposed development on Tongaat, Verulam the western rural areas, and the broader northern eThekweni region.

2. DESCRIPTION AND IMPLICATIONS OF THE DEVELOPMENT

The following section describes the development, and calculates its potential implications on the identified developmental indicators. A thorough understanding of the development (as the ‘impactor’) is required, in order to understand its effect on its surrounding environment (as the ‘impacted’).

While the assessment of the proposed development is conducted assuming all 123 ha are developed, the development itself will be constructed in phases, over 10 years or longer, and on a demand basis. It is expected that the surrounding nodes will overtime adapt to the growth in population and business activity, as the change is expected to be gradual.

2.1. Location of the Development

The proposed development site is located in the northern region of eThekweni, 30kms to the north of Durban’s CBD, and 3kms westwards or inland of the eThekweni’s northern coastline. The N2 and the R102 border the site on its eastern and northern boundaries respectively. The figure below illustrates the site’s (shaded in red) regional position within eThekweni Municipality, which is demarcated by the thick black border.

Figure 1-Location of the proposed development within eThekweni Metropolitan Municipal boundaries

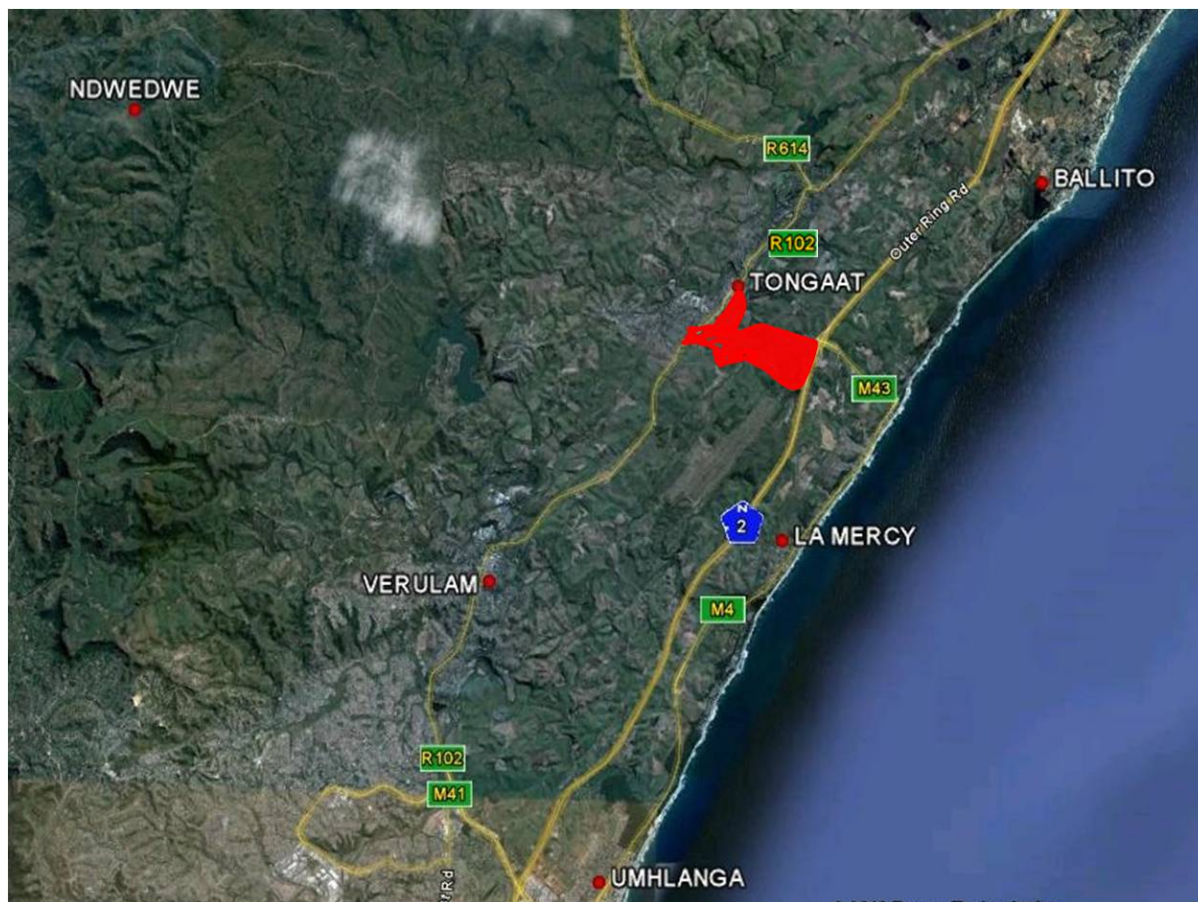


Adapted from the national Demarcation Board, 2010

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The proposed development is located close to several regional nodes, and is 6kms south west of Ballito, 4kms North-West of La Mercy, and 10kms North-East of Verulam. The site borders Tongaat along its (the site) northern border, and is 1km south of the Tongaat CBD. Located further inland, is rural Ndwedwe- approximately 14kms North-West of the site.

Figure 2- Location of the proposed development (red shading) within the North eThekweni region



The King Shaka Airport, which was completed in May 2010 and the Dube Trade Port which is currently under development is located directly on the Southern border of the proposed development.

The primary impact area comprises of Tongaat, Verulam the Dube Trade Port and King Shaka Airport. The secondary impact areas comprise of the outlying and surrounding nodes and incorporates the western rural area, Waterloo, Ballito, Umhlanga and La Mercy. This is described in greater detail in Section 3.

2.2. Description of the Proposed Development

The proposed development is planned as a mixed-use development, comprising the following:

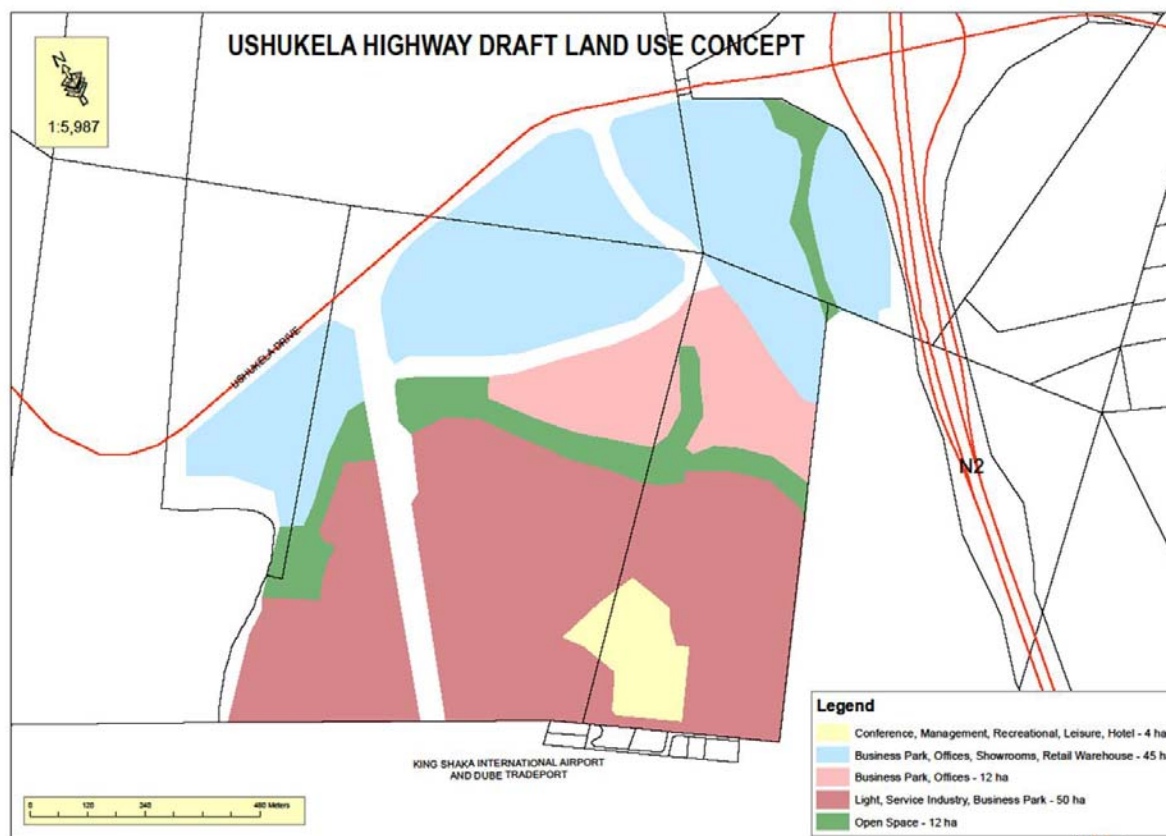
- Conference, Management, Recreational leisure, Hotel, 4ha
- Business Park, Offices, Showrooms, Retail, Warehouses 45ha
- Businesses Park, Offices 12ha

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- Light, Service, Industry, Business Park offices, 50ha
- Open Space 12ha

Specifically, plans are in progress for modal upgrades of existing roads and rail as well as the establishment of supporting roads servicing the site. The site layout is shown below.

Figure 3- Conceptual Development Framework



Tongaat Hulett Developments, 2009

The size, magnitude, and type of any particular development is necessary in order to estimate the socio economic impact indicators.

2.3. Implications of the Proposed Development: Population and Employment

In order to develop a measurable impact, each component of the development is isolated for its effect on quantifiable socio economic indicators, such as population and employment. The table below isolates each feature of the development, and explains the effect on population and employment, as the first measurable means of assessing the development's socio economic impact.

	LAND USE/ DEVELOPMENT FEATURE	DESCRIPTION	SOCIO ECONOMIC IMPLICATION
	Trade Zone/Business Park/Offices	Conference/Management/ Leisure per 22 sq. m.	A total of 1,818 jobs will be created, of which 1096 will be temporary and 722 will be permanent.
		Business Park/offices/Show/ Warehouse per 22 sq. m.	A total of 20,455 jobs will be created, of which 12,334 will be temporary and 8121 will be permanent.
		Business Park/Offices per 22 sq. m.	A total of 5,455 jobs will be created, of which 3,289 will be temporary and 2,166 will be permanent.
		Light/Service Industry/ Business Park per 30 sq. m	A total of 16,667 jobs will be created, of which 6,617 will be temporary and 10,050 will be permanent.
		Open Area	n.a.
Total projected cost R10.95 billion			

*Employment figures are extracted from the Economic Impact Assessment Report by Gabhisa Planning and Investments, 2009

**Urban-Econ estimates, adapted from Conceptual Development Framework

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The table below summarises the implication and description of the proposed development in estimated employment and population.

KEY SOCIO ECONOMIC IMPACT INDICATOR: POPULATION AND EMPLOYMENT			
LAND USE/ DEVELOPMENT FEATURE	POPULATION	REGIONAL EMPLOYMENT in jobs from 2022**	ON SITE/ LOCAL PERMANENT EMPLOYMENT in jobs from 2022 ⁺⁺
1 Conference/Management/ Leisure per 22 sq. m.	-	1,818	722
2 Business Park/offices/Show/ Warehouse per 22 sq. m.	-	20,455	8121
3 Business Park/Offices per 22 sq. m.	-	5,455	2,166
4 Light/Service Industry/ Business Park per 30 sq. m	-	16,667	10,050
5 Open Area	-	-	-
TOTAL		44,395	21059

*Unless otherwise indicated, employment figures are adapted from the Economic Impact Assessment Report by Gabhisa Planning and Investments, 2009

** Including permanent, temporary and secondary/ indirect jobs

⁺⁺The impact assessment in Tongaat and Verulam is only conducted on the permanent jobs created by the proposed development. Therefore, the impact is likely to be higher than that identified.

2.4. Conclusion

The proposed development will result in significant growth in job opportunities, and business activity, primarily in the Tongaat node but also to a lesser extent in the Verulam node and the greater eThekweni area.

3. IMPACT AREAS OF THE PROPOSED DEVELOPMENT

The following section clarifies impact areas of the proposed development; these have been identified as the neighbouring nodes of Tongaat and to a lesser extent Verulam. Other surrounding areas such as Waterloo, Ndwedwe, La Mercy, Umhlanga and Ballito are also anticipated to be affected by the development.

The figure below graphically represents the impact areas of the proposed development, indicating the primary impact areas (the nodes of Tongaat and to a lesser extent Verulam, Dube Trade port/ King Shaka Airport); and secondary areas (the nodes of Ballito, Ndwedwe, Waterloo, Umhlanga, and greater La Mercy). The tertiary impact area is the greater north eThekweni/ Southern KwaDukuza region.

Figure 4- Primary and Secondary Impact Areas



Source: Adapted from Google Earth, 2010

3.1. Primary Impact Area

The existing nodes that will experience a primary impact are Tongaat² and to a lesser extent Verulam, due to the geographic proximity and easy access along the R102 and Ushukela Drive. There also exists access along a railway, running less than 1km parallel, west of the R102 and the N2. Tongaat is a local service node, in northern eThekweni, serving a relatively small population which account for 1% the total size of eThekweni Metropolitan. Included in the primary impact area is the Dube Trade Port/ King Shaka Airport site, which is located on the Northern border of the proposed development and to a lesser extent the Verulam node. The Tradeport and Airport which were

² For the purposes of this report, the node Tongaat includes the bordering township of Hambanathi and the subplace of Emona, east of Tongaat.

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launched in May 2010, and will mainly be of importance to the proposed development with regards to employment creation.

In Tongaat and Verulam, the manufacturing sector contributes the most to total gross value added/ GVA (almost a third of all economic activity). This reflects on their largely small and medium scale industrial activity (industrial SMMEs). Other key sectors in both economies are the wholesale and retail sector, as well as the finance and insurance sector.

The tables below indicate the general socio economic situation of both Tongaat and Verulam, providing an understanding of the backdrop on which the proposed development will impact. For comparison purposes, the population and household density of eThekweni is included below.

Table 1- Tongaat and Verulam population and households as in 2010

POPULATION / DENSITY	Tongaat	Verulam	eThekwini
Population	61 922	63 812	-
Households	19 502	19 917	-
Informal Households	4 192	3 624	-
Population Density*	4 029	2 519	1 576
Household Density*	1 242	762	432

*Indicated density is measured as people per km²

Source: Adapted from Quantec Online Data; Standardised Regional- Population, 2007

From the table above (Table 1), it can be seen that both the populations of Tongaat and Verulam are just under 65 000 people, thus the combined population of the primary impact area is just below 130 000 people. Similarly, there are a combined 9840 households in the proposed development's primary impact area.

Importantly, the above table highlights that the primary impact nodes are dense. Verulam is almost twice as dense as eThekwini, while Tongaat is more than 2.5 times as dense as eThekwini. This trend reflects a need for additional land for the expansion of both these nodes.

The table below shows the local employment rates and indicates a relatively low unemployment rate for Verulam, while showing that Tongaat has only a fifth of the economically active population unemployed. Altogether, the primary impact nodes employ just under 50 000 people.

The socio economic impact assessments³ of Dube Trade Port and King Shaka Airport have estimated that DTP/ KSA will create an average of 200 000 new sustainable jobs. It is noted in the assessment that the "cost per job" will be R5 600 to R8 700, which suggests that jobs available will be mainly for mid range, or skilled workers (as opposed to semi skilled, unskilled, and even highly skilled workers). According to the table below (Table 2), this figure of 200 000 new jobs is approximately four times the amount of employment jointly available in the primary impact area of Tongaat (21 666) and

³ Developed as part of the economic impact assessment of the King Shaka Airport and Dube Trade Port: www.dubetradeport.co.za

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Verulam (22 704). The relevance of this is that the development will be launched in an already expanding economy – as additional employment has been created and supported by the DTP/ KSA development.

In Verulam and Tongaat, the bias in employment is toward skilled (43%), and semi and unskilled individuals (44%) - as opposed to highly skilled individuals (13%). Particularly in Tongaat, most employed individuals are semi and unskilled (46%).

While the labour force participation rate is relatively low, the unemployment rate in the primary impact area for those actively seeking employment is also relatively low, at an average of 18% (the average of Tongaat and Verulam combined).

Table 2- General Employment and Skills Levels as in 2010, Tongaat and Verulam

	TONGAAT	VERULAM
Employed Individuals	21 666	22 704
Unemployed Individuals	3 889	3 271
Unemployment Rate	22%	13%
Labour Force Participation Rate	55%	58%
Highly Skilled Employed Individuals	2 068	2 434
Skilled Employed Individuals	7 089	7 924
Semi and Unskilled Employed Individuals	7 889	7 636

Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2007

Both Tongaat and Verulam economies are sectorally focussed on wholesale and retail; manufacturing, and finance insurance and real estate. The prominence of wholesale and retail trade, as well as the bias toward semi and unskilled employees, suggests that the Tongaat and Verulam economies employ a large proportion of service workers, shop and sales market workers.

In Tongaat, the relatively low unemployment rate, and bias toward manufacturing confirms high employment, mainly through small to medium scale industrial activity largely concentrated in the CBD and the Tongaat Industrial Park areas. The higher proportion of semi and unskilled individuals suggests that a high number of technicians and plant and machine operators, as well as day or casual labour is employed in these activities.

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Table 3- Tongaat Sector Employment Profile, 2010

TONGAAT SECTOR		NO. OF PEOPLE EMPLOYED
1	Wholesale and Retail Trade, Catering and Accommodation	5 275
2	Manufacturing	4 843
3	Finance, Insurance, Real Estate and Business Services	3 124
4	General Government	2 926
5	Community, Social and Personal Services	1 754
6	Agriculture, Forestry and Fishing	1 449
7	Construction	1 378
8	Transport, Storage and Communication	771
9	Electricity, Gas and Water	72
10	Mining and Quarrying	57

Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2007

Unlike Tongaat, Verulam's sectoral employment profile indicates a greater bias toward skilled employees (44%). Finance, insurance and real estate are the second highest employers, after wholesale and retail trade. This suggests that apart from the above mentioned professions, the Verulam economy employs clerical, secretariat, banking and official workers, based on the adjacency of the Umhlanga Ridge Commercial Node, and Mt Edgecombe government services offices. This reflects in the slightly higher income profile for the population of Verulam.

Table 4- Verulam Sector Employment Profile, 2010

VERULAM SECTOR		NO. OF PEOPLE EMPLOYED
1	Wholesale and Retail Trade, Catering and Accommodation	5 765
2	Finance, Insurance, Real Estate and Business Services	4 141
3	Manufacturing	3 544
4	General Government	2 932
5	Community, Social and Personal Services	2 648
6	Construction	1 737
7	Transport, Storage and Communication	1 313
8	Agriculture, Forestry and Fishing	520
9	Mining and Quarrying	127
10	Electricity, Gas and Water	77

Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2007

Verulam and Tongaat therefore display a largely middle to middle-low income population, with relatively low unemployment rates. The relatively low ranking of the construction sector- particularly in Tongaat- indicates that there is minimal/ limited expansion and growth in the two nodes.

Other issues identified:

In general, the major issues identified focus on service and facilities backlogs, and the need for (but spatial constraints of) the Tongaat and Verulam economies to grow. The Tongaat LED particularly points out that there is a challenge of growing unemployment, and poverty, and a limited ability to combat this through economic growth.

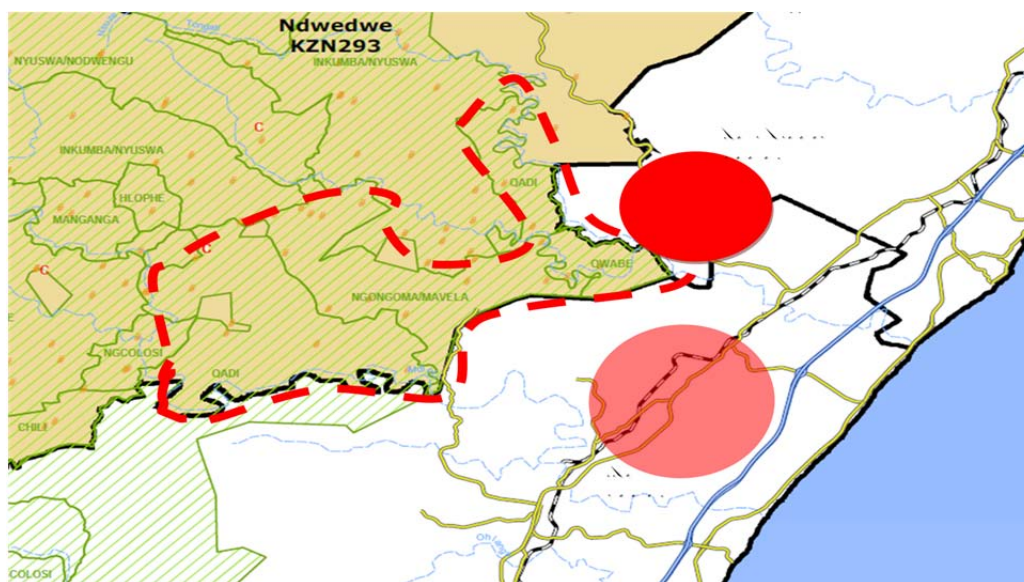
Residents of Tongaat complained that the node is surrounded by Tongaat Hullet owned land- which is not being developed. Therefore, the economy of Tongaat is perceived by residents as being

essentially closed off, and restricted from development. As a result, it is noted that if allowed to continue in this (economic) state “...the town runs a risk of remaining a village with a highly localised economy- if there is no strategic plan for its economic development”⁴. This speaks of a need for development, adjacent to Tongaat, within close enough proximity to relieve the above mentioned density, and to provide the opportunity for the node’s much needed economic growth.

3.2. Secondary Impact Areas

The secondary impact areas mainly include bordering sub-places of the western rural areas as indicated below, as well as other nodes such as Waterloo, Ballito, Umhlanga, and La Mercy (see figure 4). Due to its low socio economic profile, it is expected that the secondary impact area which will be impacted the most is the western rural area. This will therefore be the focus of the secondary impact areas.

Figure 5- Western Rural Areas which fall into the secondary area of impact



Of particular interest in the secondary impact areas, is the large scale (600ha), long term Wewe/ Driefontein Mixed Use development, situated 5km north west of Tongaat. While the development is still in its early planning stages, it is anticipated that it will ultimately provide the following:

- An estimated population of 58 000
- 6000 low income housing opportunities
- 10 000 affordable and middle income housing opportunities
- 1000 upper end housing opportunities
- Civic and social facilities such as clinics, worship sites, recreational space, community facilities and shopping facilities
- 3 secondary schools, and
- 5 primary schools
- Public transport facilities,
- 160 ha industrial-, activity zone- and services park uses and commercial facilities⁵.

⁴ Tongaat Local Economic Development Plan, 2008

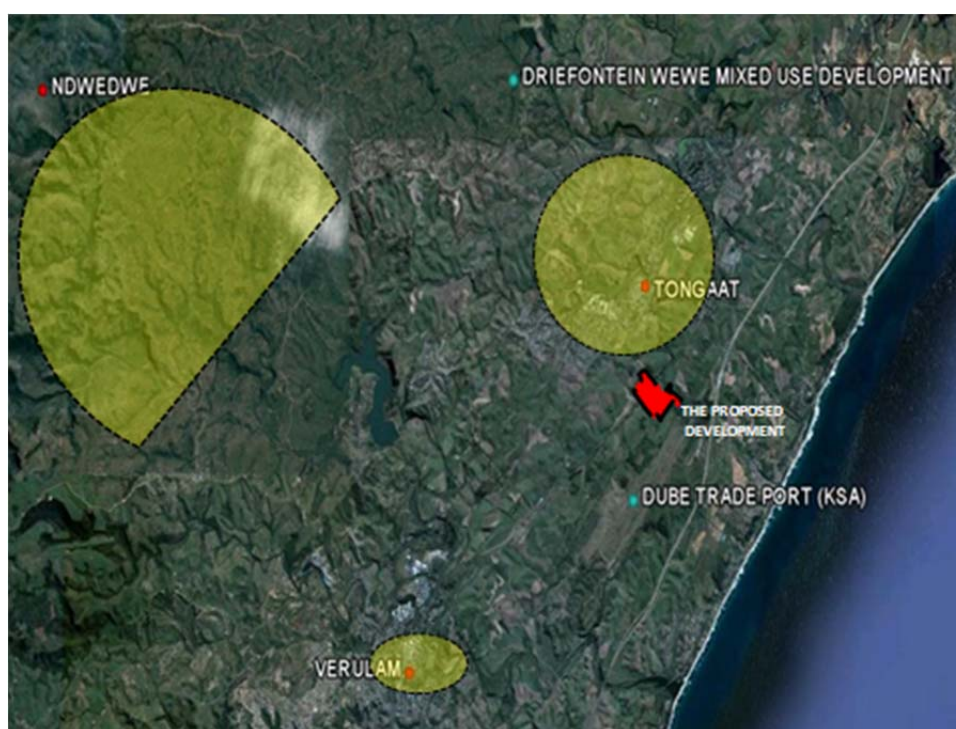
⁵ Proposed Driefontein Wewe Flats Mixed Use Development, Helena Jacobs, 2010

4. IMPACT ASSESSMENT

The following impact assessment is focused on four main impact areas- first and second, the primary impact areas of Tongaat and Verulam, and thirdly, the secondary impact area of Ndwedwe/ Western Rural areas (focus on eastern sub-places bordering the development). The impact of the proposed development on the nodes collectively results in impacts which are regional in nature. Therefore the fourth impact area is the greater northern region of eThekweni Metropolitan Municipality, including the very southern region of KwaDukuza Local Municipality. The impact on the broader region includes reference to the Dube Trade Port (DTP), while the analysis of the western rural areas includes reference to the proposed Driefontein Wewe Mixed Use Development.

The impact areas are highlighted below:

Figure 6- Key Impact Areas of the Proposed Development



Source: Adapted from Google Earth, 2010

The socio- economic impact assessment is conducted on the following key areas:

- ✓ **Existing Businesses** (retail and light commerce)
This assessment isolates the main types of business activity, mainly in Tongaat and Verulam which will be impacted by the proposed development, and quantifies this impact where possible. In Tongaat, the impact on the growth of the retail and trade sector is calculated based on a direct relationship between the growth of the sector and the population growth rate.

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✓ Poverty

This is addressed mainly by applying the impact of potential jobs created as noted in section 2, as well as applying the impact of subsidy housing on informal settlements in Tongaat, Verulam and the western rural areas.

✓ BEE and SMME Development

This briefly notes the impact of the development on black owned businesses and small enterprises in the key nodes.

✓ Skills Development

This last section notes the impact of the proposed development on general development in the listed nodes.

4.1. TONGAAT

4.1.1. Existing Businesses (light commerce)

In the short term, Tongaat businesses are expected to experience a boost and increase in revenue. The table below indicates the estimated growth in the Tongaat wholesale trade sector, directly linking it to the Tongaat growth in population.

Table 5- Short term impact of the proposed development on Tongaat business activity

	Population Growth Rate	Wholesale Trade Sector Growth Rate
CURRENT (2010)	2.35%	3%
WITH THE PROPOSED DEVELOPMENT	2.7%	3.44%

Source: Urban-Econ Impact Estimates 2010 (Adapted from Quantec Online Data- Standardised Regional Income and Production, 2007)

The table above shows that currently, the Tongaat retail and wholesale trade sector is estimated as growing at a relatively slow rate of 3% per annum (slightly higher than the population growth rate which is estimated at 2.35% per annum). Due to the distance of the proposed development from Tongaat CBD, being approximately 1 km South, as well as the easy access along the R102 as well as Ushukela Drive, those who will be employed within the proposed development are expected to utilise Tongaat's convenience shopping facilities with ease. This includes individuals employed in the proposed development, commuting to and from Ndwedwe through Tongaat.

Table 6- Impact of proposed development on unemployment in Tongaat

	Current Unemployment Rate	Unemployment Rate in 2022	Number of permanent jobs qualified for by Tongaat residents	Unemployment Rate in 2022 WITH DEVELOPMENT
%	22%	24%	12.5%	0%
Numb	3 889	4217	6354	SURPLUS OF 1996 JOBS

Source: Urban-Econ Impact Estimates 2010 (Adapted from Quantec Online Data- Standardised Regional-Labour, 2008)

It is assumed that employment will be sourced from Tongaat. Therefore Tongaat residents will be eligible for 6541 of the generated jobs. This results in a significant decrease in unemployment in Tongaat from 24% in 2022 without the proposed development, to 0% with the permanent jobs from the proposed development. This will significantly decrease poverty. While it is expected that there will be economic migration of informal settlements mainly from the western rural region (i.e. migration from a place of less job opportunities to a place of more perceived job opportunities), it must be noted that the above assessment does not take into account temporary jobs created after 2022. The proposed development will therefore eliminate unemployment in Tongaat, assisting significantly in poverty reduction.

4.1.2. BEE and SMME Development

The existence of new economic opportunities in the proposed development will provide opportunities for black owned enterprises to enter markets, or to enter a competitive location (next to highly marketed DTP). This is also true for existing black business/ investors in (predominantly African and Indian) Tongaat, who wish to expand, as is indicated in the Tongaat LED, or relocate.

4.1.3. Informal Sector Development

The Tongaat informal sector will be positively impacted. The Tongaat informal sector is relatively small. Informal sector employee salaries form 7% of both formal and informal salaries. Still, the Tongaat informal sector compensation for employees (salaries) are currently increasing at a compounded rate of 6.39% per annum-faster than that for formal unskilled, semi skilled, skilled and highly skilled labour (at constant 2005 prices). This indicates that the informal sector of Tongaat is growing in either profit per business, or per employment figures. An increase in employment in the development will result in higher public transport utilisation (taxis), particularly on the current Ushukela Drive, the R102, and the current railway- to the development, and back to Tongaat. As a result of informal transport economic activity, an increase in vendors and informal traders around these areas is expected. The informal sector will therefore grow in size and magnitude.

4.1.4. Skills Development

Opportunities for skills development are also notable. The development will create further opportunity for the strengthening and developing of existing skills development in Tongaat. In Tongaat's Industrial Park there currently exists skills development through the transport seta, services seta, and safety and security training- all of which are relevant to the proposed development. The existence of large scale business activity in the proposed development therefore creates the opportunity for links between the Tongaat SETAs (Sectoral Education and Training Authorities) and other training programmes and the proposed development's industrial business operations- through internships and in service training. This then contributes to the employability of Tongaat's youth in the long run through skills development, which assists in decreasing Tongaat's unemployment rate.

4.1.5. Summary of Impacts : Tongaat

The summary table on the following page summarises the impact of the proposed development on Tongaat:

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.1.1	EXISTING FACILITIES	Short term strain on facilities- region becomes eThekweni priority.	Permanent term opportunity for better facilities provision as more facilities are added to the area.	-
4.1.2	PROPERTY VALUES	Short term increase in property values, this means more profits for property owners.	Medium term decrease in property values as a result of new and modern properties permanently added to the region. Less profits for property owners.	Long term equalisation of property values as region becomes denser and more people demand Tongaat property.
4.1.3	POVERTY	Short term decrease in unemployment	Medium term decrease in unemployment	Large long term drop in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy
4.1.4	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	-	-
4.1.5	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis.	-	-

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IMPACT DESCRIPTION				
	IMPACT AREAS	IMPACT DESCRIPTION	MEDIUM TERM	IMPACT AREAS
4.1.6	SKILLS DEVELOPMENT	-	-	Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat setas and other identified training programmes.

4.2. VERULAM

4.2.1. Scale of Impact

Although the impact on Verulam in terms of job creation and poverty alleviation, by the proposed Ushukela Development is of secondary importance when compared to the impact on Tongaat, Verulam still experiences a significant enough impact to make it necessary to examine the effects of the development on this town. These impacts are discussed in the sections following.

4.2.2. BEE and SMME Development

The existence of new economic opportunities in the proposed development will provide opportunities for black owned enterprises to enter markets, or to enter a competitive location (next to highly marketed DTP). This is also true for existing black business/ investors in (predominantly African and Indian) Verulam, who wish to expand northward, or relocate.

4.2.3. Informal Sector Development

Verulam informal sector remuneration is equivalent to 7% of formal remuneration in Verulam. However, unlike Tongaat, Verulam informal sector remuneration is growing slower than formal remuneration (at constant 2005 prices). Still, the Verulam informal sector is a central part of the Verulam economy, and will be positively boosted by the proposed development. An increase in employment in the development will result in higher public transport utilisation (taxis), particularly on the current R102, and the current railway- to the development, and back to Verulam and Durban. As a transient route to central eThekweni, the public transport route will be busier than that within Tongaat.

Public transport from within Verulam to and from the proposed development is not expected to be expensive, as the taxi rank is located 300 meters north east of the R102 Todd Street intersection, and with the proposed development located 4kms north of the taxi rank along the R102. This will ensure affordable and easy access to the development by Verulam's average low- middle income public transport commuter, encouraging frequent trips to the development and back.

As a result of informal transport economic activity, an increase in vendors and informal traders around these areas is expected, more than those in Tongaat. The informal sector will also therefore grow in size and magnitude.

4.2.4. Skills Development

The development will create opportunities to strengthen skills development in Verulam, therefore having a positive effect. Thus the working age population of Verulam will be more employable, also contributing to poverty alleviation.

4.2.5. Summary of Impacts for Verulam: these are indicated in the table on the following page (26).

4.2.6. Poverty

Poverty in the Verulam area is set to decrease, from an increase in employment opportunities available to Verulam's poor. In the case of Verulam as well, the impact of the development's job creation on Verulam's overall unemployment levels are used as an indicator for poverty reduction. Like in Tongaat, due to the combination of skills levels and distance a 50%/50% split of employment sourcing between the nodes of Tongaat and Verulam is assumed. Therefore, it is estimated that Verulam residents will qualify for of the permanent job posts. The result is that the unemployment

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rate is completely eliminated, with a remaining surplus of jobs. Not only will the proposed development have a significantly positive impact on Verulam’s unemployment rate (and therefore poverty), but it will provide jobs for anticipated economic migrants into Verulam and surrounding areas.

Table 7- Impact of proposed development on unemployment in Verulam

	Current Unemployment Rate	Unemployment Rate in 2022	Number of permanent jobs qualified for by Verulam residents	Unemployment Rate in 2022 WITH DEVELOPMENT
%	14%	13%	12.5%	12%
Numb	3 271	3 547	1996	SURPLUS OF JOBS = 0

Source: Urban-Econ Impact Estimates 2010 (Adapted from Quantec Online Data- Standardised Regional-Labour, 2008)

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.2.1	POVERTY	Short term decrease in unemployment	Medium term decrease in unemployment	High long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy
4.2.2	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity for existing business to enter markets and grow.		-
4.2.3	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis and Verulam taxi rank, as a result of increased activity on and therefore around the R102. This is particularly true for Verulam, being en route between KZN's economic capital and the proposed development	-	-
4.2.4	SKILLS DEVELOPMENT	-	-	Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam setas and other identified training programmes. More accessibility to job opportunities for Verulam residents.

4.3. Western Rural Areas

4.3.1. Existing Facilities

The proposed development is not expected to have any visible impact on facilities in the western rural areas, due to the scarcity of the western region's facilities, as well as the approximate 20km distance from the proposed development.

4.3.2. Existing Businesses (light commerce)

The impact of the proposed development on the existing businesses in the western rural areas is not expected to be notable, or significant. This is again due to the distance between the western rural businesses (albeit few), and the proposed development.

4.3.3. Property Values

Property values are not expected to be changed in western rural areas, as this land is predominantly owned by Ingonyama tribal authorities.

4.3.4. BEE and SMME Development

It is not expected that the proposed development will impact on formal BEE and SMME development in the western rural areas. The impact of the proposed development on existing BEE and SMME activity will be primarily evident in the informal sector, as briefly discussed below.

4.3.5. Informal Sector Development

Informal business is expected to be boosted due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. There will be an increase in trading activity, as well as increased customers for taxi operators. This will positively increase informal business activity. Informal Ndwedwe businesses are also expected to migrate in and around the proposed development, perceiving greater business opportunities.

4.3.6. Skills Development

It is expected that there would be a permanent improvement in mainly elementary skills levels, as Ndwedwe residents are employed in proposed development in the western rural areas.

4.3.7. Summary of Impacts on the Western Rural Areas

This is reflected in the table on the following page (28).

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IMPACT AREAS	IMPACT DESCRIPTION		
	SHORT TERM	MEDIUM TERM	LONG TERM
EXISTING FACILITIES	No visible/ significant effect	No visible/ significant effect	No visible/ significant effect
EXISTING BUSINESSES (retail and light commerce)	No visible/ significant effect	No visible/ significant effect	No visible/ significant effect
INDUSTRIAL ACTIVITY	No visible/ significant effect	No visible/ significant effect	No visible/ significant effect
PROPERTY VALUES	No effect	No visible/ significant effect	No visible/ significant effect
POVERTY	A decrease in unemployment	Assuming temporary jobs are taken only taken by Ndwedwe residents, during construction, a medium term drop in municipal unemployment from 34% to 27%.	A long term drop in unemployment, mainly in semi skilled and unskilled jobs not taken up by Tongaat and Verulam residents.
BEE AND SMME DEVELOPMENT	No significant effect, except on informal sector.	No visible/ significant effect	No visible/ significant effect
INFORMAL SECTOR DEVELOPMENT	Permanent boost due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. Relocation of other Ndwedwe informal businesses close to Ndwedwe and both Driefontein Taxi Ranks.	No visible/ significant effect	No visible/ significant effect

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IMPACT AREAS	IMPACT DESCRIPTION		
	SHORT TERM	MEDIUM TERM	LONG TERM
SKILLS DEVELOPMENT	Permanent improvement in mainly elementary skills levels, as Ndwedwe residents are employed in proposed development.	No visible/ significant effect	No visible/ significant effect

4.4. Greater North eThekwini/ South KwaDukuza Region

4.4.1. Existing Businesses

The establishment of the proposed development is aligned to the existing north spatial development framework for eThekwini, which encourages the establishment of an "R102 Metropolitan Development Corridor between Verulam Town Centre and Tongaat Town Centre". In general, it is expected that the proposed development will have a short term negative impact on business activity of nearby nodes. In the long term, the entire northern region is expected to adjust, such that Tongaat and to a lesser extent Verulam businesses serve their localised economies and specialised markets, while the proposed development serves the regional economy. While these economies will serve a localised market, all north eThekwini/ south KwaDukuza nodes are expected to benefit significantly from the growth of the entire north eThekwini region, due to increased exposure, increased market size. This will result in a long term positive impact for the region. In the long run, it is also expected that the proposed development will become a large regional node, serving the region between Umhlanga/ Mt Edgecombe and Ballito to the south and north respectively, and eastern Ndwedwe to the west.

4.4.2 Dube Trade Port

In the long run, both trade/ logistics zones are expected to adapt, in that those operations which immediately require proximity to cargo aircraft will remain at DTP, while that don't require direct access to aircraft will be in the proposed development.

4.4.3 Poverty

Poverty in the region is expected to be positively impacted, mainly through employment. The number of jobs available is expected to decrease unemployment in the whole region to exceptionally low levels. There is expected to be significant economic migration from surrounding areas and sub-places as a result, which, in the long run may reduce the initial impact of a reduction in poverty.

4.4.4 BEE And SMME Development

There exists permanent opportunity for the regional expansion of BEE and SMME companies.

4.4.5 Informal Sector Development

The impact on the regional informal sector will be notable mainly as a positive impact on and around the taxi industry. There are expected to be new taxi routes developed, with the proposed development area as a destination, resulting in a significant boost in business activity for regional taxi ranks offering trips to the development. Informal traders will increase accordingly in all regional taxi ranks.

4.4.6 Skills Development

The proposed development provides pressure (and therefore opportunities) for the development of tertiary institutions in north eThekwini and KwaDukuza, such as FET Colleges. In addition, the region will also become a national priority in terms of the provision of Sectoral Education and Training Centres. This will assist to develop practical skills through internships and practical in service training. In general the proposed development will provide opportunity for more skills acquisition through employment, for residents of the northern region.

4.4.7 Summary of Impacts on the North of eThekwini/South of KwaDukuza:

These are detailed in the table below on page 31.

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.4.1	Existing Businesses (light Commerce)	No visible/ significant effect	No visible/ significant effect	Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. More large scale regional services, business branches, and possibly administrative government offices added to the regional economy. More convenience for the population of the region.
4.4.3	POVERTY	Due to the large scale of the development, and therefore the large number of jobs created, poverty is expected to be permanently significantly reduced.	No visible/ significant effect	No visible/ significant effect
		No visible/ significant effect	No visible/ significant effect	There is expected to be significant economic migration from surrounding areas and sub places as a result, which, in the long run may reduce the initial impact of a reduction in poverty
4.4.4	BEE AND SMME DEVELOPMENT	Permanent opportunity for the regional expansion of BEE and SMME companies.	No visible/ significant effect	No visible/ significant effect
4.4.5	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis and Verulam taxi rank, as a result of increased activity on and therefore around the R102 and the Ushukela Highway.	No visible/ significant effect	No visible/ significant effect
4.4.6	SKILLS DEVELOPMENT	Permanent skills development through increased employment opportunities	No visible/ significant effect	No visible/ significant effect

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.4.6	SKILLS DEVELOPMENT	No visible/ significant effect	No visible/ significant effect	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni south KwaDukuza region. This assists in long term skills development, and employability.

5 IMPACT QUANTIFICATION

The purpose of the following section is to quantify impacts previously identified, by means of the impact rating method.

5.4 Methodology of Quantitative Assessment

The assessment of the specific impact areas will be conducted using the Impact Rating Methodology. The exact assessment technique used in assessing the socio-economic impact of the proposed development is described in this section.

The significance of an impact is defined as the combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine the impact consequence are presented in the table below:

RATING	DEFINITION OF RATING	SCORE
A. Extent – the area over which the impact will be experienced		
None		0
Local	Confined to project or study area or part thereof (e.g. site).	1
Regional	Confined to the immediate region, e.g., the northern eThekweni and southern KwaDukuza region.	2
Wider Area	Municipality wide (eThekweni); Provincially, and beyond.	3
B. Intensity-the magnitude of the impact in relation to the sensitivity of the receiving environment		
None		0
Low	Natural and/or social/ and or economic functions and processes are negligibly altered.	1
Medium	Natural and/or social/ and or economic functions and processes continue albeit in a modified way.	2
High	Natural and /or social/ and or economic functions and processes are severely altered.	3
C. Duration-the time frame for which the impact will be experienced.		
None		0
Short-term	Up to 2 years	1
Medium -term	2 to 15 years	2
Long-term	More than 15 years	3

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The combined scores of these criteria translate into a consequence rating, which is shown in the table below:

Combined score (A+B+C)	0-2	3-4	5	6	7	8-9
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence rating has been derived, the probability of the impact occurring is considered using the probability classifications listed in the table below:

Probability of impact- the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Probable	40%-70% chance of occurring
Highly probable	>70%-90% chance of occurring
Definite	>90% chance of occurring

The overall significance of the impact will be determined by considering consequence and probability using the rating system presented below:

SIGNIFICANCE RATING	CONSEQUENCES		PROBABILITY
Insignificant	Very low	and	Improbable
	Very low	and	Possible
Very low	Very low	and	Probable
	Very low	and	Definite
	Low	and	Improbable
	Low	and	Possible
Low	Low	and	Probable
	Low	and	Definite
	Medium	and	Improbable
	Medium	and	Possible
Medium	Medium	and	Probable
	Medium	and	Definite
	High	and	Improbable
	High	and	Possible
High	High	and	Probable
	High	and	Definite
	Very high	and	Improbable
	Very high	and	Possible
Very high	Very high	and	Probable
	Very high	and	Definite

The significance of the outcomes for each impact is explained below:

- **Insignificant:** The potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- **Very Low:** The potential impact should not have any meaningful influence on the decision regarding the proposed activity/development.
- **Low:** The potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- **Medium:** The potential impact should influence the decision regarding the proposed activity/development.
- **High:** The potential impact will affect the decision regarding the proposed activity/development.
- **Very High:** The proposed activity should only be approved under special circumstances.

This section will therefore quantify the earlier identified impacts. Where there have been multiple time frames identified (e.g. short, medium and long term), the rating will be conducted on the final impact across all time frames- e.g. the resulting long term effect.

Therefore unless it is of particular importance- if an impact has a short term positive effect, which is offset by a long term negative effect, only the overall/ final (negative) effect will be rated. Similarly, if an impact has a short term negative effect which is offset by a long term positive effect, only the overall/ final (positive) effect of the impact will be rated.

5.5 Tongaat Impact Rating

The Tongaat impact rating is given below:

		IMPACT DESCRIPTION							
	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.5.1	Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will proceed, yet potentially with better operating/ competitive systems. Long term-permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable
5.5.2	Opportunity for the development of more efficient/ customer focussed production and operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will proceed, yet potentially with	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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		better operating/ competitive systems. Long term-permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.							
5.5.3	Potentially permanent opportunities created for linkages/ value chains in business activity, mainly for Tongaat business businesses to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Tongaat business firms.	The impact is: Local - it is felt by Tongaat firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term-business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium	Highly Probable
	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact

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5.5.4	Long term elimination in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is : Wider than regional - the impact is on Tongaat residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable
5.5.5	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is : Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable
5.5.6	Permanent growth in size and activity of the informal sector, mainly in and around taxis. The opportunity to make higher profits.	The impact is : Local - it is felt by Tongaat informal businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to grow permanently, as region grows.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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<p>5.5.7</p>	<p>Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat setas and other identified training programmes. More accessibility to job opportunities for Tongaat residents.</p>	<p>The impact is : Local - it is felt by Tongaat residents. Medium-chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.</p>	<p>Positive</p>	<p>Local : 1</p>	<p>Medium: 2</p>	<p>Long Term : 3</p>	<p>6</p>	<p>Medium</p>	<p>Probable</p>
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5.6 Verulam Impact Rating

The Verulam impact rating is given below:

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of In
5.6.1	Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term-permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2	Long Term :
5.6.2	Short and Medium term competition between proposed development and Verulam business activity. Verulam businesses may experience lower profits.	The impact is: Local- it is felt by Verulam businesses. Medium - business activity in Verulam will proceed, yet potentially with less profits. Short/ Medium term-businesses will eventually adjust and specialise/ improve their operating systems.	Negative	Local : 1	Medium: 2	Short- Medium Te

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5.6.3	Opportunity for the development of more efficient/ customer focussed production and operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term-permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2	Long Term :
5.6.4	Short and medium term opportunity for expansion of previously limited and business development, linked to municipal shortage in business land.	The impact is: Local- it is felt by Verulam industrial activity. High - expansion of industrial activity is high on the priority list of the Verulam community. Long term-industrial activity is expected to expand over the long term	Positive	Local : 1	High: 3	Long Term :
5.6.5	Potentially permanent opportunities created for linkages/ value chains in industrial activity, mainly for Verulam businesses to supply services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.	The impact is: Local - it is felt by Verulam firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2	Long Term : 2
	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact

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5.6.6	Long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is : Wider than regional - the impact is on Verulam residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term :
5.6.7	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is: Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term :
5.6.8	Permanent growth in size and activity of the informal sector, mainly in and around taxis. This is particularly true for Verulam, being en route between KZN's economic capital and the proposed development	The impact is : Local - it is felt by Verulam informal businesses owners. High- particularly transport business activity will continually expand. Long term- businesses have the opportunity to grow permanently, as region grows.	Positive	Local : 1	High: 3	Long Term :
5.6.9	Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam setas and other identified training programmes. More accessibility to job opportunities for Verulam residents.	The impact is: Local - it is felt by Verulam residents. Medium- chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Local : 1	Medium: 2	Long Term :

5.7 Western Rural Areas Impact Rating

From the Western Rural Areas table below, it will be seen that

- ✓ The negative impact identified (no. 4.3.4.a) of the proposed development on this area is a replacement these of informal settlements by Ndwedwe economic migrants, due to perceived economic opportunity in the region. This requires mitigational action.

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity
5.7.1	In the long term, more informal settlements are expected on the outskirts of the Ndwedwe.	The impact is: Local- it is felt by Ndwedwe residents. Medium: this is a continuation of lower living standards in the Ndwedwe Municipality. Medium term- subsidy housing from the proposed development, as well as from the proposed Driefontein Wewe development will significantly reduce informal dwellers.	Negative	Local : 1	Medium: 2
5.7.2	Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2
5.7.3	Permanent improvement in mainly elementary skills levels, as Ndwedwe residents are employed in proposed development. Therefore more employability for Ndwedwe's economically active.	The impact is: Local- it is felt by Ndwedwe locals. Low - while skills are acquired, these are mainly for low skilled, temporary and casual jobs, which have a low impact on social status. Long term - skills will forever be useful.	Positive	Local : 1	Low : 1

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5.7.4	Opportunity for the development of more efficient/ customer focussed production and operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term-permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2
5.7.5	Short and medium term opportunity for expansion of previously limited and business development, linked to municipal shortage in business land.	The impact is: Local- it is felt by Verulam industrial activity. High - expansion of business activity is high on the priority list of the Verulam community. Long term-business activity is expected to expand over the long term	Positive	Local : 1	High: 3
5.7.6	Potentially permanent opportunities created for linkages/ value chains in business activity, mainly for Verulam business to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.	The impact is: Local - it is felt by Verulam firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2

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5.7.7	Long term elimination in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is : Wider than regional - the impact is on Verulam residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3
5.7.8	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is : Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2
5.7.9	Permanent growth in size and activity of the informal sector, mainly in and around taxis. This is particularly true for Verulam, being en route between KZN's economic capital and the proposed development along the Ushukela Highway.	The impact is : Local - it is felt by Verulam informal businesses owners. High- particularly transport business activity will continually expand. Long term- businesses have the opportunity to grow permanently, as region grows.	Positive	Local : 1	High: 3
5.7.10	Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam setas and other identified training programmes. More accessibility to job opportunities for Verulam residents.	The impact is : Local - it is felt by Verulam residents. Medium- chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Local : 1	Medium: 2

5.8 Regional Impact Rating

From the north eThekweni south KwaDukuza Rural Areas table below, it will be seen that

- ✓ Impacts are generally rated higher when assessed from the regional levels, due to the larger scale of impact.
- ✓ The negative impacts identified include regional competition in business activity (similar to those identified in Tongaat and Verulam), and the potential regional in surge of informal settlements

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
5.8.1	EXISTING FACILITIES	Short term pressure for regional facilities.	-	-
		Permanent opportunity for better regional facilities provision as more facilities are added to the area.	-	-
5.8.2	EXISTING BUSINESSES (light commerce)	Short/ medium term competition between proposed development and nearby nodes.	Localisation of retail and wholesale businesses in smaller surrounding nodes, such that they will be secondary to the proposed development. Also increase in profits as retail businesses get more exposure, and as market sizes grow.	-
5.8.3		-	-	Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. Therefore more long term opportunity for business expansion of existing businesses.
5.8.4	POVERTY	Due to the large scale of the development, and therefore the large number of jobs created, poverty is expected to be permanently significantly reduced.	-	-
5.8.5		-	-	There is expected to be significant economic migration from surrounding areas and subplaces as a result, which, in the long run may reduce the initial impact of a reduction in poverty
5.8.6	BEE AND SMME DEVELOPMENT	Permanent opportunity for the regional expansion of BEE and SMME companies.	-	-
5.8.7	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis and Verulam taxi rank, as a result of increased activity on and therefore around the R102.	-	-
5.8.8	SKILLS DEVELOPMENT	Permanent skills development through increased employment opportunities	-	-

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5.8.9	SKILLS DEVELOPMENT	-	-	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni south KwaDukuza region. This assists in long term skills development, and employability.
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5.9 Main Impacts and Mitigating Measures

The main impacts identified in the assessment above are those impacts which should influence the decision making of the project. Where the intended impacts are positive and very high, this is an indication of the success of the project. Where the impacts are high and negative, the project should either not be pursued, or pursued only under special circumstances, or rigorous mitigation actions should be planned. The course of action chosen will depend on the particular project.

The main positive impacts include those which scored 7 and above, and therefore have a high or very high consequence rating. Inter alia- the consequences of that particular impact are high, or very high.

Overall, impact of the proposed development is primarily positive, with the negative impacts mostly offset by the positive impacts. Positive impacts were mainly identified as being highly significant in the decision making of the development, while negative impacts were mainly found to be of low significance to decision making of the proposed development- but nonetheless still in need of mitigating measures to address them.

There are 15 main positive impacts, which are tabulated on the following page in Table 14.

Those which scored a consequence score of 9 (i.e. consequences of the highest intensity) are the following:

- ✓ The reduction of poverty through the long term drop of unemployment - primarily in Tongaat, but also to a lesser extent in Verulam.
- ✓ A significant reduction in regional poverty due mainly to a large supply of jobs.

Those positive impacts which are identified as being definite are:

- ✓ Overall growth of Verulam businesses (particularly those located along/ near R102 corridor).
- ✓ Permanent growth of the informal sector (particularly taxis) in Verulam.
- ✓ Permanent regional growth of the regional taxi/ public transport industry.

Table 8- Main Positive Impacts of the proposed development

IMPACT NO	IMPACT	CONSEQUENCE SCORE	CONSEQUENCE RATING	PROBABILITY OF IMPACT	SIGNIFICANCE RATING
5.9.1	The opportunity for better facility provision, therefore more convenience for some residents of Tongaat and Verulam.	7	High	Definite/ Highly Probable	Very High
5.9.2					
5.9.3	The opportunity for expansion of currently constrained economies of Tongaat and Verulam.	7	High	Highly Probable	Very High
5.9.4					
5.9.5	The reduction of poverty through the long term drop of unemployment - in both Tongaat and Verulam.	9	Very High	Highly Probable	Very High
5.9.6					
5.9.7					
5.9.8	Overall growth of Verulam businesses (particularly those located along/ near R102 corridor).	7	High	✓ Definite	High
5.9.9	Permanent growth of the informal sector (particularly taxis) in Verulam.	7	High	✓ Definite	High
5.9.10	The reduction in poverty through the medium term elimination of informal households in the bordering rural sub-places.	8	Very High	Highly Probable	Very High
5.9.11	Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	7	High	Highly Probable	Very High

Socio-Economic Impact Assessment Study of Ushukela Development

5.9.12	Reduction of leakage of economic revenue, due to the establishment of new regional industrial value chains.	7	High	Highly Probable	Very High
5.9.13	The growth of the regional economy, through encouraged business investment (due to the increase in supply of business land).	8	Very High	Highly Probable	Very High
5.9.14	Significant reduction in regional poverty due mainly to a large supply of jobs.	9	Very High	Highly Probable	Very High
5.9.15	Regional opportunities for the expansion of BEE and SMME companies.	7	High	Probable	High
5.9.16	Permanent regional growth of the regional taxi/ public transport industry.	7	High	✓ Definite	High
5.9.17	Increase in employability of regional population through skills development through employment.	7	High	Probable	High
5.9.18	Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).	8	Very High	Probable	Very High

The four main negative impacts are:

- ✓ Possible lower profits for businesses in Tongaat and Verulam businesses (as a result of short and medium term competition between the proposed development and Tongaat and Verulam)
- ✓ Potentially less than anticipated profits for businesses –due to short (and medium) term competition in industrial activity between the proposed development and other business nodes such as Dube Trade Port and some business firms in Tongaat and Verulam.
- ✓ In the long term, more informal settlements are expected on the outskirts of the Ndwedwe.
- ✓ There is expected to be significant economic migration from surrounding areas (particularly in the form of informal settlements) and sub-places as a result, which, in the long run may reduce the initial impact of a reduction in poverty.

Those which are with regards to less profits due to competition, are seen as being offset in the long run by the positive effects of exposure to a larger market, and increased revenue from potential business partnerships with the proposed development’s new businesses. However, it must be noted that there may be some businesses in the existing nodes, currently running at break point, which may not be able to adapt and therefore survive competition, even in the short run.

With regards to competition between Dube Trade Port, and the proposed development, it is expected that in the long run businesses will adjust through specialisation.

While the negative impacts are of low significance, they are still identified as requiring careful mitigating attention. Mitigating measures are suggested below:

Table 9- Negative Impacts of the proposed development

		Consequence Rating	Probability of Impact	Mitigating Measure
5.9.19	Short and Medium term competition between proposed development and Verulam business activity. Verulam businesses may experience lower profits.	Low	Highly Probable	Creation of incentives for new businesses in the proposed development to source start up supplies from Verulam firms
5.9.20	In the long term, more informal settlements are expected on the outskirts of Ndwedwe.	Low	Highly Probable	Discussions with eThekweni, and Ndwedwe Housing Departments, as well as Wewe/ Driefontein Development Steering Committee about organising community area control committees to restrict further informal squatters (after decided upon

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		Consequence Rating	Probability of Impact	Mitigating Measure
				threshold).
5.9.21	Short term competition in business activity between proposed development and other business nodes such as Dube Trade Port and some business firms in Tongaat and Verulam. Potentially less than anticipated profits for businesses.	Low	Probable	-
5.9.22	There is expected to be significant economic migration from surrounding areas (particularly in the form of informal settlements) and sub places as a result, which, in the long run may reduce the initial impact of a reduction in poverty.	Medium	Highly Probable	Discussions with eThekweni, Housing Departments, as well as Wewe/ Driefontein Development Steering Committee about organising community area control committees to restrict further informal squatters (after decided upon threshold).

6 SUMMARY AND RECOMMENDATIONS

In summary, the impact assessment has shown that the proposed development will not only have a significantly positive impact on Tongaat and to a lesser extent Verulam, but provides a much needed unlocking of land resources required for their further socio economic development.

The **two main positive impact areas**:

- ✓ **6.1. Nodal and regional economic development and expansion:** This relates to the provision of access to land as well as inclusion of multi-modal transport access in the development for further business and commercial use by existing businesses, and the expansion of the north-most region of eThekweni.
- ✓ **6.2. Nodal and regional poverty reduction:** This relates to the reduction and alleviation of poverty through the reduction in unemployment and provision of subsidised housing.

The **two main negative impact areas** include;

- ✓ **6.3. Potentially reduced revenue of existing businesses due to competition:** This relates to the possibility of mainly inefficient existing businesses competing effectively. Here it is recommended that there be dialogue with business chambers and forums about the creation of incentives packages which encourage business linkages between existing business and the proposed development's new firms.
- ✓ **6.4. A replacement of, and increase in surrounding informal settlements due to economic immigration:** This relates to the increase in informal households from job seekers in surrounding poorer regions, and the potential replacement of informal settlements after subsidised housing has been provided. The corresponding mitigating measure recommends that the corresponding municipal housing departments, as well as communities be approached on methods to restrict further informal settlements.

The following subsections discuss the summarised main impacts further.

6.4 Nodal and Regional Industrial and Economic Development and Expansion

Nodal Development and Expansion

Both Tongaat and Verulam have been noted as populous and densely settled nodes which require access to outward business growth and expansion. For mainly spatial reasons, their economic and business growth has been restricted and limited, therefore stifling their economic potential. The proposed Ushukela Highway Development will provide Tongaat and to a lesser degree Verulam with the opportunity to access new business and commercial space and thus promote their much needed growth.

In particular, the proposed development will impact positively by creating opportunities for Tongaat and to a lesser degree Verulam business owners to establish new markets as well as new physical outlets. It will also supply opportunities for the creation of production and service value chains between the above businesses and the new businesses in the proposed development. Lastly, it will draw in a significantly large number of people into the area, therefore resulting in exposure of

Tongaat and to a lesser degree Verulam's existing businesses to a larger market. This is expected to occur most notably along the R102 corridor. In general, the proposed development will supply Tongaat and Verulam's existing businesses with the opportunity to expand and increase profits in the short, medium and long term.

Business and commercial activity in both nodes of Tongaat and Verulam will benefit from such business opportunities, however, it is expected that Tongaat will benefit more due to its close proximity to the development and the R102 corridor and the Ushukela Drive road. Tongaat business is also expected to benefit- albeit to a lesser extent, from KwaDukuza traffic travelling south along the R102 to the proposed development.

In particular, the dual access of road and rail to the site provide comprehensive multi-modal complimentary services to air-freight and passenger freight through the King Shaka International Airport.

Regional Development and Expansion

Each impact of the proposed development on both nodes, collectively results in a combined impact which is regional in nature. The overall regional impact of the proposed development will result in significant growth in economic activity in the whole of north eThekweni/ south KwaDukuza region.

In particular, the proposed development is in alignment with eThekweni's Draft North Spatial Development Framework, which states the development of an economic node along the R102 between Verulam and Tongaat as a north spatial development priority. The proposed development also positively impacts the region by reducing the strain on current eThekweni business land, due to the shortage of business land in the City and province.

The proposed development is expected in time to become an important economic and facilities node within the north most region of eThekweni and together with Tongaat and Verulam will become localised secondary service nodes which benefit from the proposed Ushukela Highway's socio economic positive spill-over.

6.5 Nodal and Regional Poverty Reduction

Nodal Poverty Reduction

The proposed development will impact positively on the poverty levels of both nodes, mainly through employment creation. With regards to unemployment, both Tongaat and Verulam have relatively low existing unemployment rates (although there are extensive surrounding peri-urban and rural communities which have relatively high unemployment rates). Therefore, even with Tongaat and Verulam's relatively low skills level as at present, unemployment is expected to significantly drop even further in the long run within both nodes. Assuming that their economically active only qualify for 25% of all the onsite permanent jobs after 2022, there will still be an expected surplus of 6541 jobs, after the Tongaat and Verulam employment levels reach full capacity.

Regional Poverty Reduction

It is estimated that regional employment creation by the proposed development may amount to 128685 jobs after 2022, including permanent and temporary jobs. It was found that both economies of Tongaat and Verulam put together could still not supply the proposed development with the

required labour, which will result in labour sourcing from the broader region. The overall regional impact is expected to be a significant reduction of unemployment in the long run, taking into account the combined effect of the proposed development, the proposed Wewe/ Driefontein development, and the newly constructed Dube Trade Port/ King Shaka Airport.

6.4 Alignment of Identified Impact Areas to Tongaat Local Economic Development Strategy

Importantly for integrated planning in Tongaat and surrounds, there is good cohesion between the 2008 LED Strategy for Tongaat and the identified positive impact areas resulting from the Ushukela development.

The vision developed for the Tongaat LED was: “By 2010 and beyond, the Greater Tongaat will be a preferred investment destination with superior and continuing quality service delivery; thereby providing sustainable employments and addressing social ills for the majority of people”.

Based on the above vision, the following goals were developed as the key economic thrusts into this strategy:

- **To establish the economic foundations of the greater Tongaat.**

The stagnant economy of Tongaat suffers from the lack of a number of economic assets including the infrastructure and land availability for its improvement. The lack of those economic assets impacts strategically on the overall development of Tongaat area.

- **To initiate economic growth of Tongaat**

This goal deals with economic sectors’ opportunities in terms of employment/unemployment, incomes, and growth. Many sectors in Tongaat including manufacturing, commerce, informal economy, tourism and the like have many opportunities that can be capitalised on to improve the economy of the area.

- **To initiate a developmental environment**

The goal deals with BEE, skills development issues, HIV/AIDS, health care and social assistance, and women and youth empowerment issues. Skills development, HIV/AIDS and other social issues are among major concerns threatening the social capital in Tongaat.

- **To maximise effort in order to establish institutional structures for implementation**

The significance of this goal is that it allows the rational interconnection of the other preceding goals. For instance, the economic foundations, the sectors’ opportunities and the skills development cannot improve the economy if they are un-co-ordinated and fragmented. Therefore, liaisons, management and regulations need to be put in place.

These in turn were developed into a **Key LED Strategies** (listed below) for the region – the table on the following page, (Table 16) highlighted strategies represent highlights the areas of integration between the LED Strategy and Ushukela Development

1. Enhance sector competitiveness
2. Further development of emerging and niche sectors
3. Business retention and investment promotion
4. Innovatively package industrial sites for development
5. Develop priority investment nodes and corridors

Socio-Economic Impact Assessment Study of Ushukela Development

6. Regional strategy and development
7. Sector skills alignment
8. Enhance labour productivity, literacy and numeracy skills
9. Knowledge economy
10. Implement key logistics and economic infrastructure
11. Bulk infrastructure to match economic growth
12. Direct the infrastructure required for economic growth
13. Provide strategic enterprise development support to emerging and informal enterprises
14. Centres of excellence
15. Cyber City

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As is shown in the table below – these strategies are aligned to the following anticipated positive impacts resulting from this development:

Table 106 Impact Areas Alignment to LED Strategy

IMPACT NO	IMPACT	LED STRATEGY ALIGNMENT	SPECIFIC LED STRATEGY
6.4.1	The opportunity for expansion of currently constrained economies of Tongaat and Verulam.	Yes	Enhancing sector competitiveness: to facilitate the optimal strategic functioning of industry organisations to drive the local economy.
6.4.2			Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key industrial and commercial nodes
6.4.3	The reduction of poverty through the long term drop of unemployment - in both Tongaat and to a lesser extent Verulam.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
6.4.4			
6.4.5	The reduction of poverty through the medium term and long term decrease of existing informal households- in both Tongaat and to a lesser extent Verulam.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
6.4.6			
6.4.7	Permanent growth of the informal sector (particularly taxis) in Tongaat.	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
6.4.8	The reduction in poverty through the medium term elimination of informal households in the bordering rural sub-places.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
6.4.9	Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
6.4.10	Reduction of leakage of economic revenue, due to the establishment of new regional business value chains.	Yes	Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key business and commercial nodes
			Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further

Socio-Economic Impact Assessment Study of Ushukela Development

			investment into the region.
6.4.11	The growth of the regional economy, through encouraged business investment (due to the increase in supply of industrial land).	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
			Develop priority investment nodes and corridors: to conceptualise and package the economic significance of economic nodes at various levels from city-wide nodes to community level nodes, for investment and development
6.4.12	Significant reduction in regional poverty due mainly to a large supply of jobs.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
6.4.13	Regional opportunities for the expansion of BEE and SMME companies.	Yes	Knowledge economy: to facilitate the establishment of higher learning and entrepreneurial culture centres in key nodes of the EMA
			Provide strategic enterprise development support to emerging and informal enterprises: to bridge the gap between first and second economy by facilitating the process of business evolution and global market integration for priority sectors.
6.4.14	Permanent regional growth of the regional taxi/ public transport industry.	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
6.4.15	Increase in employability of regional population through skills development through employment.	Yes	Sector skills alignment: to facilitate the alignment between skills supply (by secondary and tertiary – FET) and industry demand in priority sectors
			Enhance labour productivity, literacy and numeracy skills: to facilitate the improvement (value-adding) of labour practices and efficiency in priority sectors

6.5 Concluding Comments

A development of this magnitude is anticipated to have significant impact on the regional socio-economic fabric of Northern eThekweni. Certainly, not all of these impacts will be positive in the short term, however, by identifying and providing for suitable mitigation activities during the planning stages, the negative externalities can be greatly reduced. In contrast, the significant positive impacts were identified as

- **Nodal and regional economic development and expansion and**
- **Nodal and regional poverty reduction**

These are supported by the indicated areas of alignment between the anticipated impacts and the key goals and strategies of the Tongaat LED.

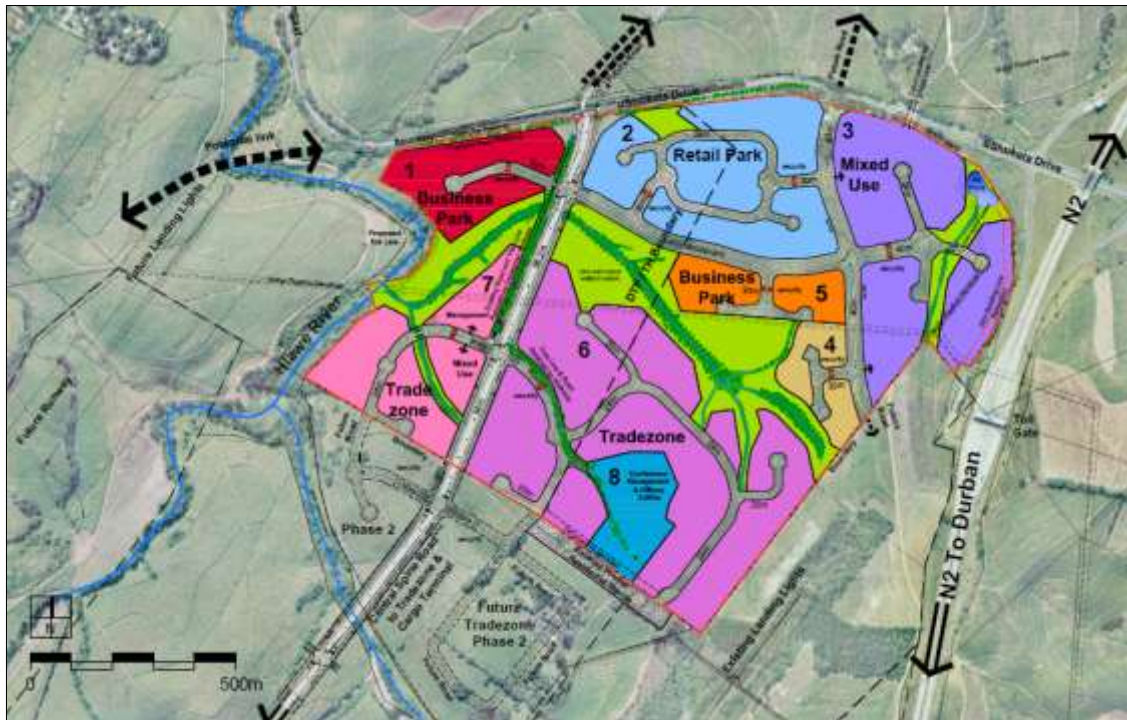
The positive impacts of the development are of high significance to the socio-economic well being of the region, and significantly outweigh the anticipated negative impacts. The Ushukela Development will enable the northern eThekweni region, and Tongaat and Verulam in particular, to access a vast range of economic opportunities that complement the existing logistical infrastructure of the Dube Trade Port and King Shaka Airport, and thus positively enhance the regional competitiveness.

Appendix 19: uShukela Highway Development: Socio Economic Impact Assessment of the
Development on Tongaat and Verulam – Update

USHUKELA HIGHWAY DEVELOPMENT

Socio Economic Impact Assessment of the
Development on Tongaat and Verulam - Update

July 2012



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EXECUTIVE SUMMARY

The assessment undertaken for this report relates to the proposed **uShukela Highway Development**, 38km north of Durban CBD in northern eThekweni Metropolitan Municipality.

The purpose of the assessment is to determine the potential socio-economic impacts of the proposed development on the surrounding nodes of Tongaat and the greater northern eThekweni and southern KwaDukuza region as well as on the node of Verulam and the Ndwedwe/western rural areas.

The applied methodology identified and isolated separate potential impacts of the proposed development. These were directed to two main impact areas - the primary impact area and the secondary impact area. The primary impact area includes the node of Tongaat, Dube Trade Port (northern eThekweni) and KwaDukuza. The secondary impact area consisted of Ndwedwe/the western rural areas and Verulam. These areas were identified not only due to geographic locality, but also due to existing land use and economic profile.

In terms of quantifying the significance of each impact, an Impact Rating Method was used to distinguish the gravity of each impact. **The most significant impacts identified are as follows:**

- **The project has significant impacts in terms of employment.** These include:
 - The proposed development will facilitate large-scale business establishment in the area, beneficial to employment creation.
 - **An estimated 8,153 permanent jobs will be created by business operations on-site;** this is aligned to a significant potential impact on the levels of unemployment in the impact regions.
 - **An estimated 939 temporary jobs will be created during the site's capital expenditure phase.**
- **The project as significant nodal and regional economic development and expansion impact.**
 - It was found that Tongaat and Verulam have been spatially restricted from further social, industrial and commercial development. **The proposed development provides much needed unlocking of land required for this.**
 - The proposed development was found to provide opportunity for the expansion of existing businesses through enabling the creation of value chains and business links between the proposed development and existing businesses, and increasing the exposure of existing business to a growing market.
 - The uShukela-Tongaat corridor was identified as being key in drawing a growing market to both eThekweni and KwaDukuza; linking Ballito to Umhlanga through the development of this bridging corridor to Dube Trade Port. The proposed development was found to be aligned with broader eThekweni economic development - particularly the Northern Spatial Economic Development Framework, and the Industrial Development Strategy.

The proposed development has the potential to introduce complementary businesses into an area currently stagnating due to the lack of available zoned land; in effect, acting as a stimulus to the existing local business sector and promoting new markets in Tongaat, Northern eThekweni, KwaDukuza, Verulam and the western rural areas.

1. INTRODUCTION

1.1. BACKGROUND AND PURPOSE

Tongaath-Hulett Developments commissioned this socio-economic impact assessment of the proposed Ushukela Highway Development to identify the major impacts likely to occur as a result of the development on the neighbouring nodes of Tongaat, Dube Trade Port and Ballito/KwaDukuza South, as well as the secondary nodes of Verulam, Waterloo and, Ndwedwe Rural. The study examines and provides an economic context for the range of social impact areas identified. Detailed impacts on these key indicators have been modelled and these are described in detail in the sections that follow.

The proposed site is located in northern eThekweni Metropolitan Municipality in KwaZulu-Natal, and is situated on previously agriculturally zoned land – east and south-east of the existing local node of Tongaat. The currently un-zoned site is 135ha in size and is currently being used for commercial farming and sugarcane plantations. It is planned for mixed-use including logistics and distribution, industrial zoning, trade and retail, business zoning, and mixed-use commercial zoning. It is anticipated that the actual development will be constructed in phases over an estimated time frame of a decade. While the impact assessment is conducted on the proposed total conceptual development, the construction of each feature will be demand-based, and therefore is subject to change.

The report isolates the impact of the development on the following major socio economic indicators:

- employment/ unemployment,
- commercial and business activity,
- poverty,
- skills development,
- black economic empowerment, and
- SMME development.

As the site is located 3km east of Tongaat, and on the north-eastern border of the Dube Trade Port/ King Shaka Airport, these areas were identified as first order impact zones, and the core focus of this assessment. As the development is sizable, some comment is also provided on the impact on the northern precinct of eThekweni, southern KwaDukuza and Ndwedwe/western rural area to provide a regional context to the impacts.

1.2. SOURCES OF INFORMATION

Information for the report was collected and analysed mainly through desktop research, interviews and consultation, from the following sources:

- ✓ Quantec stratified database
- ✓ Tongaat Local Economic Development Plan
- ✓ Verulam Local Economic Development Plan
- ✓ eThekweni Spatial Development Framework
- ✓ North eThekweni Spatial Development Plan
- ✓ Detailed interview with the eThekweni Spatial Planning Department
- ✓ Urban-Econ Economic Impact Modelling

1.3. METHODOLOGY

For the purposes of this report, the methodology applied is to assess the development separately, and determine its effect on socio economic impact indicators. These are then applied within the current context of the region, and a location specific impact assessment is conducted. Mainly the impact of the *completed* development is applied to the surrounding nodes, assuming their *current* socio-economic status quo.

Due to both the conceptual nature of the addressed impacts, and because the proposed development is still currently in its planning phase, some impacts are qualitatively assessed. All impacts are thereafter quantified by means of the Impact Rating Assessment. Where further detail on the development has not been made available, assumptions made are reflected in the text. **Structure of the Report**

1.4 STRUCTURE OF REPORT

The report is structured as follows:

Section one: Introduction

This introduces the report as above.

Section two: Description and Implications of the Development

This section addresses the development abstractly, and the general implications of the development on indicators such as employment.

Section three: Geographical Impact Areas and Socio-Economic Status Quo.

This section delineates the areas of impact, and distinguishes between primary, secondary and tertiary impact areas. An overview of the socio-economic status quo is provided as a backdrop by which to assess the impact of the proposed development.

Section four: Socio-Economic Impact Assessment

This section assesses the impact by identifying socio-economic factors on the development. It focuses on the primary impact areas of Tongaat and the northern eThekweni and southern KwaDukuza Region; as well as the secondary impacts in Verulam, Waterloo and Ndwedwe/western rural areas.

Section five: Impact Quantification

This section isolates the above identified impacts, and quantifies them by means of the Impact Rating Method, determining the significance of impact of each. The chief impacts are thereby identified.

Section six: Summary and Recommendations

This last section summarises the overall impact of the development. Where possible negative externalities have been identified, detailed measures and associated mitigating actions necessary are recommended to support the positive impact of the proposed development on the identified areas.

2. DESCRIPTION AND EMPLOYMENT IMPLICATIONS OF THE DEVELOPMENT

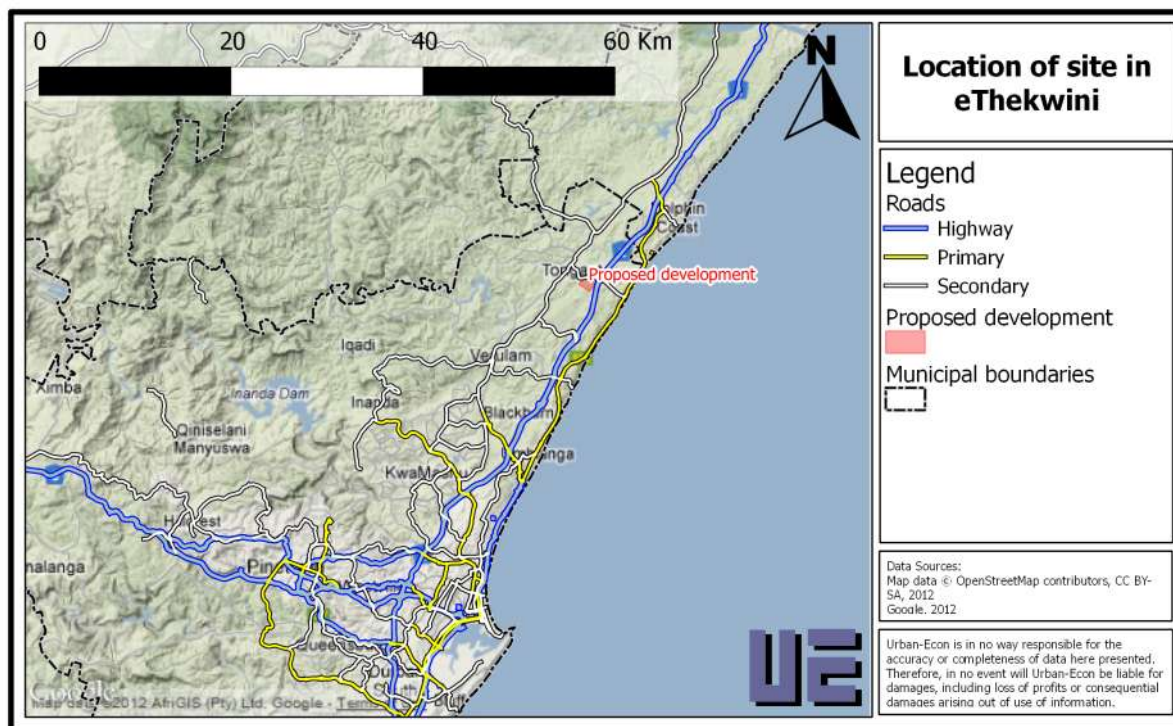
The following section describes the development and provides its initial implications on the identified developmental indicators. A thorough understanding of the development’s full implication (as the ‘impactor’) is explored in the sections to follow in order to understand its effect on its surrounding environment (as the ‘impacted’).

While the assessment of the proposed development is conducted assuming all 135 ha are developed, the development itself will be constructed in phases, over 10 years or longer, and on a demand basis. It is expected that the surrounding nodes will overtime adapt to the growth in business activity, as the change is expected to be gradual.

2.1. LOCATION OF THE DEVELOPMENT

The proposed development site is located in the northern region of eThekweni, 38kms to the north of Durban’s CBD, and 3kms westward or inland of the eThekweni’s northern coastline. The N2 and the uShukela Drive (Watson Highway) border the site on its eastern and northern boundaries respectively. The figure below illustrates the site’s (shaded in red) regional position within eThekweni Municipality, which is demarcated by the black border.

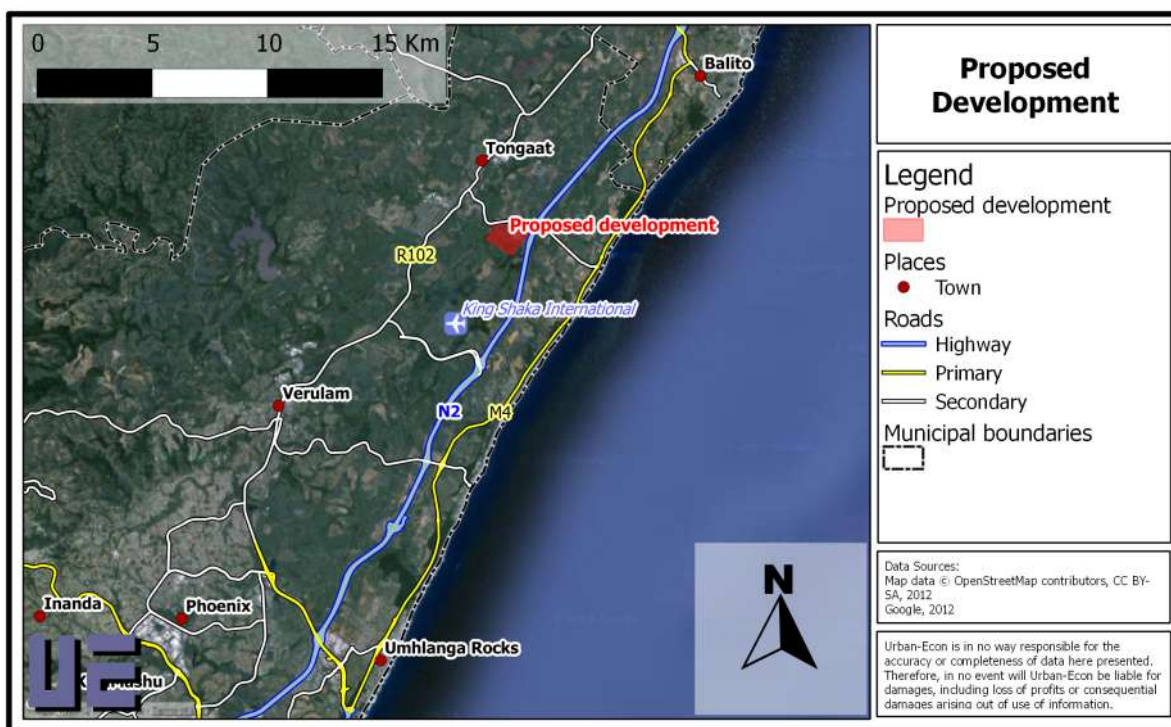
Figure 1-Location of the proposed development within eThekweni Metropolitan Municipal boundaries



Source: Urban-Econ derived from OpenStreetMap contributors, CC BY-SA, 2012

The proposed development is located close to several regional nodes. It is located 6kms south-west of Ballito, 4kms west of La Mercy, and 4kms north-east of Verulam. The site borders are 1km south of the Tongaat CBD. Located further inland, is rural Ndwedwe - approximately 14kms west of the site. The King Shaka Airport (which opened on 1 May 2010), and the Dube Trade Port (which opened on 8 March 2012), is located directly on the southern border of the proposed development. The figure below details the proximate nodes.

Figure 2- Location of the proposed development (red shading) within the North eThekweni region



Source: Urban-Econ, derived from OpenStreetMap contributors, CC BY-SA, 2012

2.2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

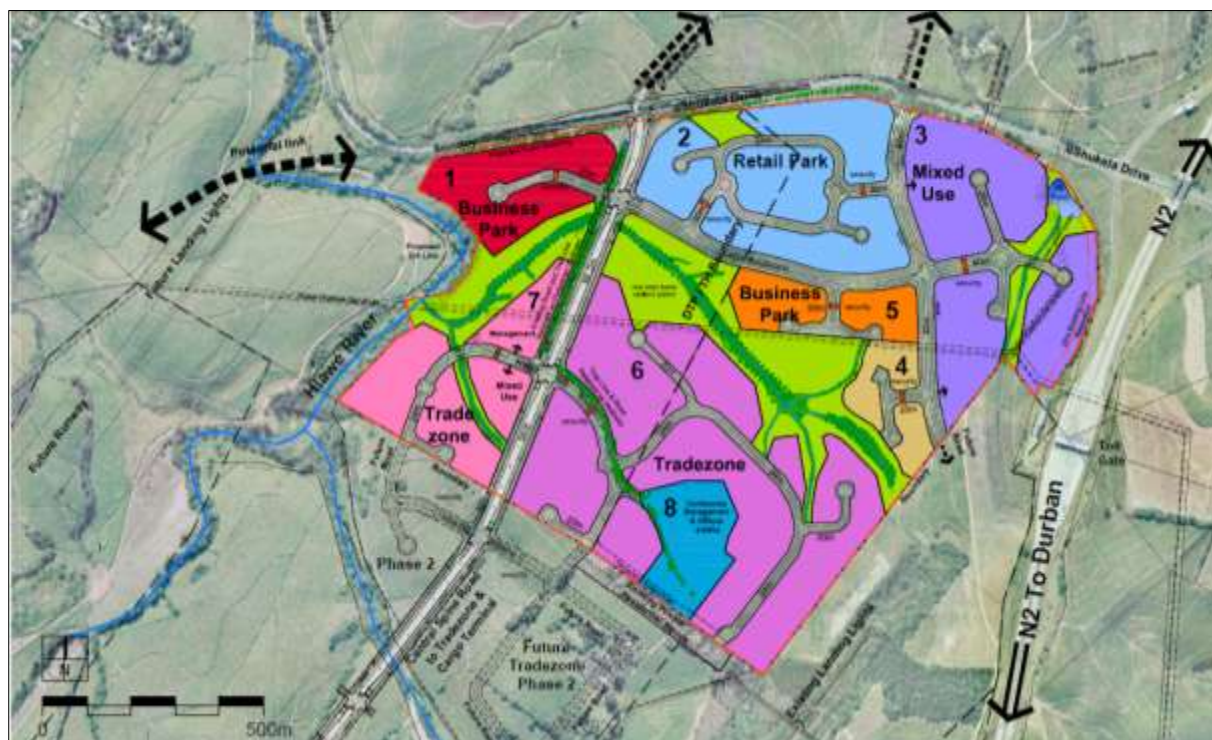
The proposed development is planned as a mixed-use development, comprising the following:

- Conference facilities, management offices, business offices - 4.8 ha
- Business parks: offices and showrooms – 13.8ha
- Mixed-use: offices, showrooms, service retail and hotels – 15.7 ha
- Tradezones: Light/clean industry, warehousing, distribution and manufacturing - 38.0ha
- Open space - 21.9 ha
- Roads – 26.5 ha

Specifically, plans are in progress for modal upgrades of existing roads and rail, as well as the establishment of supporting roads servicing the site. The site layout is shown below.

SOCIO-ECONOMIC IMPACT ASSESSMENT STUDY OF USHUKELA DEVELOPMENT

Figure 3- Conceptual Development Framework



Source: Tongaat Hulett Developments, 2012

2.3. EMPLOYMENT IMPLICATIONS OF THE PROPOSED DEVELOPMENT

In order to develop a measurable impact, each descriptive feature of the development is isolated for its effect on quantifiable socio-economic indicators. The table below isolates the initial impact on employment as the first measurable means of assessing the development’s socio economic impact.

As can be seen from the table below, a total of 8,153 permanent jobs are expected to be created by business activity on the site. This **excludes** the employment creation impact on suppliers through increased demand for supplier services. Annual operational expenditure’s (OPEX) by on-site businesses effect the supply chain through backward and forward linkages, both direct and indirectly, and have thus a significant impact on employment creation throughout the supply chain. Additional direct jobs created in the supply-chain refers to jobs created at the premises of suppliers, whilst indirect additional jobs created refers to jobs created at the premises of suppliers of suppliers.

As the total annual OPEX of on-site businesses cannot be determined at this stage (and is demand-based), an indication of the direct and indirect employment opportunities that will be created (per R1million annual operational expenditure) has been provided.

Table 1: Number of Permanent Jobs created through the development

Sub-Precinct	Land Use/Development	Permanent Jobs		
		Anticipated no of permanent on-site employees	Additional jobs in direct supply-chain (per R1 million OPEX)	Additional jobs in indirect supply-chain (per 1 million OPEX)

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Permanent Jobs				
Sub-Precinct	Land Use/Development	Anticipated no of permanent on-site employees	Additional jobs in direct supply-chain (per R1 million OPEX)	Additional jobs in indirect supply-chain (per 1 million OPEX)
1	Business Park 1			
	Offices	616	4.9	2.5
	Showrooms	363	3.0	1.6
	Subtotal:	980		
2	Retail Park			
	Offices	1 032	4.9	2.5
	Showrooms	304	3.0	1.6
	Retail	304	4.9	2.5
	Warehousing	73	0.5	1.2
	Subtotal:	1 713		
3	Mixed-Use 1			
	Offices	381	4.9	2.5
	Showrooms	673	3.0	1.6
	Services	449	4.9	2.5
	Retail	449	3.0	1.6
	Hotels	150	3.0	1.6
	Subtotal:	2 101		
4	Business Park 2			
	Offices	272	4.9	2.5
	Showrooms	160	3.0	1.6
	Subtotal:	432		
5	Business Park 3			
	Offices	369	4.9	2.5
	Showrooms	218	3.0	1.6
	Subtotal:	587		
6	Tradezone 1			
	Offices	521	4.9	2.5
	Light/clean industry	222	0.9	1.9
	Warehousing	111	0.5	1.2
	Distribution	37	0.5	1.2
	Manufacturing	148	0.9	1.9
	Subtotal:	1 040		
7	Tradezone 2 and Mixed-Use 2			
	Offices	85	4.9	2.5
	Light/clean industry	48	0.9	1.9
	Warehousing	24	0.5	1.2
	Distribution	12	0.5	1.2
	Manufacturing	48	0.9	1.9
	Offices (mixed-use)	85	4.9	2.5
	Showrooms	100	3.0	1.6
	Service Retail	100	3.0	1.6
	Subtotal:	504		
8	Conference, Management and Offices			
	Conference	360	3.0	1.6
	Management Offices	218	4.9	2.5
	Offices	218	3.0	1.6
	Subtotal:	796		

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Permanent Jobs				
Sub-Precinct	Land Use/Development	Anticipated no of permanent on-site employees	Additional jobs in direct supply-chain (per R1 million OPEX)	Additional jobs in indirect supply-chain (per 1 million OPEX)
Total permanent on-site jobs		8 153	Average: 3.0	Average: 1.9

Source: Urban-Econ Employment Multipliers, 2012

Whilst the above mentioned jobs are permanently created jobs, the table below details the number of temporary jobs created during the site's capital expenditure phase.

As can be seen from the table below, a total of 939 jobs will be created during the site preparation capital expenditure phase, namely 528 directly in the construction supply chain, and 410 indirectly of companies supporting the construction supply chain.

Table 2: Number of Temporary Jobs created by the development during capital expenditure phase

Capital Expenditure Item	CAPEX Amount	Total Temporary Jobs	Direct	Indirect
Internal Infrastructure				
Retail	R 26 640 000	127	72	56
Mixed-Use	R 53 580 000	256	144	112
Trade Zone	R 41 625 000	199	112	87
Business Park	R 34 832 000	166	94	73
Conference/Office	R 8 134 000	39	22	17
Sub-Total	R 164 811 000	787	443	344
Bulk Infrastructure				
Roads	R 26 821 000	128	72	56
Water	R 0	-	-	-
Sewer	R 4 033 000	19	11	8
Electricity	R 0	-	-	-
Stormwater	R 0	-	-	-
Bulk Open Spaces	R 1 019 000	5	3	2
Sub-Total	R 31 873 000	152	86	67
Land Costs:	R 41 621 000	-	-	-
Total:	R 238 305 000	939	528	410

Source: Urban-Econ Employment Multipliers, 2012

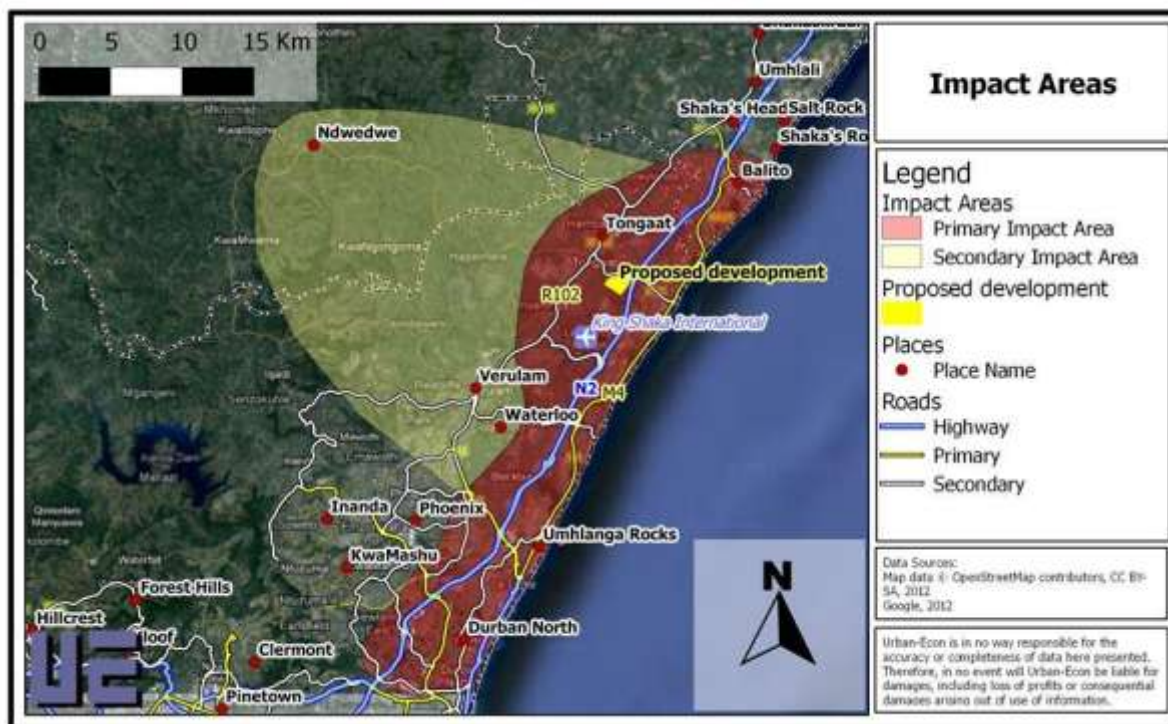
2.4. CONCLUSION

The proposed development will result in significant growth in job opportunities and business activity. An anticipated 8,153 permanent jobs are anticipated upon successful establishment of on-site businesses at the proposed development, and 939 temporary jobs during the capital expenditure phase of the proposed development.

3. GEOGRAPHIC IMPACT AREAS AND SOCIO-ECONOMIC STATUS QUO

The following section delineates impact areas of the proposed development, which are represented in the figure below. The primary impact areas identified are the Tongaat, northern eThekweni and southern KwaDukuza including the Dube Trade Port and King Shaka Airport. The secondary nodes are Verulam, Ndwedwe/western rural and Waterloo, Umhlanga, and greater La Mercy).

Figure 4- Primary and Secondary Impact Areas



Source: Adapted from Google Earth, 2012

3.1. PRIMARY IMPACT AREA

The primary impact area includes the nodes of Tongaat¹ due to the geographic proximity and the ease of access along the Watson Highway. Tongaat acts as local service nodes in north eThekweni, serving relatively small populations which account for 1% the total size of eThekweni Metropolitan.

Also included in the primary impact area is the Dube Trade Port/ King Shaka Airport site, which is located on the southern border of the proposed development. The Airport and Tradeport are of importance to the proposed development with regards to creation of business and industrial activity, as well as employment in the area.

¹ For the purposes of this report, the node Tongaat includes the bordering township of Hambanathi and the subplace of Emona and Westbrook.

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Lastly northern eThekweni and southern KwaDukuza are included in the primary impact area as these areas will be the prime source of highly skilled labour at the proposed development, and will be largely impacted by the emergence of businesses situated between these two rapidly growing economic nodes. These areas also host a share of tertiary sector economic activity, and form an existing activity corridor that links the business parks of the Umhlanaga Ridge along the M4 to the tertiary sector activity in Waterloo (Tongaat) and onwards to Ballito (KwaDukuza). The close alignment of the uShukela Highway (Main Rd off the M4 to Tongaat) to this corridor will continue to deepen the tertiary (business services, retail and medical services) activity spine and connect uShukela into this corridor.

3.1.1 PRIMARY CATCHMENT SOCIO-ECONOMIC PROFILE, 2012

The table below details the socio-economic profile of the primary impact area as well as indication of the likely employment capture of on-site jobs created by the proposed development.

The following can be highlighted:

- Overall the area has a low unemployment rate, and indicates good employment opportunities. The labour force participation is low however, and is indicative of the area's working population having a preference not to be economically active as opposed to a large presence of discouraged workers. The majority of the employed population is skilled, and is indicative of a better educated working population.

Table 3 Primary Catchment Profile

	eThekweni		KwaDukuza South		Tongaat		Primary Catchment
Employed	1 032 243	39%	43 889	36%	17 832	48%	6196 (76%)
Unemployed	268 767	10%	10 343	8%	1 806	5%	
Not Economically Active	1 356 926	51%	68 387	56%	17381	47%	
<i>Child population</i>	946 778	25%	50462	29%	11194	22%	
<i>Working age population</i>	2607 888	70%	118057	67%	37019	72%	
Formally Employed	812 328	79%	34 292	78%	13890	78%	
Highly Skilled	110 407	14%	3 697	8%	1 865	10%	5283 (90%)
Skilled	374 023	46%	13 620	31%	6 560	37%	
Semi and Unskilled	328 305	40%	17 033	39%	5 465	31%	913 (40%)
Informally Employed	220 983	21%	9 644	22%	3 966	22%	
Population	3 727 124		175840		51 216		
No. of Households	1 029 502		47 825		15 626		
No. of people per household	3.6		3.7		3.3		
No of people per km²	1 626		278		3 412		
No. of households per km²	449		76		1 041		
Aged population	176 317	5%	7417	4%	3115	6%	
Age Dependency Ratio	43.0		49.0		38.5		
GVA Share of KZN (R millions, 2005 prices)	152075.1	53%	5083.6	2%	Captured as part of eThekweni		
Leading Sectors (per Sub-Area)							
- Finance, insurance, real estate and business	36691.3	24%	962.4	19%	454.1	18%	

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services						
- Manufacturing	32058.9	21%	1486.3	29%	713.0	28%
- Transport, storage and communication	23797.5	16%				
- Wholesale and retail trade			858.9	17%	388.6	15%

3.1.1 HOUSEHOLD AND POPULATION PROFILE

The noted above, the catchment area population and households reflect an immediate density of 3412 persons per km² in Tongaat, with 3.7 persons per household. There is a slightly and a slightly lower density in the remaining northern eThekweni profile of 3.6; and a KwaDukuza indicating density of 3.3. Thus locality of the proposed development is well settled and when this is reviewed in conjunction with the employment profile – 90% of the catchment’s employed is highly skilled, this indicates that a the development will be well positioned to provide additional space for commercial activity in a community that has the ability to take up the opportunities.

3.1.2 SECTORIAL EMPLOYMENT

From the land allocation it is indicative that large office jobs (highly skilled employment), wholesale and retail trade (skilled to highly skilled employment) and light industry and the limited on-site manufacturing (skilled and semi and unskilled employment) enterprises will establish at the proposed development.

The table below demonstrates employment by key sector. As can be seen from the table, the manufacturing industry and wholesale and retail trade, accommodation and catering industry are dominant employers in both Tongaat. Finance, insurance and real estate, and general government are the next highest employment industries.

Table 4- Key Sector Employment Profile, 2012

Employment Sector	eThekweni		KwaDukuza South		Tongaat	
Manufacturing	148 400	14%	6 926	15%	3 974	22.1%
Wholesale and retail trade, catering and accommodation	249 317	24%	11 292	24%	4 392	24%
Transport, storage and communication	63 360	6%	1 093	2%	836	5%
Finance, insurance, real estate and business services	183 014	18%	5 378	12%	2 578	14%
Community, social and personal services			8 802	19%	1 457	8%
General government			4 159	9%	2 795	(16%)

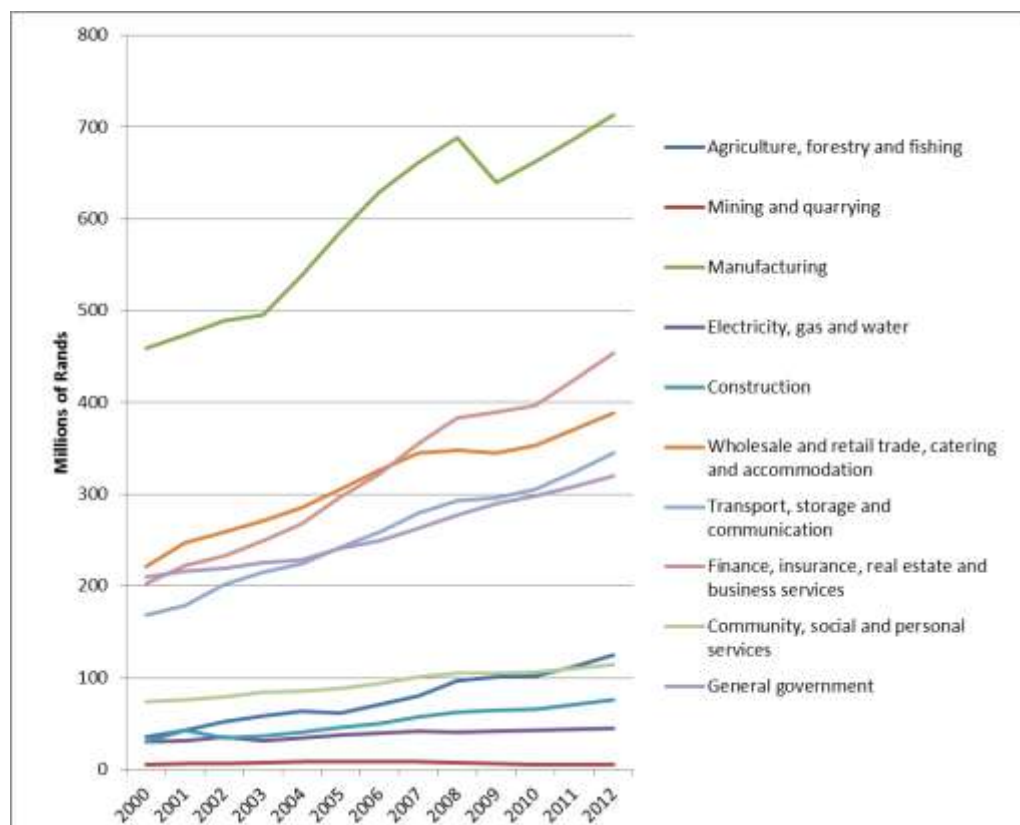
Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2012

3.1.3 GROSS VALUE ADDED (GVA)

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In Tongaat, the manufacturing sector contributes the most to gross value added (28%). This reflects on their largely small and medium scale industrial activity (industrial SMMEs). Tertiary services such as finance, insurance, real estate and business services (18%) and wholesale and retail trade, catering and accommodation are the next highest (15%). The figure below describes the GVA profile of Tongaat over the past 12 years. This profile will likely remain with the emergences of new light-manufacturing business and tertiary offices, retail and other services at the proposed development. Currently the existing town centre of Tongaat is highly constrained, and the uShukela Development will allow for local businesses to seek prime vacancy space that allows for interaction into a wider market – notably linking Dube Trade Port and the uMhlanga and Ballito nodes to Tongaat.

Figure 5: Gross Value Added (GVA) per Industry Sector of Tongaat



Source: Quantec Standardised Regional, 2012

3.2. SECONDARY IMPACT AREAS

The secondary impact areas include Verulam, Waterloo and the bordering sub-places of the Ndwedwe/western rural areas.

The following table details the socio-economic profile of the secondary impact area. The following can be noted:

- sparse household and population densities characteristic of a rural region. The number of informal households is also high.

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- the majority of the working population are semi and unskilled individuals. The population that is unemployed is also mostly semi and unskilled. Only 9% of residents are highly skilled.

Table 5 Secondary Catchment Area

	Verulam 2012		Ndwedwe/Western Rural Area		Secondary Catchment
Employed	23 352	48%	15 883		1898 (24%)
Unemployed	2 415	5%	6 080		
Not Economically Active	22539	47%	68 313		
Child population	16 244	24%	48 729	34%	
Working age population	48 306	71%	87 978	62%	
Formally Employed	18185	78%	12 517	79%	
Highly Skilled	2 555	(11%)	1 376	9%	528 (10%) ²
Skilled	8 609	(37%)	4 961	31%	
Semi and Unskilled	7 021	(30%)	6 210	39%	1370 (60%) ³
Informally Employed	5 197	(22%)	3 400	21%	
Population	67 962		142 067		
No. of Households	20 816		29 310		
No. of people per household	3.3		4.8		
No of people per km ²	2 600		122.7		
No. of households per km ²	796		25.3		
Aged population	3 557	5%	7861	4%	
Age Dependency Ratio	40.8		64.3		
GVA Share of KZN (R millions, 2005 prices)	3 279.1	1%	1677.8	0.6%	
Leading Sectors					
- Agriculture, forestry and fishing			361.8	22%	
- Finance, insurance, real estate and business services	767.2	23%			
- Manufacturing	725.8	22%	318.6	19%	
- Transport, storage and communication	569.9	18%			
- Wholesale and retail trade, catering and accommodation			251.0	15%	

3.2.1 HOUSEHOLD AND POPULATION PROFILE

The noted above, the catchment area population and households reflect a much higher density in the urban area of Verulam of 2600 persons per km². In comparison, the rural hinterland of Ndwedwe is sparsely settled, with only 123 persons per kilometre. The catchment's employment profile reflects a low share of skilled employment (10%); but a high share of semi and unskilled employment, using the catchment criteria, is is

² Of total anticipated skilled jobs at the development

³ Of total anticipated semi and unskilled jobs at the development

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estimated that these communities would be able to access a high share of the semi and unskilled labour requirements in this development, giving due consideration to their proximity in the secondary catchment.

3.2.2 SECTORIAL EMPLOYMENT

From the land allocation it is indicative that large office jobs (highly skilled employment), wholesale and retail trade (skilled to highly skilled employment) and light industry and the limited on-site manufacturing (skilled and semi and unskilled employment) enterprises will be established at the proposed development. The existing sectoral employment profile reflects good levels of manufacturing, retail and logistics employment. So there exists a base pool of semi and unskilled labour in these sectors that have clear alignment to the uShukela Highway Development.

Table 6- Secondary Impact Area - Sector Employment Profile, 2012

Employment Sector	Verulam		Ndwedwe	
Agriculture, forestry and fishing	354	(2%)	2 518	16%
Mining and quarrying	109	(0.5%)	82	1%
Manufacturing	3 395	(14%)	1 768	11%
Electricity, gas and water	55	(0.2%)	67	0%
Construction	1 711	(7%)	2 045	13%
Wholesale and retail trade, catering and accommodation	5 863	(25%)	3 506	22%
Transport, storage and communication	1 664	(7%)	524	3%
Finance, insurance, real estate and business services	4 116	(18%)	884	6%
Community, social and personal services	2 718	(12%)	2 392	15%
General government	3 480 (15%)		2 981	19%

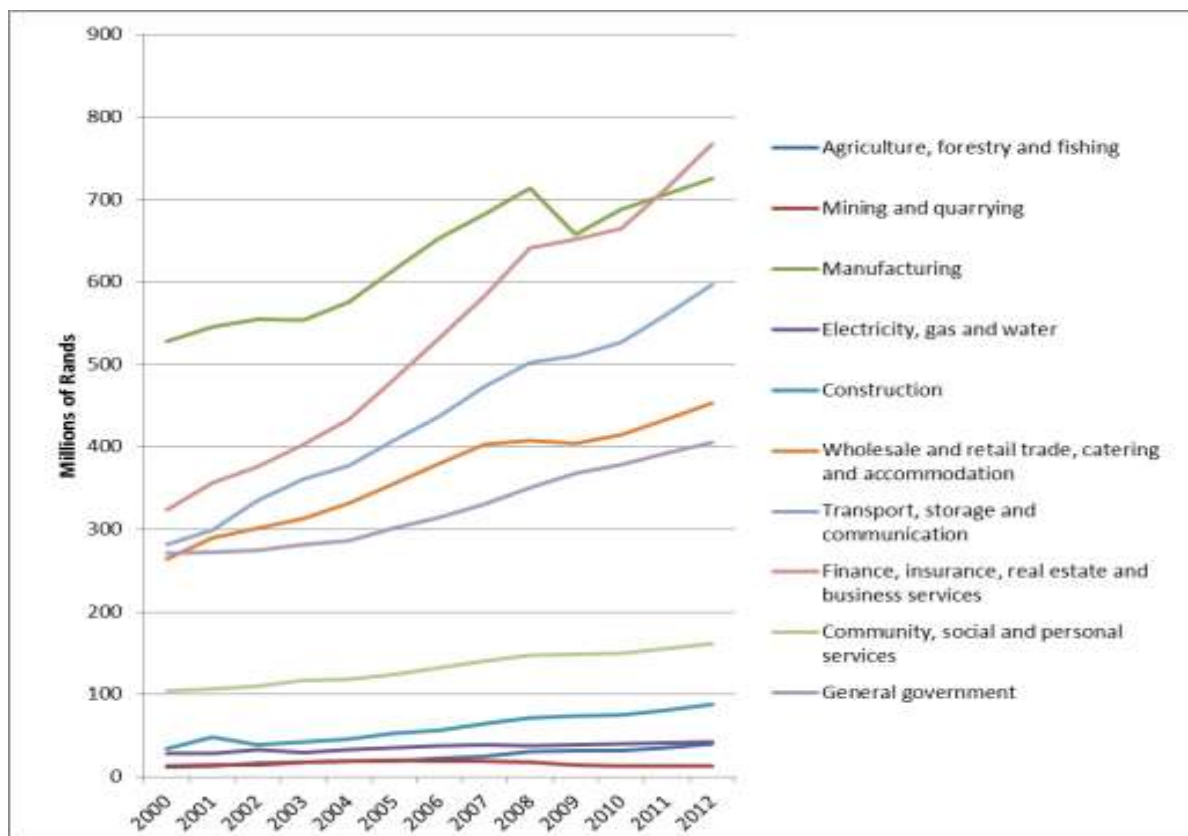
Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2012

3.2.3 GROSS VALUE ADDED

In Verulam, finance, insurance, real estate and business services (23%), as well as manufacturing (22%) are the highest industries contributing to regional gross value added, as indicated in the figure below. The proposed development will further strengthen the dominance of these two industries as businesses likely to develop at the site are within these respective sectors.

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Figure 6: Gross Value Added (GVA) per Industry Sector of Verulam



Source: Quantec Standardised Regional, 2012

4. SOCIO-ECONOMIC IMPACT ASSESSMENT

4.1 IMPACT FACTORS

4.1.1 IMPACT AREAS

As indicated in section three above, the impact areas have been classified into primary and secondary and impact areas. The following impact assessment is focused on four main sub-areas areas. Tongaat and northern region of eThekweni Metropolitan Municipality and the including the southern region of KwaDukuza Local Municipality fall into this catchment too. Verulam and the Nwedwe/western rural areas form this secondary catchment. The impact areas are highlighted below, with impact criteria further detailed below.

4.1.2 IMPACT ASSESSMENT CRITERIA

The socio- economic impact assessment is conducted on the following criteria:

✓ **Existing Social Facilities**

This assessment looks at the impact of the proposed development on existing social facilities in the addressed areas - noting a possible initial backlog in facility provision in the proposed development.

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- ✓ **Existing Businesses** (retail and light commerce)
This assessment isolates the main types of business activity which will be impacted by the proposed development, and quantifies this impact where possible.
- ✓ **Industrial Activity**
This assessment discusses the impact on industrial activity, and addresses the impact of the proposed development on regional industrial activity.
- ✓ **Residential Demand**
This assessment discusses the impact of the proposed development only on Tongaat, Verulam and the western rural area for additional residential stock in the region.
- ✓ **Property Values**
This is noted as being directly linked to the impact of the proposed development on residential demand.
- ✓ **Poverty**
This is addressed mainly by applying the impact of potential jobs created as noted in section 2, as well as applying the impact of subsidy housing on informal settlements in Tongaat, Verulam and the western rural areas.
- ✓ **BEE and SMME Development**
This briefly notes the impact of the development on black-owned businesses and small enterprises in the key nodes.
- ✓ **Informal Sector Development**
This section notes that key impacts will be felt mainly by the taxi industry and its corresponding vendors.
- ✓ **Skills Development**
This section notes the impact of the proposed development on general development in the listed nodes.

4.2. TONGAAT

The following section explores the socio-economic impact per identified criteria on the residents and businesses of Tongaat.

EXISTING SOCIAL FACILITIES

As the proposed development does not intend to have a residential component, no strain on existing social facilities is anticipated. The hotels services will cater for the accommodation needs of commuting business persons. These will however not be reliant on existing social services in Tongaat. Increased use of the police services in Tongaat will be utilised, as will be the back-up services of fire-fighting stations.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

In the short term, Tongaat businesses are expected to experience a boost and increase in revenue as a result of increases in demand for food, accommodation services, fuel and convenience retail in the area. This will

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notably be impacted by the construction of the hotel in the area, restaurants providing food for on-site employees, and an increase in commuter traffic requiring fuel and convenience retail.

INDUSTRIAL AND COMMERCIAL ACTIVITY

The establishment of new light industrial businesses in the proposed development is expected to boost supportive industrial activity in Tongaat (e.g. suppliers, industrial repairs and maintenance). Manufacturing presently dominates the Tongaat zone economy in terms of job creation and GVA, and a further industrial activity at the proposed site would further boost this present outcome. The largest contributor to the manufacturing sector in Tongaat is the food and beverages sub-sector that includes the Tongaat-Hulett group's operations in Tongaat. The clothing and textiles sub-sector is the 2nd largest manufacturing sector, followed by the furniture and other manufacturing sectors. There are about 35 registered clothing and textile firms operating in Tongaat. Most of the registered firms in the metal products, machinery and equipment sub-sector are small-scale operations focussing on the local market.⁴

Due to close proximity and easy access, there will be significant opportunities for the creation of industrial value chains and linkages between particularly Tongaat Industrial Park and the proposed development industrial / business park/ office businesses. There may be competition between support suppliers which will eventually develop in the proposed development, and in Tongaat industrial. Some existing Tongaat industrial businesses may require more marketing and upgrading. Where large scale supplies are not required, Tongaat industrial businesses are expected to be more competitive, due to lower rental costs than that of the proposed site.

In the short term, there is likely to be healthy competition in services and retail businesses allowing existing Tongaat businesses the opportunity to expand, or relocate, and in the long run offer either local service specialisation or regional service offering, linking the node better to DTP, eThekweni and KwaDukuza along the M4 corridor.

Worth noting in assessing the effect of the proposed development on industrial activity, is the key issue identified in the Tongaat LED, of a shortage of industrial land in and around Tongaat. Tongaat industrial stakeholders strongly felt that the under-development of surrounding Tongaat-Hulett owned land resulted in Tongaat being constrained in its development – restricting and stifling industrial activity. The Tongaat LED notes that investors expressed their frustration at their restriction to expand or invest in further industrial activity in Tongaat, while pointing out that DTP land is too expensive. These investors reported that they would prefer cheaper industrial land near DTP. The effect of the proposed development on light industrial activity is therefore largely to create opportunity for industrial expansion, by increasing the land in Tongaat zoned for industrial and commercial use substantially. This will encourage investment in the region in the long term.

PROPERTY VALUES

The impact of the proposed development are likely to witness an increase in residential property values, as demand for residential housing nearby industrial and commercial activity at the proposed site will increase.

⁴ Tongaat LED Study, p8, 2008; Tongaat Manufacturing Cluster, 2011

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Existing industrial and commercial property values will be depended on the outcome of existing businesses ability to remain competitive with new entrants locating at the proposed development. Should competition enable business expansion of existing Tongaat businesses as opposed to contraction, commercial properties and industrial properties are likely to increase in value too.

POVERTY

Poverty in the greater Tongaat area will decrease due mainly to increased opportunities for employment, and general economic activity. In terms of quantifying the impact of poverty, the unemployed population of Tongaat is identified as the chief beneficiary of employment generated by the site, due to the mix of close proximity and labour skills.

These findings have been detailed in the table below, with impacts on the unemployment rate of the area shown.

BEE AND SMME DEVELOPMENT

The existence of new economic opportunities in the proposed development will provide opportunities for black-owned enterprises to enter markets, or to enter a competitive location next to highly marketed DTP. This is also true for existing black businesses/ investors in (predominantly African and Indian) Tongaat, who wish to expand (as is indicated in the Tongaat LED).

INFORMAL SECTOR DEVELOPMENT

The Tongaat informal sector will be positively impacted. The Tongaat informal sector is a significant employer, providing a means to income for 22% of its population, and has been increasing employment opportunities at a rate of 2.3% per annum. An increase in commuting workers to the proposed development results in higher public transport utilisation and access to informal service providers at commuting points. This is likely to impact on informal transport economic activity as well as an increase in vendors and informal traders en-route.

SKILLS DEVELOPMENT

Opportunities for skills development are also notable. The development will create further opportunity for the strengthening and developing of existing skills development in Tongaat. In Tongaat's Industrial Park there currently exists skills development through the Transport SETA, Services SETA, and safety and security training - all of which are relevant to the proposed development. This then contributes to the employability of Tongaat's youth in the long run through skills development, which assists in decreasing Tongaat's unemployment rate.

PUBLIC TRANSPORT

Due to the size and scope of the proposed development it is anticipated that there will be considerable expansion in the public transport network (bus and taxi service) along the uShukela Highway. This in conjunction with the DTP link road and the planned revamp of commuter rail in eThekweni north will provide numerous opportunities for economic growth in the public transport sector.

SUMMARY OF IMPACTS: TONGAAT

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.2.1	EXISTING FACILITIES	No effect	No effect	No effect
4.2.2	EXISTING BUSINESSES (retail and light commerce)	Short term increase in retail and wholesale sector (more convenience retail) and fuel sales	Medium term competition in retail and wholesale sector,	Long term growth, localisation and potential specialisation of retail and wholesale sector
4.2.3.1	LIGHT-INDUSTRIAL ACTIVITY	Short term competition between proposed development and Tongaat Industrial Park industrial activity.	Medium term competition between proposed development and Tongaat Industrial Park industrial activity.	-
4.2.3.2		-	-	Opportunity for the development of more efficient production systems due to competition. E.g., better customer care, quicker technologies, better services, more competitive prices, in an attempt to attract business. The impact is that customers will benefit from the above.
4.2.3.3		Permanent opportunity for expansion of previously limited and “boxed in” light industrial development.	-	-
4.2.3.4		Potentially permanent opportunities created for linkages/ value chains between existing industry in the northern region of eThekweni and the anticipated light industrial activities on site. Specifically, high end production of electronics or more specifically business orientated production is closely aligned to both the Tongaat LED and the Tongaat Manufacturing Cluster as well as the on-site commercial focus for allied activities.	-	-
4.2.4	PROPERTY VALUES	Short term increase in property values, this means more profits for property owners.	Medium term stabilisation in property values as a result of new and modern properties permanently added to the region. Potentially less growth in profits for property owners.	Long term equalisation of property values as region becomes denser and more people demand Tongaat property.
4.2.5.1	POVERTY	Short term decrease in unemployment	Medium term decrease in unemployment	Large long term drop in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy.

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4.2.6	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	.-	.-
4.2.7	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis.	-	-
4.2.8	SKILLS DEVELOPMENT	-	-	Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat setas and other identified training programmes.

4.3. GREATER NORTH ETHEKWINI / SOUTH KWADUKUZA REGION

EXISTING SOCIAL FACILITIES

No pressure on social facilities is expected as no residential units are planned at the proposed development.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

The establishment of the proposed development is aligned to the existing Northern Spatial Development Framework (NSDF) of the eThekweni Municipality, which encourages the establishment of a densification of development in the northern eThekweni region. While the development will serve the localised market of Tongaat and Dube Trade Port, all northern eThekweni/ southern KwaDukuza nodes are expected to benefit significantly from the growth of the entire northern eThekweni region due to increased exposure and increased market size. This will result in a long term positive impact for the region. In the long run, it is also expected that the proposed development will become a large regional node, serving the region between Umhlanga/ Mount Edgecombe and Ballito to the south and north respectively, and eastern Ndwedwe to the west.

LIGHT INDUSTRIAL AND COMMERCIAL ACTIVITY

It is anticipated that commercial and associated light industrial activity in the region is expected to experience a significant increase. It is expected that industrial activity (particularly the finishing of manufactured goods; production of high end electronics and similar exportable goods) in the northern region will be concentrated around the Dube Trade Port region. The proposed development is expected to impact the region such that there will be more specialised light industrial activity within the development area. There will be more opportunity for service value chains not only for export firms but also for the expanse of commercial activities anticipated in the development. It is also expected that all commercial land will be more competitively priced due to the availability of more zoned land.

According to both the iLembe and eThekweni Draft Industrial Development Strategy (2010), there is a significant recent shortage of industrial (both heavy and light) land in eThekweni and iLembe. As a result, the growth in rental price for zoned industrial land has been significant - particularly within recent years. While growth in the rental price of commercial land has grown by an average 10% from 1995 - 2008, the growth rate has doubled, and grown by an average of 20% from 2005 - 2008. This is mainly due to the shortage of adequately zoned heavy and light industrial land in the region, and in eThekweni in general.

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Therefore, the proposed development is expected to result in regional competition in commercial activity in the short run, and in the long run, the proposed development is expected to encourage regional specialisation in each light industrial node supporting the regional commercial value chains through clean and business focussed production.

DUBE TRADE PORT

In the short run, the effect of the proposed development on DTP industrial activity has the potential to impact on potential tenants, industries / companies which need to be near cargo aircraft but do not need to be located directly on the DTP premises may opt to rent space in the proposed development. There is anticipation that proposed development may be more affordable for medium-sized light industrial enterprise. Specifically on-site activity more closely aligned to commercial and retail nature of the uShukela tenant mix than the export platform of DTP is anticipated within the light industrial complex. It must be noted that the DTP value-offering is specifically targeted, whereas the uShukela development has no specific parameters in place for potential tenants.

POVERTY

Poverty in the region is expected to be positively impacted, mainly through employment creation. The jobs creation is expected to decrease unemployment in the whole region. There is expected to be significant economic migration from surrounding areas and sub-places as a result, which in the long run may counteract parts of the initial impact of a reduction in poverty

INFORMAL SECTOR DEVELOPMENT

The impact on the regional informal sector will be a positive impact on and around the taxi industry. There are expected to be new taxi routes developed, with the proposed development as a destination resulting in a significant boost in business activity for regional taxi ranks offering trips to the development. Informal traders will increase accordingly in all regional taxi ranks.

SKILLS DEVELOPMENT

The proposed development will require (and therefore provides opportunities) the development of tertiary institutions in north eThekweni and KwaDukuza for vocational training. In addition, the region will also become a national priority in terms of the provision of Sectorial Education and Training Centres. This will assist to develop practical skills through internships and practical in-service training. In general the proposed development will provide opportunity for more skills acquisition through employment for residents of the northern region.

SUMMARY OF IMPACTS ON THE NORTH OF ETHEKWINI/SOUTH OF KWADUKUZA:

These are detailed in the table below on the following page.

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.3.1.1	EXISTING BUSINESSES (retail and light commerce)	No significant impact	-	-
4.3.1.2		-	-	Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. More large-scale regional services, business branches, and possibly administrative government offices added to the regional economy. More convenience for the population of the region.
4.3.2.1	LIGHT INDUSTRIAL ACTIVITY	Short term competition in light industrial (service) activity between proposed development and other industrial nodes such as Dube Trade Port and some industrial firms in eThekweni North and KwaDukza. Potentially less-than-anticipated profits for businesses.	-	-
4.3.2.2		Short term relief of pressure for light industrial land. More competitive pricing of zoned land.	Medium term relief of pressure for light industrial land. More competitive pricing of zoned land.	More regional inward investment, due to competitive pricing of zoned land due to increased supply.
4.3.2.3		-	-	More light industrial activity and regional value chains in production. Therefore more value adding light industrial processes kept in area, benefitting existing businesses.
4.3.4.1	POVERTY	Due to the large scale of the development and therefore the large number of jobs created, poverty is expected to be significantly reduced.	-	-

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.3.4.2		-	-	There is expected to be significant economic migration from surrounding areas and sub places, which in the long run may reduce the initial impact of a reduction in poverty
4.3.5	BEE AND SMME DEVELOPMENT	Permanent opportunity for the regional expansion of BEE and SMME companies.	-	-
4.3.6	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis and Tongaat taxi rank, as a result of increased activity on and therefore around uShukela Highway	-	-
4.3.7	SKILLS DEVELOPMENT	Permanent skills development through increased employment opportunities	-	-
4.3.8	SKILLS DEVELOPMENT	-	-	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni south KwaDukuza region. This assists in long term skills development and employability.

4.4 VERULAM

EXISTING FACILITIES

No strain on existing social facilities in Verulam is expected as no residential units are expected to be constructed at the proposed development. The use of additional policing services and backup fire-fighting services will be expected.

EXISTING BUSINESSES (RETAIL AND EXISTING COMMERCE)

The impact on Verulam's existing businesses is expected to be similar to that of Tongaat, in that the latter business will initially benefit from fuel and convenience shopping expenditure (including lunch time expenditure). The duration of the impact of the proposed development on Verulam businesses, particularly those along the R102 corridor, is long term as this activity corridor will be linked to the M4 via the uShukela Highway Development.

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COMMERCIAL AND INDUSTRIAL ACTIVITY

As there is limited non-retail commercial services activity in Verulam to be impacted by the proposed development, it is in fact the local Verulam industrial businesses will benefit initially from the proposed development's business establishing costs. It is expected that there will be complementarities of in industrial activity in Verulam and the proposed commercial development at the site. The competition between the proposed development's light industrial activity and that which exists in Verulam therefore is not expected to be significant.

PROPERTY VALUES

As business activity increases at the proposed development, demand for residential housing is expected to increase in Verulam due to its proximity to the workplace, raising property values. With added economic activity in the area, the production of supply services nearby the DTP will also likely provide a stimulus to suppliers based in Verulam, resulting in greater businesses in the area. As a result, demand for commercial and industrial property in Verulam will also increase.

POVERTY

Poverty in the Verulam area is set to decrease as increased employment opportunities will become available to Verulam's unemployed, reducing household dependencies and poverty indices.

BEE AND SMME DEVELOPMENT

The existence of new economic opportunities in the proposed development will provide opportunities for black-owned enterprises to enter markets, or to enter a competitive location (next to highly marketed DTP). This is also true for existing black business/ investors in (predominantly African and Indian) Verulam, who wish to expand northward or relocate their premises.

INFORMAL SECTOR DEVELOPMENT

Verulam informal sector remuneration forms 7% of formal and informal remuneration in Verulam. However, unlike Tongaat, Verulam informal sector remuneration has been growing slower than formal remuneration (at constant 2005 prices). Still, the Verulam informal sector is a central part of the Verulam economy, and will be positively boosted by the proposed development. An increase in employment in the development will result in higher public transport utilisation and it is anticipated that there will be opportunities for the local taxi and bus service providers to create new routes to the site.

As a result of informal transport economic activity, an increase in vendors and informal traders around these areas is expected, more than those in Tongaat. **The informal sector will therefore grow in size and magnitude.**

SKILLS DEVELOPMENT

The development will create opportunities to strengthen skills development in Verulam, therefore having a positive effect. Thus the working age of Verulam will be more employable, and contribute to poverty alleviation.

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.4.1	EXISTING FACILITIES	No significant Effect	-	-
4.4.2	EXISTING BUSINESSES (retail and commerce)	Short / medium term boost in retail activity of proposed development and Verulam CBD by increased commuters heading northward towards uShukela.	Localisation of retail and wholesale businesses such that they will be secondary to the proposed development. Also increase in profits as retail businesses get more exposure.	Permanent increase in profits for businesses dependant on transient traffic. More exposure to market. Mainly the petrol filling stations, and retail stores in close proximity to R102 Inanda Rd intersection. Overall/ long term growth, localisation and potential specialisation of retail and wholesale sector. More profits for businesses in area, especially near transient traffic routes for secondary impact.
4.4.3.1	LIGHT INDUSTRIAL ACTIVITY	Short to medium term competition between proposed development and Verulam light industrial activity.	Medium term competition between proposed development and Tongaat Industrial Park industrial activity.	-
4.4.3.2		Short term opportunities created for linkages in finishing and light industrial activity, mainly for Tongaat industrial businesses to supply starting up materials and services.	Opportunities created for linkages in finishing and light industrial activity for support and supplier industrial activities, as businesses starting up in proposed development source supplies/ start up materials from Verulam industrial businesses(as opposed to sourcing from larger nodes such as Durban, Ballito, etc).	Potentially permanent/ Long term opportunities created for linkages/ value chains in industrial activity, mainly for Verulam industrial businesses to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.
4.4.3.3		Short and medium term opportunity for expansion of activity, due to a new centre of demand northward.		
4.4.3.4		-	-	Opportunity for the development of more efficient / customer focussed production and operating systems due to competition. Customers benefit.
4.4.4	POVERTY	Short term decrease in unemployment in secondary catchment	Medium term decrease in unemployment in secondary catchment	High long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
				economy
4.4.5	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity for existing business to enter markets and grow.	-	-
4.4.6	INFORMAL SECTOR DEVELOPMENT	Some anticipated growth in size and activity of the informal sector, mainly in and around taxis and Verulam taxi rank, as a result of increased activity on and therefore around the R102 northward towards uShukela.	-	-
4.4.7	SKILLS DEVELOPMENT	-	-	Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam SETAS and other identified training programmes. More accessibility to job opportunities for Verulam residents.

4.5 WESTERN RURAL AREAS

EXISTING SOCIAL FACILITIES

The proposed development is not expected to have any visible impact on social facilities in the western rural areas, due to the scarcity of the western region's facilities, as well as the approximate 20km distance from the proposed development.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

The impact of the proposed development on the existing businesses in the western rural areas is not expected to be notable, or significant. This is again due to the distance between the western rural businesses (albeit few), and the proposed development.

LIGHT INDUSTRIAL ACTIVITY

There is currently no identified nor notable light industrial activity in the western rural areas within close proximity, and therefore no impact is anticipated.

PROPERTY VALUES

Property values are not expected to be changed in western rural areas, as this land is predominantly owned by Ingonyama tribal authorities.

POVERTY

Living standards in the western rural areas are expected to be positively impacted, particularly by the availability of low skilled jobs during the initial decade and/or the construction phase of the development.

BEE AND SMME DEVELOPMENT

It is not expected that the proposed development will impact on formal BEE and SMME development in the western rural areas. The impact of the proposed development on existing BEE and SMME activity will be primarily evident in the informal sector, as briefly discussed below.

INFORMAL SECTOR DEVELOPMENT

Informal business is expected to be boosted due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. There will be an increase in trading activity, as well as increased customers for taxi operators. This will positively increase informal business activity. Informal Ndwedwe businesses are also expected to migrate in and around the proposed development, receiving greater business opportunities.

SKILLS DEVELOPMENT

It is expected that there would be a permanent improvement in skills levels adequate for semi- and unskilled occupations as Ndwedwe/western rural area residents become employed in proposed development.

SUMMARY OF IMPACTS ON THE WESTERN RURAL AREAS

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IMPACT AREAS	IMPACT DESCRIPTION		
	SHORT TERM	MEDIUM TERM	LONG TERM
EXISTING FACILITIES	No visible/ significant effect	-	-
EXISTING BUSINESSES	No visible/ significant effect	-	-
INDUSTRIAL ACTIVITY	No visible/ significant effect	-	-
PROPERTY VALUES	No effect	-	-
POVERTY	A decrease in unemployment	Assuming temporary jobs are taken only taken by Ndwedwe residents, during construction, a medium term drop in unemployment from 17.4% to 4.2% is expected.	A long term drop in unemployment, mainly in semi-skilled and unskilled jobs not taken up by Tongaat and Verulam residents.
BEE AND SMME DEVELOPMENT	No significant effect, except on informal sector.	-	-
INFORMAL SECTOR DEVELOPMENT	Permanent boost due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. Relocation of other Ndwedwe informal businesses close to Ndwedwe and both Driefontein Taxi Ranks.	-	-
SKILLS DEVELOPMENT	Permanent improvement in mainly elementary skills levels, as Ndwedwe residents are employed in proposed development.	-	-

5 IMPACT QUANTIFICATION

The purpose of the following section is to quantify impact previously identified, by means of the impact rating method.

5.1. METHODOLOGY OF QUANTITATIVE ASSESSMENT

The assessment of the specific impact areas will be conducted using the Impact Rating Methodology. The exact assessment technique used in assessing the socio-economic impact of the proposed development is described in this section.

The significance of an impact is defined as the combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine the impact consequence are presented in the table below:

RATING	DEFINITION OF RATING	SCORE
A. Extent – the area over which the impact will be experienced		
None		0
Local	Confined to project or study area or part thereof (e.g. site).	1
Regional	Confined to the immediate region, e.g., the northern eThekweni and southern KwaDukuza region.	2
Wider Area	Municipality wide (eThekweni); Provincially, and beyond.	3
B. Intensity-the magnitude of the impact in relation to the sensitivity of the receiving environment		
None		0
Low	Natural and/or social/ and or economic functions and processes are negligibly altered.	1
Medium	Natural and/or social/ and or economic functions and processes continue albeit in a modified way.	2
High	Natural and /or social/ and or economic functions and processes are severely altered.	3
C. Duration-the time frame for which the impact will be experienced.		
None		0
Short-term	Up to 2 years	1
Medium -term	2 to 15 years	2
Long-term	More than 15 years	3

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The combined scores of these criteria translate into a consequence rating, which is shown in the table below:

Combined score (A+B+C)	0-2	3-4	5	6	7	8-9
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence rating has been derived, the probability of the impact occurring is considered using the probability classifications listed in the table below:

Probability of impact- the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Probable	40%-70% chance of occurring
Highly probable	>70%-90% chance of occurring
Definite	>90% chance of occurring

The overall significance of the impact will be determined by considering consequence and probability using the rating system presented below:

SIGNIFICANCE RATING	CONSEQUENCES		PROBABILITY
Insignificant	Very low	and	Improbable
	Very low	and	Possible
Very low	Very low	and	Probable
	Very low	and	Definite
	Low	and	Improbable
	Low	and	Possible
Low	Low	and	Probable
	Low	and	Definite
	Medium	and	Improbable
	Medium	and	Possible
Medium	Medium	and	Probable
	Medium	and	Definite
	High	and	Improbable
	High	and	Possible
High	High	and	Probable

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SIGNIFICANCE RATING	CONSEQUENCES		PROBABILITY
Very high	High	and	Definite
	Very high	and	Improbable
	Very high	and	Possible
	Very high	and	Probable
	Very high	and	Definite

The significance of the outcomes for each impact is explained below:

- **Insignificant:** The potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- **Very Low:** The potential impact should not have any meaningful influence on the decision regarding the proposed activity/development.
- **Low:** The potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- **Medium:** The potential impact should influence the decision regarding the proposed activity/development.
- **High:** The potential impact will affect the decision regarding the proposed activity/development.
- **Very High:** The proposed activity should only be approved under special circumstances.

This section will therefore quantify the earlier identified impacts. Where there have been multiple time frames identified (e.g. short, medium and long term), the rating will be conducted on the final impact across all time frames- e.g. the resulting long term effect.

Therefore unless it is of particular importance- if an impact has a short term positive effect, which is offset by a long term negative effect, only the overall/ final (negative) effect will be rated. Similarly, if an impact has a short term negative effect which is offset by a long term positive effect, only the overall/ final (positive) effect of the impact will be rated.

5.2. TONGAAT IMPACT RATING

From the table below, it will be seen that

- ✓ The highest and most positive impacts are impact no. 5.9 - the long term expected significant drop in unemployment.
- ✓ The impact of the development on property values 5.8 was found to be positive, and in addition an associated positive impact on residential markets is anticipated.
- ✓ Competition between local firms and those within the proposed development. While it is noted as a negative impact, it is felt that firms will adapt in the long run, and as a result develop more efficient systems. It is also felt that while there may be lower profits or turnover due to

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competition; this will be offset by the increased exposure which the northern region will experience, the resulting opportunity in business growth.

OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.1 Overall/ long term growth, localisation and potential specialisation of retail and wholesale sector. More potential profits for businesses in area.	The impact is: Local - in this case, the specific growth and localisation is felt by Tongaat (and Verulam) businesses only. Medium - business activity will continue, but with more profits, while businesses may be more specialised. Long term - the effect is long term.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable
5.2 Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will proceed, yet potentially with better operating/ competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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		production, continually benefiting the customer.							
5.3	Short and Medium term competition between proposed development and Tongaat Industrial Park supporting light industrial activity on site. Tongaat businesses may experience lower profits.	The impact is: Local - it is felt by Tongaat businesses. Medium - business activity in Tongaat will proceed, yet potentially with less profits. Short/ Medium term- businesses will eventually adjust and specialise/ improve their operating systems.	Negative	Local : 1	Medium: 2	Short-Medium Term: 1- 2	4 / 5	Low	Highly Probable
5.4	Opportunity for the development of more efficient/ customer focussed production and	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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	operating systems due to competition. Customers benefit.	proceed, yet potentially with better operating/competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.							
5.5	Permanent opportunity for expansion of previously limited and “boxed in” development. Business owners in Tongaat have opportunity to grow.	The impact is: Local - it is felt by Tongaat based economic activity. High - expansion of commercial activity is high on the priority list of the Tongaat community. Long term- commercial activity is expected to expand over the long term	Positive	Local : 1	High: 3	Long Term : 3	7	High	Highly Probable
5.6	Potentially permanent opportunities created for linkages/ value chains in commercial	The impact is: Local - it is felt by Tongaat firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium	Highly Probable

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	activity, mainly for Tongaat based firms to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Tongaat industrial firms.	linkages/ value chains could potentially be permanent.							
5.7	An increase in residential rental demand in the short term, due to additional employment opportunities. Higher resulting prices and higher profits for property owners and rental agencies.	The impact is: Local - it is felt by Tongaat rental businesses/ property owners. Medium- business activity will continue - with the potential for higher profits. Short term- eventually as more residential units are built in the region, prices will fall.	Positive	Local : 1	Medium: 2	Short Term : 1	4	Very Low	Highly Probable
5.8	Impact on commercial property sales due to the nature of the development. Competitive	The impact is: Local- although many tenants/ buyers will be from out of Tongaat, the impact will occur locally. Medium- business activities will continue-with more benefits	Positive	Local : 1	Medium: 2	Medium Term: 2	5	Low	Highly Probable

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	pricing in Tongaat properties will be encouraged, and upgrading of rental properties to attract tenants.	for the consumer. Medium term- eventually as the region expands with more business, competition will decrease.							
5.9	Long term elimination in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is: Wider than regional - the impact is on Tongaat residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable
5.10	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is: Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue - with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable

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<p>5.11</p>	<p>Permanent growth in size and activity of the informal sector, mainly in and around taxis. The opportunity to make higher profits.</p>	<p>The impact is: Local - it is felt by Tongaat informal businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to grow permanently, as region grows.</p>	<p>Positive</p>	<p>Local : 1</p>	<p>Medium: 2</p>	<p>Long Term : 3</p>	<p>6</p>	<p>Medium</p>	<p>Highly Probable</p>
<p>5.12</p>	<p>Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat SETAs and other identified training programmes. More accessibility to job opportunities for Tongaat residents.</p>	<p>The impact is: Local - it is felt by Tongaat residents. Medium-chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.</p>	<p>Positive</p>	<p>Local : 1</p>	<p>Medium: 2</p>	<p>Long Term : 3</p>	<p>6</p>	<p>Medium</p>	<p>Probable</p>

5.3 ETHEKWINI AND KWADUKUZA CORRIDOR IMPACT

From the table below, it will be seen that

- ✓ The highest and most positive impacts are impact no. 5.13 which identifies the establishment of proposed development as regional node, linking Umhlanga, Ballito and Tongaat.
- ✓ Impact 5.14 identifies the positives of local increased circulation of revenue within the region as value chains deepen.
- ✓ Impact 5.16 reviews the positives of more investment is attracted into the area, and
- ✓ Impact 5.17 confirms the long term expected significant drop in unemployment.

OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.13 Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. More large scale regional services, business branches, and possibly administrative government offices added to the regional economy. Higher prioritisation of the northern region by eThekwini.	The impact is: Regional. Medium - service utilisation will continue, albeit more conveniently. Long term - the regional node and its benefits will be long term.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Highly Probable
5.14 More commercial activity and regional commercial value chains development. Therefore more value adding commercial processes kept in region, less economic revenue leakage outside the region, therefore	The impact is: Regional. Medium - business activity will continue, with significantly more profits. Long term - the business value chains and resulting increased business revenue and strengthening of the economy will be long term.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Highly Probable

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	benefitting existing businesses and the economy of the region.								
5.15	Short term competition in commercial activity between proposed development and other commercial nodes such as Dube Trade Port and some commercial firms in Tongaat and Verulam. Potentially less than anticipated profits for businesses.	The impact is: Regional- it will be a general regional effect. Medium - business activity in region will proceed, yet potentially with potentially less profits than anticipated. Short term- businesses are expected to adjust and find their regional niche.	Negative	Regional: 2	Medium: 2	Short Term : 1	5	Low	Probable
5.16	More investment, due to competitive pricing of commercial land due to increased supply.	The impact is: Regional- it will be a general regional effect. Medium - business activity in region will proceed, yet potentially with potentially less profits than anticipated. Short term- businesses are expected to adjust and find their regional niche.	Positive	Wider than regional : 3	Medium: 2	Long Term : 3	8	Very High	Highly Probable
5.17	Due to the large scale of the development, and therefore the large number of jobs created, poverty is expected to be permanently significantly reduced.	The impact is: Wider than regional- it will be a regional effect, which feeds into District, and provincial and national ASGISA priorities. High: The creation of just under 165 000 permanent sustainable, new jobs will close to eliminate unemployment and significantly reduce poverty.	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable

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Long term- the effect is expected to be permanent.									
5.18	There is expected to be significant economic migration from surrounding areas (particularly in the form of economic settlers) and sub places as a result, which, in the long run may reduce the initial impact of a reduction in poverty.	The impact is: Regional- more informal settlements are added to the region. Medium - the construction of subsidy housing in the proposed development and proposed Wewe development will reduce the impact. Medium Term - there is expected to be municipal housing initiatives in the region which will address this.	Negative	Regional: 2	Medium: 2	Medium Term: 2	6	Medium	Highly Probable
5.19	Permanent opportunity for the regional expansion of BEE and SMME companies. Therefore more exposure to markets and more growth of BEE businesses and SMMEs.	The impact is: Regional. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages and permanent exposure will be available to these companies.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Probable
5.20	Permanent growth in size and activity of the informal sector, mainly in and around transport services along the uShukela Highway	The impact is: Regional - mainly taxi networks throughout the region will be busier to and from proposed development. Medium- business activity will continue- but with higher profits. Long Term - general informal business activity will be permanently and continually	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Definite

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growing.										
5.21	Permanent skills development through increased employment opportunities. Increased employability of economically active in region, assisting in employment creation.	The impact is: Regional. Medium- chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Probable	
5.22	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni and south KwaDukuza region. This assists in long term skills development, and employability.	The impact is: Regional. High- the impact of a tertiary institution in the region would assist significantly in skills development. Long term- skills learnt will be permanently beneficial.	Positive	Regional: 2	High: 3	Long Term : 3	8	Very High	Probable	

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5.3. VERULAM IMPACT RATING

From the Verulam table below, it will be seen that

- Transport opportunities (5.31) linking the KwaDukuza – Umhlanaga Corridor to the R102 corridor. Promotes accessibility for commercial activity linking Business Park to Umhlanga Ridge via the uShukela Highway.
- 5.24 noted the opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.
- 5.28 indicated an increase in commercial rental demand in the short term, as first movers seek adjacency to the development. Higher resulting prices, and higher profits for property owners and rental agencies.

OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.23 Overall/ long term growth, localisation of retail and wholesale and potential specialisation in the sector. More profits for businesses in area, especially near transient traffic routes.	The impact is: Local - in this case, the specific growth and localisation is felt by Verulam (and Verulam) businesses only. High - Particularly businesses Around the R102 will experience a significant increase in exposure, turnover and profits. Long term - the effect is long term.	Positive	Local : 1	High: 3	Long Term : 3	7	High	Definite

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.24 Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable
5.25 Short and Medium term competition between proposed development and Verulam commercial activity.	The impact is: Local- it is felt by Verulam businesses. Medium - business activity in Verulam will proceed, yet potentially with less profits. Short/ Medium term- businesses will eventually adjust and specialise/ improve their operating systems.	Negative	Local : 1	Medium: 2	Short-Medium Term: 1- 2	4 / 5	Low	Probable
5.26 Short and medium term opportunity for expansion of previously limited and commercial development, linked to municipal shortage in	The impact is: Local- it is felt by Verulam commercial activity. High - expansion of economic activity is high on the priority list of the Verulam community. Long	Positive	Local : 1	High: 3	Long Term : 3	7	High	Highly Probable

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
zoned land.	term- commercial activity is expected to expand over the long term							
5.27 Potentially permanent opportunities created for linkages/ value chains in commercial activity, mainly for Verulam industrial businesses to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.	The impact is: Local - it is felt by Verulam firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium	Highly Probable
5.28 An increase in commercial rental demand levels in the short term, as first movers seek adjacency to the development. Higher resulting prices and higher profits for property owners and rental agencies.	The impact is: Local - it is felt by Verulam rental businesses/ property owners. Medium- business activity will continue- with the potential for higher profits. Short term- eventually as more components of the proposed development, prices will fall.	Positive	Local : 1	Medium: 2	Short Term : 1	4	Very Low	Highly Probable

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.29 Long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is : Wider than regional - the impact is on Verulam residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable
5.30 Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is: Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue - with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable
5.31 Permanent growth in size and activity of the informal sector, mainly in and around taxis. This is particularly true for the routes linking R102 to uShukela Highway through Tongaat CBD.	The impact is: Local - it is felt by Verulam informal businesses owners. High- particularly transport business activity will continually expand. Long term- businesses have the opportunity to grow permanently, as region grows.	Positive	Local : 1	High: 3	Long Term : 3	7	High	Definite

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.32 Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam SETA's and other identified training programmes. More accessibility to job opportunities for Verulam residents.	The impact is: Local - it is felt by Verulam residents. Medium-chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable

5.4. WESTERN RURAL AREAS IMPACT RATING

From the Western Rural Areas table below, it will be seen that

- Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow is identified as the most important impact on the western rural areas (5.35).
- Positive impact of 5.33: improvement in base skills level through the opportunities created in the development for unskilled labour absorption.

OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating
5.33 Permanent improvement in mainly elementary skills levels, as local residents are employed in proposed development. Therefore more employability for the regions' economically active.	The impact is: Local- it is felt by rural residents.Low - while skills are acquired, these are mainly for low skilled, temporary and casual jobs, which have a low impact on social status. Long term - skills will forever be useful.	Positive	Local : 1	Low : 1	Long Term : 3	4	Very Low
5.34 Potentially permanent opportunities created for linkages/ value chains in commercial activity, there are currently few linkages for the small scale businesses in the outer-west areas	The impact is: Local - it is felt by Ndwedwe firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium
5.35 Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is : Local - it is felt by Ndwedwe's BEE and SMME businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium

5.5. MAIN IMPACTS AND MITIGATING MEASURES

The main impacts identified in the assessment above are those impacts which should influence the decision making of the project. Where the intended impacts are positive and very high, this is an indication of the success of the project. Where the impacts are high and negative, the project should either not be pursued, or pursued only under special circumstances, or rigorous mitigation actions should be planned. The course of action chosen will depend on the particular project.

The main positive impacts include those which scored 7 and above, and therefore have a high or very high consequence rating. Inter alia- the consequences of that particular impact are high, or very high.

Overall, impact of the proposed development is primarily positive, with the negative impacts mostly offset by the positive impacts. Positive impacts were mainly identified as being highly significant in the decision making of the development, while negative impacts were mainly found to be of low significance to decision making of the proposed development- but nonetheless still in need of mitigating measures to address them.

There are 15 main positive impacts, which are tabulated on the following page.

Those which scored a consequence score of 9 (i.e. consequences of the highest intensity) are the following:

- The reduction of poverty through the long term drop of unemployment - in both Tongaat and Verulam.
- A significant reduction in regional poverty due mainly to a large supply of jobs.

Those positive impacts which are identified as being definite are:

- The reduction of poverty through the medium term and long term increase of employment in the region.
- Overall growth of Tongaat businesses (particularly those located along/ near uShukela Highway link to M4 corridor).
- Linkages to the M4 Commercial Services Corridor linking Umhlanga to Tongaat and KwaDukuza
- Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node and the subsequent promotion of suitable densification within eThekweni's boundary.
- The opportunity for expansion of currently constrained economies of Tongaat and Northern eThekweni/Southern KwaDukuza
- Reduction of leakage of economic revenue, due to the establishment of new regional industrial value chains.
- The growth of the regional economy, through encouraged commercial investment (due to the increase in supply of zoned land).
- Regional opportunities for the expansion of BEE and SMME companies.
- Permanent regional growth of the regional taxi/ public transport industry.
- Increase in employability of regional population through skills development through employment.
- Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).

IMPACT NO	IMPACT	CONSEQUENCE SCORE	CONSEQUENCE RATING	PROBABILITY OF IMPACT	SIGNIFICANCE RATING
1	The opportunity for expansion of currently constrained economies of Tongaat and Northern eThekweni/Southern KwaDukuza	7	High	Highly Probable	Very High
3	The reduction of poverty through the long term drop of unemployment in the impact areas	9	Very High	Highly Probable	Very High
4	Overall growth of Tongaat businesses (particularly those located along/ near M4 corridor).	7	High	Definite	High
5	Permanent growth of the informal sector (particularly taxis)	7	High	Definite	High
6	Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	7	High	Highly Probable	Very High
7	Reduction of leakage of economic revenue, due to the establishment of new regional industrial value chains.	7	High	Highly Probable	Very High
8	The growth of the regional economy, through encouraged commercial investment (due to the increase in supply of zoned land).	8	Very High	Highly Probable	Very High
9	Significant reduction in regional poverty due mainly to a large supply of jobs.	9	Very High	Highly Probable	Very High
10	Regional opportunities for the expansion of BEE and SMME companies.	7	High	Probable	High
11	Permanent regional growth of the regional taxi/ public transport industry.	7	High	✓ Definite	High
12	Increase in employability of regional population through skills development through employment.	7	High	Probable	High
13	Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).	8	Very High	Probable	Very High

The three identified possible negative impacts are:

- Short and Medium term competition between proposed development Existing regional commercial activity may experience lower profits.
- Possible lower profits for businesses for existing local businesses (as a result of short and medium term competition between proposed development existing commercial activities. Potentially less than anticipated profits for businesses –due to short (and medium) term competition in industrial activity between proposed development and other commercial nodes such as Dube Trade Port.
- There is expected to be economic migration from surrounding areas and subplaces outside of the catchment areas, which, in the long run may reduce the initial impact of a reduction in unemployment in the region.

Those which are with regards to less profits due to competition, are seen as being offset in the long run by the positive effects of exposure to a larger market, and increased revenue from potential business partnerships with the proposed development’s new businesses. However, it must be noted that there may be some businesses in the existing nodes, currently running at break point, which may not be able to adapt and therefore survive competition, even in the short run.

With regards to competition between Dube Trade Port, and the proposed development, it is expected that in the long run businesses will adjust through specialisation.

While the negative impacts are of low significance, they are still identified as requiring careful mitigating attention. Mitigating measures are suggested below:

Table 7- Negative Impacts of the proposed development

		Consequence Rating	Probability of Impact	Mitigating Measure
1	Short term competition in commercial activity between proposed development and other commercial nodes such as Dube Trade Port and some commercial firms in Tongaat and Verulam. Potentially less than anticipated profits for businesses.	Low	Highly Probable	Creation of incentives for new businesses in the proposed development to source start up supplies from local firms
2	There is expected to be significant economic migration from surrounding areas and subplaces as a result, which, in the long run may reduce the initial impact of a reduction in unemployment	Medium	Highly Probable	Developing a hire-local policy for construction phase will mitigate this influx issue. In addition the existing skills profile of the area reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela.

6. SUMMARY AND RECOMMENDATIONS

In summary, the impact assessment has shown that the proposed development will not only have a significantly positive impact on the primary and secondary impact areas, but provides a much needed unlocking of land resources required for their further economic development in a currently constrained area.

There are **two significant positive impact areas**, and two identified negative impact areas. The two main positive impact areas include:

- ✓ **6.1. Nodal and regional economic development and expansion:** This relates to the provision of access to zoned land as well for further industrial and commercial use by existing businesses, and the expansion of the northern most region of eThekweni to the business corridor along the M4 to KwaDukuza;
- ✓ **6.2. Nodal and regional poverty reduction:** This relates to the reduction and alleviation of poverty in the impact areas. This is anticipated to occur through the reduction in nodal unemployment levels and thus within the region. There is an increase in household earnings anticipated as employment opportunities are taken up within these areas.

The **two main negative impact areas** include;

- ✓ **6.3. Potentially reduced revenue of existing businesses due to competition:** This relates to the possibility of mainly inefficient existing businesses not surviving competition. Here it is recommended that there be dialogue with business chambers and forums (specifically the Tongaat Chamber, and Tongaat UIP, the iLembe Chamber and the Durban Chamber of Commerce and Industry) about the creation of incentives packages which encourage business linkages between existing business and the proposed development's new firms.
- ✓ **6.4. An influx of job-seekers to the region increase in surrounding informal settlements due to economic immigration:** This relates to the increase in the potential for the establishment informal households from job seekers; migrating towards the development site from a the wider surrounding poorer regions. Developing a hire-local policy for construction phase will mitigate against this influx issue. Additionally, it should be noted that the existing skills profile of the primary and secondary impact area specifically, reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela Development.

The following subsections discuss the summarised main impacts further.

6.1. NODAL AND REGIONAL INDUSTRIAL AND ECONOMIC DEVELOPMENT AND EXPANSION

Nodal Development and Expansion

Tongaat has been identified as a as populous and densely settled node, currently constrained for additional zoned commercial land which is required for outward commercial growth and expansion. For mainly spatial reasons, their economic and industrial growth has been restricted and limited, therefore stifling their economic potential. The proposed Ushukela Highway Development will provide Tongaat and the greater impact area with the opportunity to access new industrial and commercial space and thus promote their much needed growth.

In particular, the proposed development will impact positively by creating opportunities for business owners to establish new markets as well as new physical outlets. It will also supply opportunities for the creation of production and service value chains between the above businesses and the new businesses in the proposed development. Lastly, it will draw in a significantly large number of people into the area, therefore resulting in

exposure of existing businesses to a larger market. This is expected to occur most notably along the M4 (Umhlanga – Tongaat – Ballito) corridor and linking to the Dube Trade Port. In general, the proposed development will supply existing local businesses with the opportunity to expand and increase profits in the short, medium and long term.

The commercial centres of the primary impact area and secondary impact areas (Tongaats and Verulam respectively) will benefit from such business opportunities, however, it is expected that Tongaat will benefit more due to its location along the M4-uShukela corridor. Notably, from both Durban and KwaDukuza bound traffic travelling south along the M4 to the proposed development site adjacent Dube Trade Port.

Regional Development and Expansion

Each impact of the proposed development on both nodes, collectively results in a combined impact which is regional in nature. The overall regional impact of the proposed development will result in significant growth in economic activity in the whole of north eThekweni/ south KwaDukuza region.

In particular, the proposed development is in alignment with eThekweni's Draft North Spatial Development Framework, which states the development of an economic node is a north spatial development priority. The proposed development also positively impacts the region by reducing the strain on current eThekweni available commercial and industrial zoned land, due to the shortage of industrial land in the City and province.

The proposed development is expected in time to become the a major driver of economic growth within the north most region of eThekweni, supporting the secondary service nodes of Tongaat and Verulam . Both of which benefit from the proposed Ushukela Highway's proximity and associated market pull.

6.2. NODAL AND REGIONAL POVERTY REDUCTION

Nodal Poverty Reduction

With regards to unemployment while northern eThekweni has a relatively low existing unemployment rates, there are components of the impact area – notably rural western areas and Ndwedwe which have higher levels of unemployment. The creation of a develop such as uShukela will have a significant impact on local employment generation which will in turn allow for an overall reduction in nodal poverty as more households become income generators. Specifically, there are identified opportunities aligned to both the construction phase as well as the operational phases which are suitable for the skills profile take up in both the primary and secondary catchment areas.

Regional Poverty Reduction

It is estimated that regional employment creation by the proposed development will exceed the level of unemployment anticipated in the catchment areas; in short it , which will result in labour sourcing from the broader region. The overall regional impact is expected to be a significant reduction of unemployment in the long run, taking into account the combined effect of the proposed development, the proposed Wewe/ Driefontein development, and the newly constructed Dube Trade Port/ King Shaka Airport on the region.

6.3. POTENTIALLY REDUCED REVENUE OF EXISTING BUSINESSES DUE TO COMPETITION

The impact assessment has identified that there may be reduced revenues or profits for some existing businesses due to competition with the proposed development. However, it is felt that this negative impact will be largely offset by increased revenues from new business linkages, new value chains, and increased exposure to a growing market. It is still expected that there may be some existing inefficient businesses operating at breakeven point in the impact area, which may not survive this competition.

It was earlier noted that there will be potential for Tongaat and Verulam businesses to benefit from new firms in the proposed development by supplying their start up and operational materials. This will result in the creation of new value chains, and the reduction of industrial/ business expenditure leakage outside of the region to larger nodes.

MITIGATING MEASURE:

Initiating and encouraging business linkages are recommended as a mitigating measure. It is recommended that there be discussions between the proposed development's steering committee, and local businesses (e.g. Tongaat Business Chamber of Commerce and Industry), about the creation of incentives packages for new businesses in the proposed development, if they source start up supplies from Tongaat and surrounds. This will encourage expenditure in the catchment area by the proposed development's businesses. It is also recommended that the eThekweni Business Support Unit be included to address potential linkages with weaker businesses (SMMEs). This will encourage long term business partnerships and linkages between existing business and the proposed development, and reduce or completely offset negative impacts of competition.

6.4 ALIGNMENT OF IDENTIFIED IMPACT AREAS TO TONGAAT LOCAL ECONOMIC DEVELOPMENT STRATEGY

Importantly for integrated planning in Tongaat and surrounds, there is good cohesion between the 2008 LED Strategy for Tongaat and the identified positive impact areas resulting from the Ushukela development.

The vision developed for the Tongaat LED was: "By 2010 and beyond, the Greater Tongaat will be a preferred investment destination with superior and continuing quality service delivery; thereby providing sustainable employments and addressing social ills for the majority of people".

Based on the above vision, the following goals were developed as the key economic thrusts to in this strategy:

- **To establish the economic foundations of the greater Tongaat.**

The stagnant economy of Tongaat suffers from the lack of a number of economic assets including the infrastructure and land availability for its improvement. The lack of those economic assets impacts strategically on the overall development of Tongaat area.

- **To initiate economic growth of Tongaat**

This goal deals with economic sectors' opportunities in terms of employment/unemployment, incomes, and growth. Many sectors in Tongaat including manufacturing, industrial, retail and commerce, informal economy, tourism and the like have many opportunities that can be capitalised on to improve the economy of the area.

- **To initiate a development environment**

The goal deals with BEE, skills development issues, HIV/AIDS, health care and social assistance, and women and youth empowerment issues. Skills development, HIV/AIDS and other social issues are among major concerns threatening the social capital in Tongaat.

- **To maximise effort in order to establish institutional structures for implementation**

The significance of this goal is that it allows the rational interconnection of the other preceding goals. For instance, the economic foundations, the sectors' opportunities and the skills development cannot improve the economy if they are un-co-ordinated and fragmented. Therefore, liaisons, management and regulations need to be put in place.

These in turn were developed into a **Key LED Strategies** (listed below) for the region – the table on the following page, (Table 15) highlighted strategies represent highlights the areas of integration between the LED Strategy and Ushukela Development

1. Enhance sector competitiveness
2. Further development of emerging and niche sectors
3. Business retention and investment promotion
4. Innovatively package industrial sites for development
5. Develop priority investment nodes and corridors
6. Regional strategy and development
7. Sector skills alignment
8. Enhance labour productivity, literacy and numeracy skills
9. Knowledge economy
10. Implement key logistics and economic infrastructure
11. Bulk infrastructure to match economic growth
12. Direct the infrastructure required for economic growth
13. Provide strategic enterprise development support to emerging and informal enterprises
14. Centres of excellence
15. Cyber City

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As is shown in the table below – these strategies are aligned to the following anticipated positive impacts resulting from this development:

Table 8 Impact Areas Alignment to LED Strategy

IMPACT	LED STRATEGY ALIGNMENT	SPECIFIC LED STRATEGY
The opportunity for expansion of currently constrained economies of the northern eThekweni Region	Yes	Enhancing sector competitiveness: to facilitate the optimal strategic functioning of industry organisations to drive the local economy.
		Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key commercial nodes
The reduction of poverty through the long term drop of unemployment	Yes	Further development of emerging and niche sectors and down-stream business support activities: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
Permanent growth of the informal sector supporting new commuter networks (along uShukela Highway).	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
Reduction of leakage of economic revenue, due to the establishment of new regional commercial value chains.	Yes	Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key commercial nodes
		Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
The growth of the regional economy, through encouraged investment (due to the increase in supply of correctly zoned land).	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
		Develop priority investment nodes and corridors: to conceptualise and package the economic significance of economic nodes at various levels from city-wide nodes to community level nodes, for investment and development

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IMPACT	LED STRATEGY ALIGNMENT	SPECIFIC LED STRATEGY
Significant reduction in regional poverty due mainly to a large supply of jobs.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
Regional opportunities for the expansion of BEE and SMME companies.	Yes	Knowledge economy: to facilitate the establishment of higher learning and entrepreneurial culture centres in key nodes of the EMA
		Provide strategic enterprise development support to emerging and informal enterprises: to bridge the gap between first and second economy by facilitating the process of business evolution and global market integration for priority sectors.
Permanent regional growth of the regional taxi/ public transport industry.	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
Increase in employability of regional population through skills development through employment.	Yes	Sector skills alignment: to facilitate the alignment between skills supply (by secondary and tertiary – FET) and industry demand in priority sectors
		Enhance labour productivity, literacy and numeracy skills: to facilitate the improvement (value-adding) of labour practices and efficiency in priority sectors
Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).	Yes	Sector skills alignment: to facilitate the alignment between skills supply (by secondary and tertiary – FET) and industry demand in priority sectors

6.5 CONCLUDING COMMENTS

A development of this magnitude is anticipated to have significant impact on the regional socio-economic fabric of Northern eThekweni. Certainly, not all of these impacts will be positive in the short term, however, by identifying and providing for suitable mitigation activities during the planning stages, their negative externalities can be greatly reduced.

Only two negative impacts were identified that require planned mitigation:

- Possible lower profits for businesses for existing local businesses (as a result of short and medium term competition between proposed development existing commercial activities). This is only likely for firms competing for similar markets – it should be noted that established firms with identified markets are likely to increase niche or specialisation in order to compensate.
- There is expected to be economic migration from surrounding areas and subplaces outside of the catchment areas, which, in the long run may reduce the initial impact of a reduction in unemployment in the region.

Suggested Mitigation:

- Support for business linkages and networks for new businesses in the proposed development to source start up supplies from local firms to create linkages between new (within development) and existing businesses (within catchment area) where possible; this could take the form of a business expansion and retention programme or a buy-local campaign.
- Developing a hire-local policy for construction phase will mitigate this influx issue. In addition the existing skills profile of the area reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela.

In contrast, the significant positive impacts were identified as

- **Nodal and regional economic development and expansion and**
- **Nodal and regional employment creation**

These are supported by the indicated areas of alignment between the anticipated impacts and the key goals and strategies of the Tongaat LED as reviewed in Table 9.

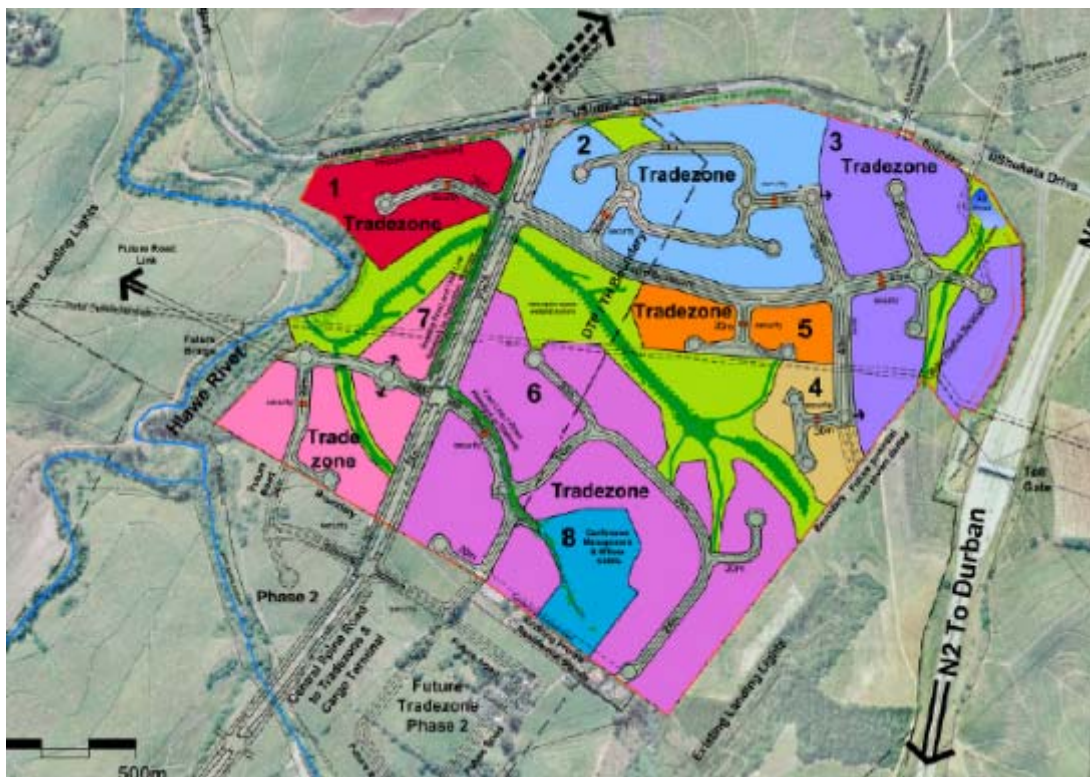
The positive impacts of the development are of high significance to the socio-economic well-being of the region, and significantly outweigh the anticipated negative impacts. The Ushukela Development will enable the northern eThekweni region, and Tongaat and KwaDukuza in particular, to access a vast range of economic opportunities that complement the existing logistical infrastructure of the Dube Trade Port and King Shaka Airport, and thus positively enhance the regional competitiveness.

Appendix 20: uShukela Highway Development: Socio Economic Impact Assessment of the Development on Tongaat and Verulam – Update

USHUKELA HIGHWAY DEVELOPMENT

Socio Economic Impact Assessment of the Development on Tongaat and Verulam - Update

March 2013



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EXECUTIVE SUMMARY

The assessment undertaken for this report relates to the proposed **uShukela Highway Development**, 38km north of Durban CBD in northern eThekweni Metropolitan Municipality. The purpose of the assessment is to determine the potential socio-economic impacts of the proposed development on the surrounding nodes of Tongaat and the greater northern eThekweni and southern KwaDukuza region as well as on the node of Verulam and the Ndwedwe/western rural areas.

The applied methodology identified and isolated separate potential impacts of the proposed development. These were directed to two main impact areas - the primary impact area and the secondary impact area. The primary impact area includes the node of Tongaat, Dube Trade Port (northern eThekweni) and KwaDukuza. The secondary impact area consisted of Ndwedwe/the western rural areas and Verulam. These areas were identified not only due to geographic locality, but also due to existing land use and economic profile.

In terms of quantifying the significance of each impact, an Impact Rating Method and the Multiplier Impact Assessment were used to distinguish the gravity of each impact. These were based upon the provision of **site-readiness infrastructure capex, R443 894 000 and an estimated site development capex cost based on developable area of a further R3 611 908 740. This provides for a total anticipated capex injection of R4 055 802 740 into the region from this single development alone.**

The proposed associated land-uses (tradezones comprising of light/clean industry, warehousing, distribution and manufacturing as well as conference facilities, management offices and business offices) provided for on the site were used to calculate likely on-site employment scenarios once the development has been completed.

The most significant impacts identified are as follows:

- **The project has significant impacts in terms of employment.** These include:
 - The proposed development will facilitate large-scale business establishment in the area, beneficial to employment creation.
 - **An estimated 1920 temporary jobs will be created during the site's capital expenditure phase for site's infrastructure readiness development alone.**
 - In addition **during the development of on-site structures and buildings**, based on the proposed developable bulks, **it is estimated that 17 243 employment opportunities in the construction sector will be become available. This includes 10 785 directly within the construction supply chain and a further 8378 in indirect related supply chains**
 - **An estimated 4026 permanent jobs will be created by business operations on-site. This was derived from the associated density ratios of employment on the proposed land-use areas. .**
- **The project as significant nodal and regional economic development and expansion impact.**
 - It was found that Tongaat and Verulam have been spatially restricted from further social, industrial and commercial development. **The proposed development provides much needed unlocking of land required for this.**
 - The proposed development was found to provide opportunity for the expansion of existing businesses through enabling the creation of value chains and business links between the proposed development and existing businesses, and increasing the exposure of existing business to a growing market.
 - The uShukela-Tongaat corridor was identified as being key in drawing a growing market to both eThekweni and KwaDukuza; linking Ballito to Umhlanga through the development of this bridging

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corridor to Dube Trade Port. The proposed development was found to be aligned with broader eThekweni economic development - particularly the Northern Spatial Economic Development Framework, and the Industrial Development Strategy.

The proposed development has the potential to introduce much needed complementary light-industrial related businesses into an area currently stagnating due to the lack of available zoned land; in effect, acting as a stimulus to the existing local business sector and promoting new markets in Tongaat, Northern eThekweni, KwaDukuza, Verulam and the western rural areas.

1. INTRODUCTION

1.1. BACKGROUND AND PURPOSE

Tongaat-Hulett Developments commissioned this socio-economic impact assessment of the proposed Ushukela Highway Development to identify the major impacts likely to occur as a result of the development on the neighbouring nodes of Tongaat, Dube Trade Port and Ballito/KwaDukuza South, as well as the secondary nodes of Verulam, Waterloo and, Ndwedwe Rural. The study examines and provides an economic context for the range of social impact areas identified. Detailed impacts on these key indicators have been modelled and these are described in detail in the sections that follow.

The proposed site is located in northern eThekweni Metropolitan Municipality in KwaZulu-Natal, and is situated on previously agriculturally zoned land – east and south-east of the existing local node of Tongaat. The currently un-zoned site is 135ha in size and is currently being used for commercial farming and sugarcane plantations. It is planned for mixed-use including logistics and distribution, industrial zoning, trade and retail, business zoning, and mixed-use commercial zoning. It is anticipated that the actual development will be constructed in phases over an estimated time frame of a decade. While the impact assessment is conducted on the proposed total conceptual development, the construction of each feature will be demand-based, and therefore is subject to change.

The report isolates the impact of the development on the following major socio economic indicators:

- employment/ unemployment,
- commercial and business activity,
- poverty,
- skills development,
- black economic empowerment, and
- SMME development.

As the site is located 3km east of Tongaat, and on the north-eastern border of the Dube Trade Port/ King Shaka Airport, these areas were identified as first order impact zones, and the core focus of this assessment. As the development is sizable, some comment is also provided on the impact on the northern precinct of eThekweni, southern KwaDukuza and Ndwedwe/western rural area to provide a regional context to the impacts.

1.2. SOURCES OF INFORMATION

Information for the report was collected and analysed mainly through desktop research, interviews and consultation, from the following sources:

- ✓ Quantec stratified database
- ✓ Tongaat Local Economic Development Plan
- ✓ Verulam Local Economic Development Plan
- ✓ eThekweni Spatial Development Framework
- ✓ North eThekweni Spatial Development Plan
- ✓ Detailed interview with the eThekweni Spatial Planning Department
- ✓ Urban-Econ Economic Impact Modelling

1.3. METHODOLOGY

For the purposes of this report, the methodology applied is to assess the development separately, and determine its effect on socio economic impact indicators. These are then applied within the current context of the region, and a location specific impact assessment is conducted. Mainly the impact of the *completed* development is applied to the surrounding nodes, assuming their *current* socio-economic status quo.

Due to both the conceptual nature of the addressed impacts, and because the proposed development is still currently in its planning phase, some impacts are qualitatively assessed. All impacts are thereafter quantified by means of the Impact Rating Assessment. Where further detail on the development has not been made available, assumptions made are reflected in the text.

1.4 STRUCTURE OF REPORT

The report is structured as follows:

Section one: Introduction

This introduces the report as above.

Section two: Description and Implications of the Development

This section addresses the development abstractly, and the general implications of the development on indicators such as employment.

Section three: Geographical Impact Areas and Socio-Economic Status Quo.

This section delineates the areas of impact, and distinguishes between primary, secondary and tertiary impact areas. An overview of the socio-economic status quo is provided as a backdrop by which to assess the impact of the proposed development.

Section four: Socio-Economic Impact Assessment

This section assesses the impact by identifying socio-economic factors on the development. It focuses on the primary impact areas of Tongaat and the northern eThekweni and southern KwaDukuza Region; as well as the secondary impacts in Verulam, Waterloo and Ndwedwe/western rural areas.

Section five: Impact Quantification

This section isolates the above identified impacts, and quantifies them by means of the Impact Rating Method, determining the significance of impact of each. The chief impacts are thereby identified.

Section six: Summary and Recommendations

This last section summarises the overall impact of the development. Where possible negative externalities have been identified, detailed measures and associated mitigating actions necessary are recommended to support the positive impact of the proposed development on the identified areas.

2. DESCRIPTION AND EMPLOYMENT IMPLICATIONS OF THE DEVELOPMENT

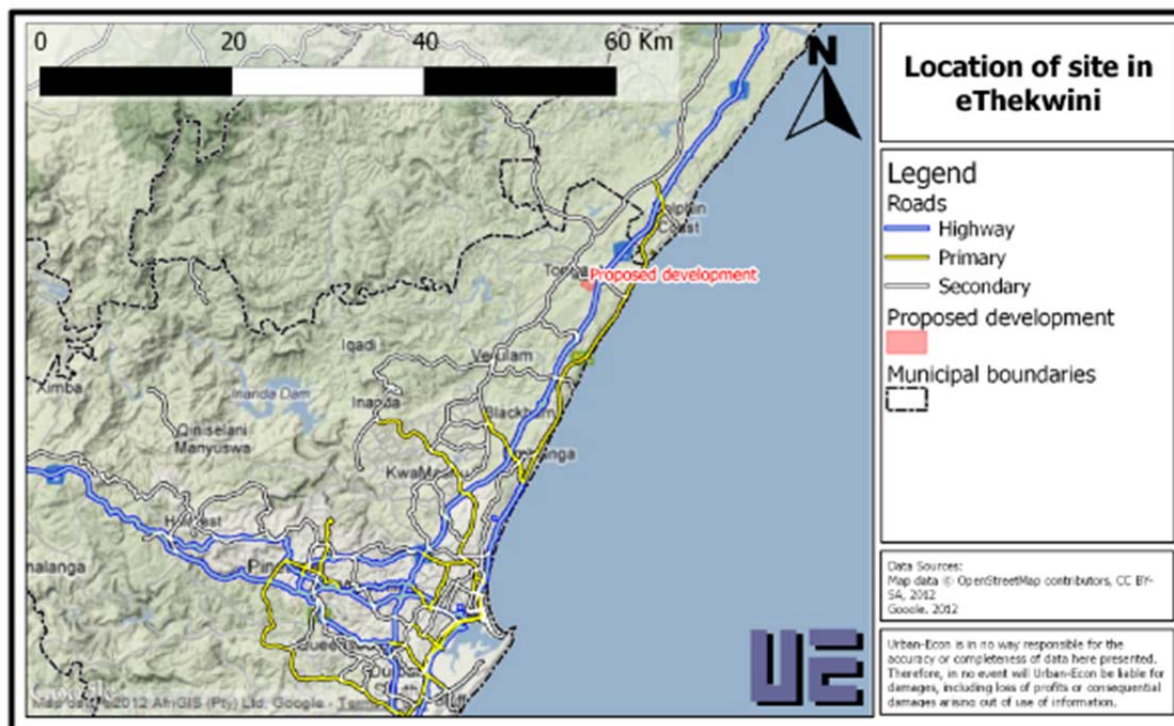
The following section describes the development and provides its initial implications on the identified developmental indicators. A thorough understanding of the development’s full implication (as the ‘impactor’) is explored in the sections to follow in order to understand its effect on its surrounding environment (as the ‘impacted’).

While the assessment of the proposed development is conducted assuming all 135 ha are developed, the development itself will be constructed in phases, over 10 years or longer, and on a demand basis. It is expected that the surrounding nodes will overtime adapt to the growth in business activity, as the change is expected to be gradual.

2.1. LOCATION OF THE DEVELOPMENT

The proposed development site is located in the northern region of eThekweni, 38kms to the north of Durban’s CBD, and 3kms westward or inland of the eThekweni’s northern coastline. The N2 and the uShukela Drive (Watson Highway) border the site on its eastern and northern boundaries respectively. The figure below illustrates the site’s (shaded in red) regional position within eThekweni Municipality, which is demarcated by the black border.

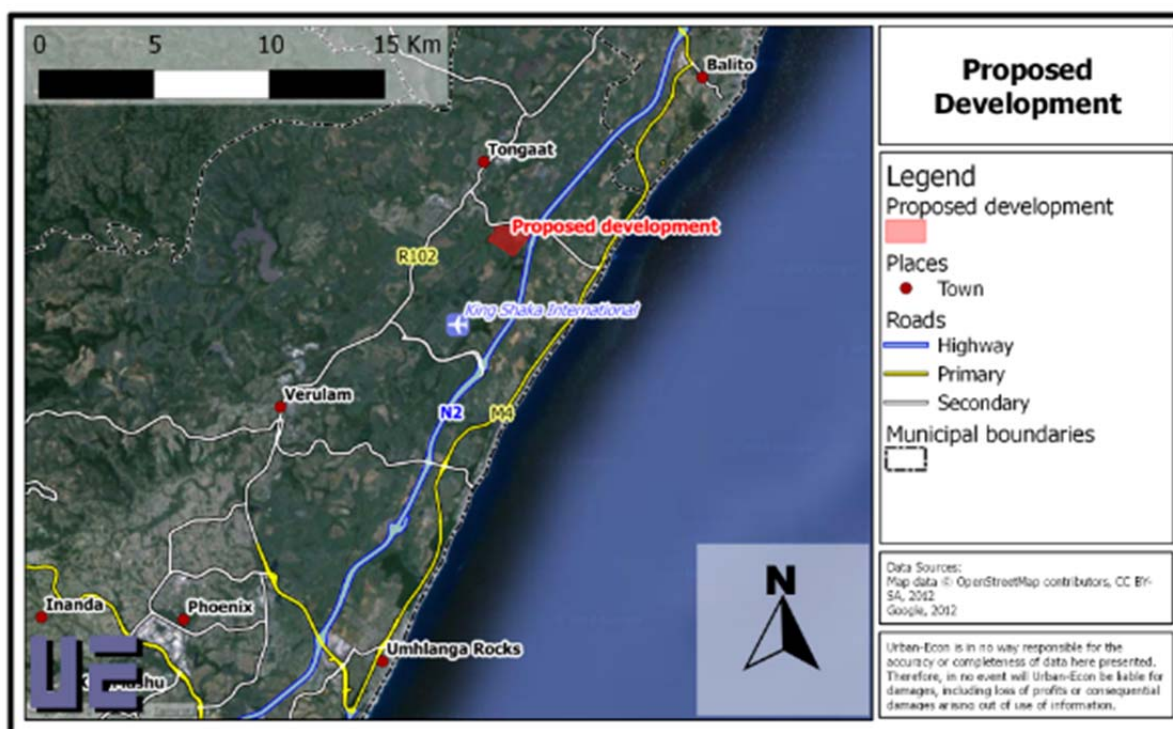
Figure 1-Location of the proposed development within eThekweni Metropolitan Municipal boundaries



Source: Urban-Econ derived from OpenStreetMap contributors, CC BY-SA, 2012

The proposed development is located close to several regional nodes. It is located 6kms south-west of Ballito, 4kms west of La Mercy, and 4kms north-east of Verulam. The site borders are 1km south of the Tongaat CBD. Located further inland, is rural Ndwedwe - approximately 14kms west of the site. The King Shaka Airport (which opened on 1 May 2010), and the Dube Trade Port (which opened on 8 March 2012), is located directly on the southern border of the proposed development. The figure below details the proximate nodes.

Figure 2- Location of the proposed development (red shading) within the North eThekweni region



Source: Urban-Econ, derived from OpenStreetMap contributors, CC BY-SA, 2012

2.2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

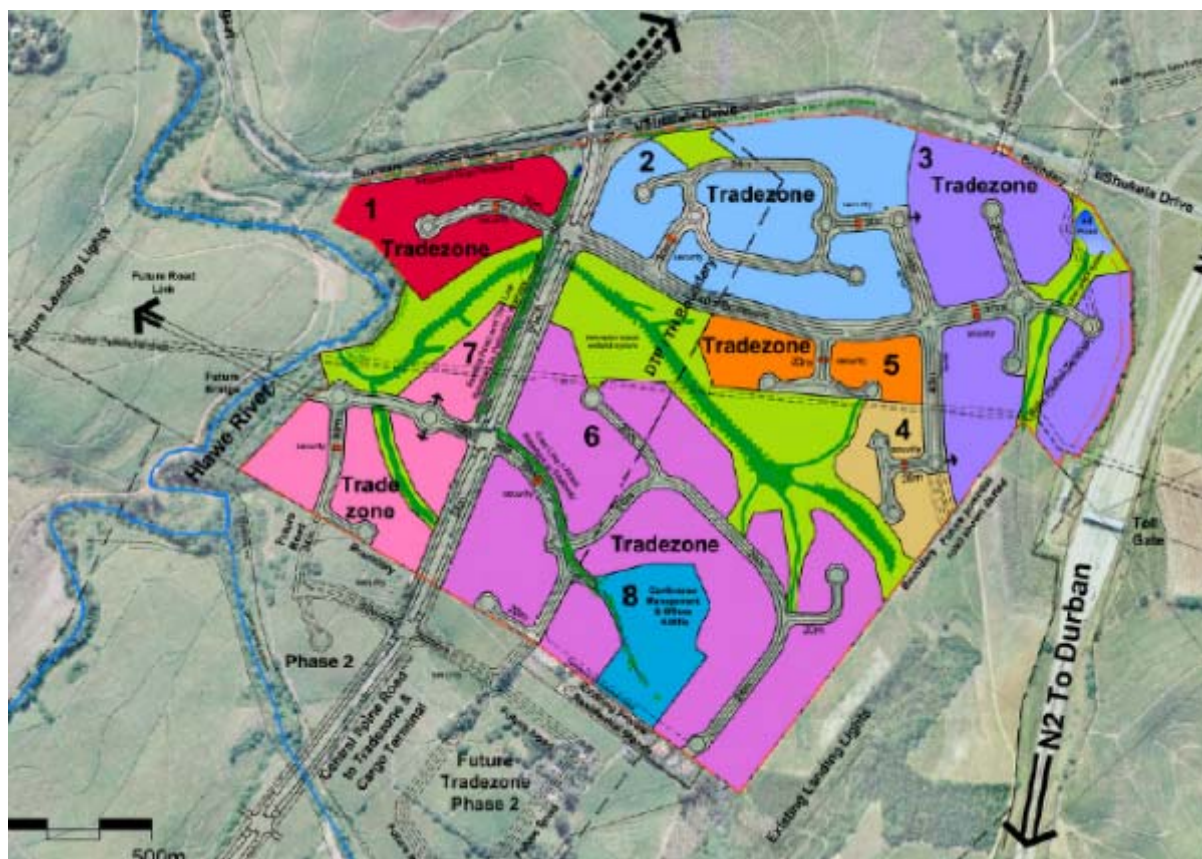
The proposed development is planned as a predominantly light-industrial park, with additional conferencing, management and offices facilities also on site:

Sub-Precinct	Land Use	Area (m ²)	% Site Area	Platform Area (m ²)	FAR	Developable Bulk (m ²)
1	Tradezone/Light Industrial/Logistics	62 385	-	60 729	0.6	36 437
2	Tradezone/Light Industrial/Logistics	148 496	-	163 646	0.6	98 188
3	Tradezone/Light Industrial/Logistics	157 337	-	140 909	0.8	84 545
4	Tradezone/Light Industrial/Logistics	33 412	-	29 154	0.6	17 492
5	Tradezone/Light Industrial/Logistics	40 632	-	39 677	0.6	23 806
6	Tradezone/Light Industrial/Logistics	286 786	-		0.6	104 238
7	Tradezone/Light Industrial/Logistics	89 146	-	87 894	0.6	52 736
8	Conference, management & offices	48 072	-	48 000	0.3	14 400
TOTAL		866 266	100.00	743 739		431 843
Roads		263 890	19.55			
Open Space		219 603	16.27			
Site Area		1340 750	100.00			

- Conference facilities, management offices, business offices - 4.8 ha
- Tradezones: Light/clean industry, warehousing, distribution and manufacturing - 81.8 ha
- Open space - 21.9 ha
- Roads – 26.5 ha

Specifically, plans are in progress for modal upgrades of existing roads and rail, as well as the establishment of supporting roads servicing the site. The site layout is shown below.

Figure 3- Conceptual Development Framework



Source: Tongaat Hulett Developments, 2013

2.3 CAPITAL INVESTMENT

The associated capital investment on the site is broken into two components, the detailed site readiness (infrastructure related spend) and the anticipated top-structure (super structure) spend. The former is the investment from the site developer, the latter, will be in the investment made by the individual businesses that are attracted into the development.

Detailed costings for site readiness have been undertaken, and these include the following: internal infrastructure for the different zones as well as bulk infrastructure (roads, water, sewer, electricity, stormwater) and additional land costs. These costs amount to R443 894 000, are derived as reflected in the table below:

Capital Expenditure Item	CAPEX Amount
Internal Infrastructure	
Trade Zone	R 362 266 000
Conference/Office	R 8 134 000
Sub-Total	R 370 400 000
Bulk Infrastructure	
Roads	R 26 821 000
Water	R 0

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Capital Expenditure Item	CAPEX Amount
Sewer	R 4 033 000
Electricity	R 0
Stormwater	R 0
Bulk Open Spaces	R 1 019 000
Sub-Total	R 31 873 000
Land Costs:	R 41 621 000
Total:	R 443 894 000

Source: Tongaat-Hulett Development, 2013

Super-Structure (for the anticipated on-site buildings) costings have been calculated using the 2013 AECOM Africa Property and Construction Handbook. These calculations are based on the proposed developable bulks for the different land uses and the associated per m² build costs indicated in the handbook. The anticipated build costs for the total superstructure development is R 3611 908 740. This is for the full development site in current rand value (2013). The breakdown between the zones is reflected below.

Capital Expenditure Item	CAPEX Amount
Superstructures	
Trade Zone	R 3 331 195 140
Conference/Office	R 280 713 600
Total Anticipated Expenditure	R 3 611 908 740

Source: Calculation based on 2013 AECOM Africa Property and Construction Handbook.

2.4 EMPLOYMENT IMPLICATIONS OF THE PROPOSED DEVELOPMENT

In order to develop a measurable impact, each descriptive feature of the development is isolated for its effect on quantifiable socio-economic indicators. The table below isolates the initial impact on employment as the first measurable means of assessing the development's socio economic impact.

As can be seen from the table below, a total of 4026 permanent jobs are expected to be created by business activity on the site. This **excludes** the employment creation impact on suppliers through increased demand for supplier services. Annual operational expenditure's (OPEX) by on-site businesses effect the supply chain through backward and forward linkages, both direct and indirectly, and have thus a significant impact on employment creation throughout the supply chain. Additional direct jobs created in the supply-chain refers to jobs created at the premises of suppliers, whilst indirect additional jobs created refers to jobs created at the premises of suppliers of suppliers.

As the total annual OPEX of on-site businesses cannot be determined at this stage (and is demand-based), an indication of the direct and indirect employment opportunities that will be created (per R1million annual operational expenditure) has been provided.

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Table 1: Number of Permanent Jobs created through the development

Permanent Jobs				
Sub-Precinct	Land Use/Development	Anticipated no of permanent on-site employees	Additional jobs in direct supply-chain (per R1 million OPEX)	Additional jobs in indirect supply-chain (per 1 million OPEX)
1-7	Tradezone			
	Offices	1 782	4.9	2.5
	Light/clean industry	647	0.9	1.9
	Warehousing	323	0.5	1.2
	Distribution	90	0.5	1.2
	Manufacturing	388	0.9	1.9
	Subtotal:	3229		
8	Conference, Management and Offices			
	Conference	360	3.0	1.6
	Management Offices	218	4.9	2.5
	Offices	218	3.0	1.6
	Subtotal:	796		
Total permanent on-site jobs		4026	Average: 3.0	Average: 1.9

Source: Urban-Econ Employment Multipliers, 2012

Whilst the above mentioned jobs are permanently created jobs, the table below details the number of temporary jobs created during the site's capital expenditure phase. **As can be seen from the table below, a total of 1920 jobs will be created during the site preparation capital expenditure phase**, namely 1081 directly in the construction supply chain, and 839 indirectly of companies supporting the construction supply chain. In addition, during the development of the superstructures on the site, **it is estimated that 17 243 employment opportunities in the construction sector will be become available. This includes 10 785 directly within the construction supply chain and a further 8378 in indirect related supply chains.**

Table 2: Number of Temporary Jobs created by the development during capital expenditure phases

Capital Expenditure Item	CAPEX Amount	Total Temporary Jobs	Direct	Indirect
Internal Infrastructure				
Trade Zone	R 362 266 000	1729	973	756
Conference/Office	R 8 134 000	39	22	17
Sub-Total	R 370 400 000	1768	995	773
Bulk Infrastructure				
Roads	R 26 821 000	128	72	56
Water	R 0	-	-	-
Sewer	R 4 033 000	19	11	8
Electricity	R 0	-	-	-
Stormwater	R 0	-	-	-
Bulk Open Spaces	R 1 019 000	5	3	2
Sub-Total	R 31 873 000	152	86	66
Land Costs:	R 41 621 000	-	-	-
Superstructures				
Trade Zone	R 3 331 195 140	15 903	8 950	6 953
Conference/Office	R 280 713 600	1 340	754	586
Sub-Total	R 3 611 908 740	17 243	9 704	7 539
Total Development Capex Cost	R 4 055 802 740	19 163	10 785	8 378

Source: Urban-Econ Employment Multipliers, 2013

2.5 CONCLUSION

The proposed development will result in significant growth in job opportunities and business activity.

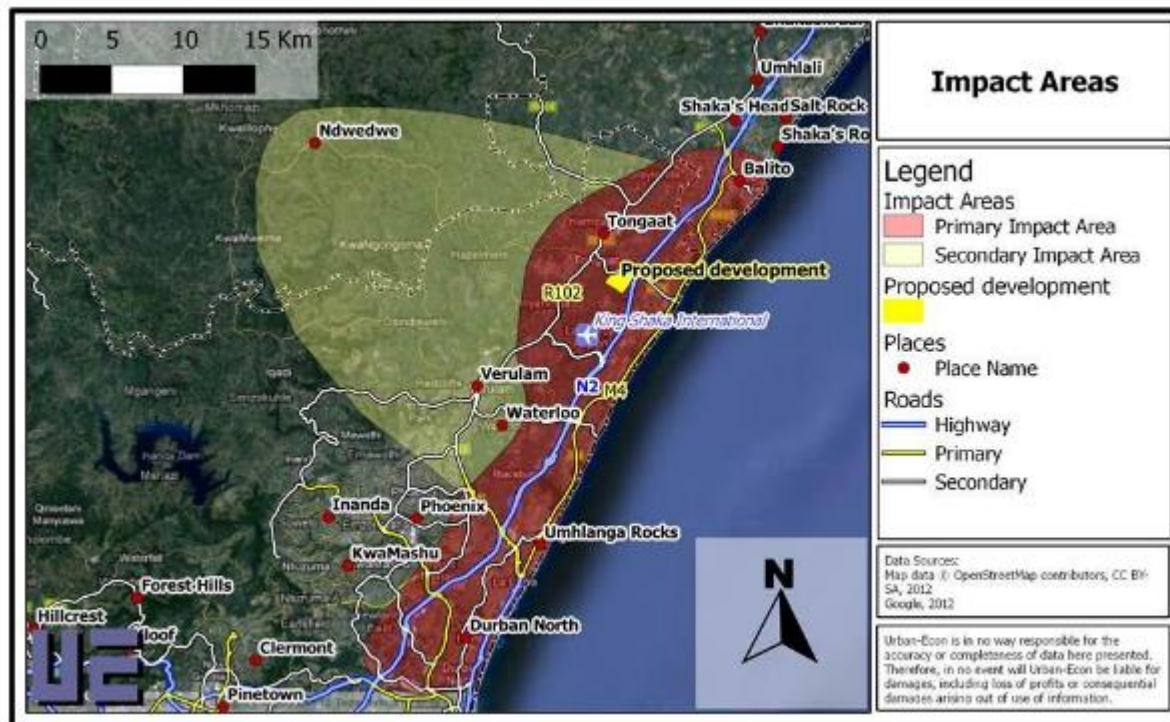
During the initial site readiness phase, 1920 temporary jobs will be created through the infrastructure related capital expenditure phase of the proposed development. In addition, it is estimated that 17 243 employment opportunities in the construction sector will be become available. This includes 10 785 directly within the construction supply chain and a further 8378 in indirect related supply chains.

An anticipated 4026 permanent jobs are anticipated upon successful establishment of on-site businesses at the proposed development.

3. GEOGRAPHIC IMPACT AREAS AND SOCIO-ECONOMIC STATUS QUO

The following section delineates impact areas of the proposed development, which are represented in the figure below. The primary impact areas identified are the Tongaat, northern eThekweni and southern KwaDukuza including the Dube Trade Port and King Shaka Airport. The secondary nodes are Verulam, Ndwedwe/western rural and Waterloo, Umhlanga, and greater La Mercy).

Figure 4- Primary and Secondary Impact Areas



Source: Adapted from Google Earth, 2012

3.1. PRIMARY IMPACT AREA

The primary impact area includes the nodes of Tongaat¹ due to the geographic proximity and the ease of access along the Watson Highway. Tongaat acts as local service nodes in north eThekweni, serving relatively small populations which account for 1% the total size of eThekweni Metropolitan.

Also included in the primary impact area is the Dube Trade Port/ King Shaka Airport site, which is located on the southern border of the proposed development. The Airport and Tradeport are of importance to the

¹ For the purposes of this report, the node Tongaat includes the bordering township of Hambanathi and the subplace of Emona and Westbrook.

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proposed development with regards to creation of business and industrial activity, as well as employment in the area.

Lastly northern eThekweni and southern KwaDukuza are included in the primary impact area as these areas will be the prime source of highly skilled labour at the proposed development, and will be largely impacted by the emergence of businesses situated between these two rapidly growing economic nodes. These areas also host a share of tertiary sector economic activity, and form an existing activity corridor that links the business parks of the Umhlanaga Ridge along the M4 to the tertiary sector activity in Waterloo (Tongaat) and onwards to Ballito (KwaDukuza). The close alignment of the uShukela Highway (Main Rd off the M4 to Tongaat) to this corridor will continue to deepen the tertiary (business services, retail and medical services) activity spine and connect uShukela into this corridor.

3.1.1 PRIMARY CATCHMENT SOCIO-ECONOMIC PROFILE, 2012

The table below details the socio-economic profile of the primary impact area as well as indication of the likely employment capture of on-site jobs created by the proposed development.

The following can be highlighted:

- Overall the area has a low unemployment rate, and indicates good employment opportunities. The labour force participation is low however, and is indicative of the area's working population having a preference not to be economically active as opposed to a large presence of discouraged workers. The majority of the employed population is skilled, and is indicative of a better educated working population.

Table 3 Primary Catchment Profile

	eThekweni		KwaDukuza South		Tongaat		Primary Catchment
Employed	1 032 243	39%	43 889	36%	17 832	48%	6196 (76%)
Unemployed	268 767	10%	10 343	8%	1 806	5%	
Not Economically Active	1 356 926	51%	68 387	56%	17381	47%	
<i>Child population</i>	946 778	25%	50462	29%	11194	22%	
<i>Working age population</i>	2607 888	70%	118057	67%	37019	72%	
<i>Formally Employed</i>	812 328	79%	34 292	78%	13890	78%	
<i>Highly Skilled</i>	110 407	14%	3 697	8%	1 865	10%	5283 (90%)
<i>Skilled</i>	374 023	46%	13 620	31%	6 560	37%	
<i>Semi and Unskilled</i>	328 305	40%	17 033	39%	5 465	31%	913 (40%)
<i>Informally Employed</i>	220 983	21%	9 644	22%	3 966	22%	
Population	3 727 124		175840		51 216		
No. of Households	1 029 502		47 825		15 626		
No. of people per household	3.6		3.7		3.3		
No of people per km²	1 626		278		3 412		
No. of households per km²	449		76		1 041		
Aged population	176 317	5%	7417	4%	3115	6%	
Age Dependency Ratio	43.0		49.0		38.5		
GVA Share of KZN (R millions, 2005 prices)	152075.1	53%	5083.6	2%	Captured as part of eThekweni		
Leading Sectors (per Sub-Area)							

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	eThekweni		KwaDukuza South		Tongaat		Primary Catchment
- Finance, insurance, real estate and business services	36691.3	24%	962.4	19%	454.1	18%	
- Manufacturing	32058.9	21%	1486.3	29%	713.0	28%	
- Transport, storage and communication	23797.5	16%					
- Wholesale and retail trade			858.9	17%	388.6	15%	

3.1.1 HOUSEHOLD AND POPULATION PROFILE

The noted above, the catchment area population and households reflect an immediate density of 3412 persons per km² in Tongaat, with 3.7 persons per household. There is a slightly and a slightly lower density in the remaining northern eThekweni profile of 3.6; and a KwaDukuza indicating density of 3.3. Thus locality of the proposed development is well settled and when this is reviewed in conjunction with the employment profile – 90% of the catchment’s employed is highly skilled, this indicates that a the development will be well positioned to provide additional space for commercial activity in a community that has the ability to take up the opportunities.

3.1.2 SECTORIAL EMPLOYMENT

From the land allocation it is indicative that large office jobs (highly skilled employment), wholesale and retail trade (skilled to highly skilled employment) and light industry and the limited on-site manufacturing (skilled and semi and unskilled employment) enterprises will establish at the proposed development.

The table below demonstrates employment by key sector. As can be seen from the table, the manufacturing industry and wholesale and retail trade, accommodation and catering industry are dominant employers in both Tongaat. Finance, insurance and real estate, and general government are the next highest employment industries.

Table 4- Key Sector Employment Profile, 2012

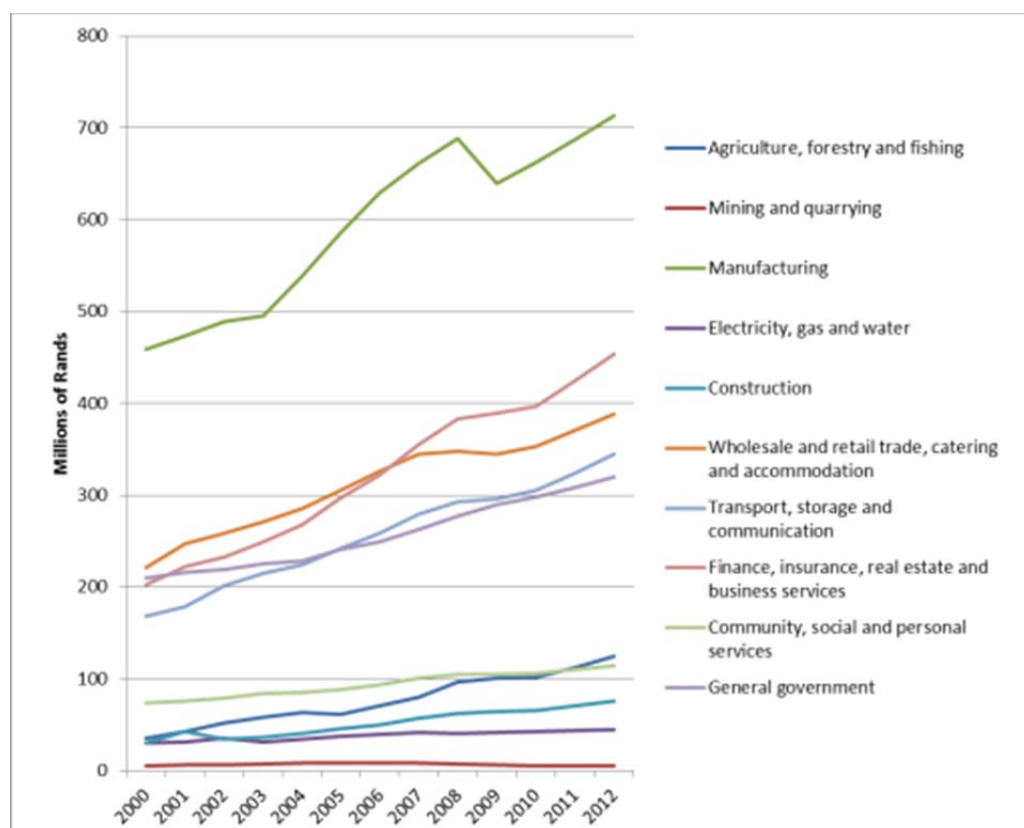
Employment Sector	eThekweni		KwaDukuza South		Tongaat	
Manufacturing	148 400	14%	6 926	15%	3 974	22.1%
Wholesale and retail trade, catering and accommodation	249 317	24%	11 292	24%	4 392	24%
Transport, storage and communication	63 360	6%	1 093	2%	836	5%
Finance, insurance, real estate and business services	183 014	18%	5 378	12%	2 578	14%
Community, social and personal services			8 802	19%	1 457	8%
General government			4 159	9%	2 795	(16%)

Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2012

3.1.3 GROSS VALUE ADDED (GVA)

In Tongaat, the manufacturing sector contributes the most to gross value added (28%). This reflects on their largely small and medium scale industrial activity (industrial SMMEs). Tertiary services such as finance, insurance, real estate and business services (18%) and wholesale and retail trade, catering and accommodation are the next highest (15%). The figure below describes the GVA profile of Tongaat over the past 12 years. This profile will likely remain with the emergences of new light-manufacturing business and tertiary offices, retail and other services at the proposed development. Currently the existing town centre of Tongaat is highly constrained, and the uShukela Development will allow for local businesses to seek prime vacancy space that allows for interaction into a wider market – notably linking Dube Trade Port and the uMhlanga and Ballito nodes to Tongaat.

Figure 5: Gross Value Added (GVA) per Industry Sector of Tongaat



Source: Quantec Standardised Regional, 2012

3.2. SECONDARY IMPACT AREAS

The secondary impact areas include Verulam, Waterloo and the bordering sub-places of the Ndwedwe/western rural areas.

The following table details the socio-economic profile of the secondary impact area. The following can be noted:

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- sparse household and population densities characteristic of a rural region. The number of informal households is also high.
- the majority of the working population are semi and unskilled individuals. The population that is unemployed is also mostly semi and unskilled. Only 9% of residents are highly skilled.

Table 5 Secondary Catchment Area

	Verulam 2012		Ndwedwe/Western Rural Area		Secondary Catchment
Employed	23 352	48%	15 883		1898 (24%)
Unemployed	2 415	5%	6 080		
Not Economically Active	22539	47%	68 313		
Child population	16 244	24%	48 729	34%	
Working age population	48 306	71%	87 978	62%	
Formally Employed	18185	78%	12 517	79%	
Highly Skilled	2 555	(11%)	1 376	9%	528 (10%) ²
Skilled	8 609	(37%)	4 961	31%	
Semi and Unskilled	7 021	(30%)	6 210	39%	1370 (60%) ³
Informally Employed	5 197	(22%)	3 400	21%	
Population	67 962		142 067		
No. of Households	20 816		29 310		
No. of people per household	3.3		4.8		
No of people per km ²	2 600		122.7		
No. of households per km ²	796		25.3		
Aged population	3 557	5%	7861	4%	
Age Dependency Ratio	40.8		64.3		
GVA Share of KZN (R millions, 2005 prices)	3 279.1	1%	1677.8	0.6%	
Leading Sectors					
- Agriculture, forestry and fishing			361.8	22%	
- Finance, insurance, real estate and business services	767.2	23%			
- Manufacturing	725.8	22%	318.6	19%	
- Transport, storage and communication	569.9	18%			
- Wholesale and retail trade, catering and accommodation			251.0	15%	

3.2.1 HOUSEHOLD AND POPULATION PROFILE

² Of total anticipated skilled jobs at the development

³ Of total anticipated semi and unskilled jobs at the development

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The noted above, the catchment area population and households reflect a much higher density in the urban area of Verulam of 2600 persons per km². In comparison, the rural hinterland of Ndwedwe is sparsely settled, with only 123 persons per kilometre. The catchment's employment profile reflects a low share of skilled employment (10%); but a high share of semi and unskilled employment, using the catchment criteria, is estimated that these communities would be able to access a high share of the semi and unskilled labour requirements in this development, giving due consideration to their proximity in the secondary catchment.

3.2.2 SECTORIAL EMPLOYMENT

From the land allocation it is indicative that large office jobs (highly skilled employment), wholesale and retail trade (skilled to highly skilled employment) and light industry and the limited on-site manufacturing (skilled and semi and unskilled employment) enterprises will established at the proposed development. The existing sectoral employment profile reflects good levels of manufacturing, retail and logistics employment. So there exists a base pool of semi and unskilled labour in these sectors that have clear alignment to the uShukela Highway Development.

Table 6- Secondary Impact Area - Sector Employment Profile, 2012

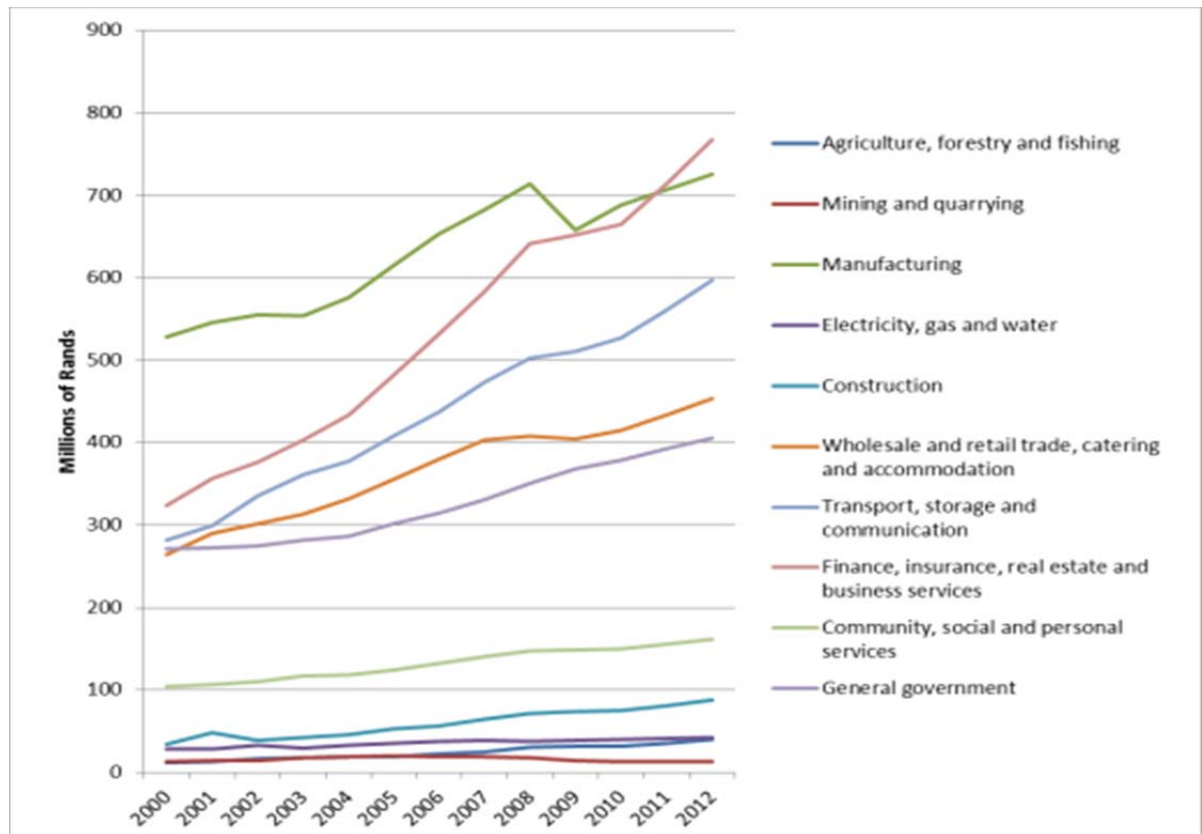
Employment Sector	Verulam		Ndwedwe	
Agriculture, forestry and fishing	354	(2%)	2 518	16%
Mining and quarrying	109	(0.5%)	82	1%
Manufacturing	3 395	(14%)	1 768	11%
Electricity, gas and water	55	(0.2%)	67	0%
Construction	1 711	(7%)	2 045	13%
Wholesale and retail trade, catering and accommodation	5 863	(25%)	3 506	22%
Transport, storage and communication	1 664	(7%)	524	3%
Finance, insurance, real estate and business services	4 116	(18%)	884	6%
Community, social and personal services	2 718	(12%)	2 392	15%
General government	3480 (15%)		2 981	19%

Source: Adapted from Quantec Online Data; Standardised Regional- Labour, 2012

3.2.3 GROSS VALUE ADDED

In Verulam, finance, insurance, real estate and business services (23%), as well as manufacturing (22%) are the highest industries contributing to regional gross value added, as indicated in the figure below. The proposed development will further strengthen the dominance of these two industries as businesses likely to develop at the site are within these respective sectors.

Figure 6: Gross Value Added (GVA) per Industry Sector of Verulam



Source: Quantec Standardised Regional, 2012

4. SOCIO-ECONOMIC IMPACT ASSESSMENT

4.1 IMPACT FACTORS

4.1.1 IMPACT AREAS

As indicated in section three above, the impact areas have been classified into primary and secondary and impact areas. The following impact assessment is focused on four main sub-areas areas. Tongaat and northern region of eThekweni Metropolitan Municipality and the including the southern region of KwaDukuza Local Municipality fall into this catchment too. Verulam and the Nwedwe/western rural areas form this secondary catchment. The impact areas are highlighted below, with impact criteria further detailed below.

4.1.2 IMPACT ASSESSMENT CRITERIA

The socio- economic impact assessment is conducted on the following criteria:

- ✓ **Existing Social Facilities**
This assessment looks at the impact of the proposed development on existing social facilities in the addressed areas - noting a possible initial backlog in facility provision in the proposed development.
- ✓ **Existing Businesses** (retail and light commerce)
This assessment isolates the main types of business activity which will be impacted by the proposed development, and quantifies this impact where possible.
- ✓ **Industrial Activity**
This assessment discusses the impact on industrial activity, and addresses the impact of the proposed development on regional industrial activity.
- ✓ **Residential Demand**
This assessment discusses the impact of the proposed development only on Tongaat, Verulam and the western rural area for additional residential stock in the region.
- ✓ **Property Values**
This is noted as being directly linked to the impact of the proposed development on residential demand.
- ✓ **Poverty**
This is addressed mainly by applying the impact of potential jobs created as noted in section 2, as well as applying the impact of subsidy housing on informal settlements in Tongaat, Verulam and the western rural areas.
- ✓ **BEE and SMME Development**
This briefly notes the impact of the development on black-owned businesses and small enterprises in the key nodes.
- ✓ **Informal Sector Development**
This section notes that key impacts will be felt mainly by the taxi industry and its corresponding vendors.

✓ Skills Development

This section notes the impact of the proposed development on general development in the listed nodes.

4.2. TONGAAT

The following section explores the socio-economic impact per identified criteria on the residents and businesses of Tongaat.

EXISTING SOCIAL FACILITIES

As the proposed development does not intend to have a residential component, no strain on existing social facilities is anticipated. The hotels services will cater for the accommodation needs of commuting business persons. These will however not be reliant on existing social services in Tongaat. Increased use of the police services in Tongaat will be utilised, as will be the back-up services of fire-fighting stations.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

In the short term, Tongaat businesses are expected to experience a boost and increase in revenue as a result of increases in demand for food, accommodation services, fuel and convenience retail in the area. This will notably be impacted by the construction of the hotel in the area, restaurants providing food for on-site employees, and an increase in commuter traffic requiring fuel and convenience retail.

INDUSTRIAL AND COMMERCIAL ACTIVITY

The establishment of new light industrial businesses in the proposed development is expected to boost supportive industrial activity in Tongaat (e.g. suppliers, industrial repairs and maintenance). Manufacturing presently dominates the Tongaat zone economy in terms of job creation and GVA, and a further industrial activity at the proposed site would further boost this present outcome. The largest contributor to the manufacturing sector in Tongaat is the food and beverages sub-sector that includes the Tongaat-Hulett group's operations in Tongaat. The clothing and textiles sub-sector is the 2nd largest manufacturing sector, followed by the furniture and other manufacturing sectors. There are about 35 registered clothing and textile firms operating in Tongaat. Most of the registered firms in the metal products, machinery and equipment sub-sector are small-scale operations focussing on the local market.⁴

Due to close proximity and easy access, there will be significant opportunities for the creation of industrial value chains and linkages between particularly Tongaat Industrial Park and the proposed development industrial / business park/ office businesses. There may be competition between support suppliers which will eventually develop in the proposed development, and in Tongaat industrial. Some existing Tongaat industrial businesses may require more marketing and upgrading. Where large scale supplies are not required, Tongaat

⁴ Tongaat LED Study, p8, 2008; Tongaat Manufacturing Cluster, 2011

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industrial businesses are expected to be more competitive, due to lower rental costs than that of the proposed site.

In the short term, there is likely to be healthy competition in services and retail businesses allowing existing Tongaat businesses the opportunity to expand, or relocate, and in the long run offer either local service specialisation or regional service offering, linking the node better to DTP, eThekweni and KwaDukuza along the M4 corridor.

Worth noting in assessing the effect of the proposed development on industrial activity, is the key issue identified in the Tongaat LED, of a shortage of industrial land in and around Tongaat. Tongaat industrial stakeholders strongly felt that the under-development of surrounding Tongaat-Hulett owned land resulted in Tongaat being constrained in its development – restricting and stifling industrial activity. The Tongaat LED notes that investors expressed their frustration at their restriction to expand or invest in further industrial activity in Tongaat, while pointing out that DTP land is too expensive. These investors reported that they would prefer cheaper industrial land near DTP. The effect of the proposed development on light industrial activity is therefore largely to create opportunity for industrial expansion, by increasing the land in Tongaat zoned for industrial and commercial use substantially. This will encourage investment in the region in the long term.

PROPERTY VALUES

The impact of the proposed development are likely to witness an increase in residential property values, as demand for residential housing nearby industrial and commercial activity at the proposed site will increase. Existing industrial and commercial property values will be depended on the outcome of existing businesses ability to remain competitive with new entrants locating at the proposed development. Should competition enable business expansion of existing Tongaat businesses as opposed to contraction, commercial properties and industrial properties are likely to increase in value too.

POVERTY

Poverty in the greater Tongaat area will decrease due mainly to increased opportunities for employment, and general economic activity. In terms of quantifying the impact of poverty, the unemployed population of Tongaat is identified as the chief beneficiary of employment generated by the site, due to the mix of close proximity and labour skills.

These findings have been detailed in the table below, with impacts on the unemployment rate of the area shown.

BEE AND SMME DEVELOPMENT

The existence of new economic opportunities in the proposed development will provide opportunities for black-owned enterprises to enter markets, or to enter a competitive location next to highly marketed DTP. This is also true for existing black businesses/ investors in (predominantly African and Indian) Tongaat, who wish to expand (as is indicated in the Tongaat LED).

INFORMAL SECTOR DEVELOPMENT

The Tongaat informal sector will be positively impacted. The Tongaat informal sector is a significant employer, providing a means to income for 22% of its population, and has been increasing employment opportunities at a rate of 2.3% per annum. An increase in commuting workers to the proposed development results in higher

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public transport utilisation and access to informal service providers at commuting points. This is likely to impact on informal transport economic activity as well as an increase in vendors and informal traders en-route.

SKILLS DEVELOPMENT

Opportunities for skills development are also notable. The development will create further opportunity for the strengthening and developing of existing skills development in Tongaat. In Tongaat's Industrial Park there currently exists skills development through the Transport SETA, Services SETA, and safety and security training - all of which are relevant to the proposed development. This then contributes to the employability of Tongaat's youth in the long run through skills development, which assists in decreasing Tongaat's unemployment rate.

PUBLIC TRANSPORT

Due to the size and scope of the proposed development it is anticipated that there will be considerable expansion in the public transport network (bus and taxi service) along the uShukela Highway. This in conjunction with the DTP link road and the planned revamp of commuter rail in eThekweni north will provide numerous opportunities for economic growth in the public transport sector.

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SUMMARY OF IMPACTS: TONGAAT

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.2.1	EXISTING FACILITIES	No effect	No effect	No effect
4.2.2	EXISTING BUSINESSES (retail and light commerce)	Short term increase in retail and wholesale sector (more convenience retail) and fuel sales	Medium term competition in retail and wholesale sector,	Long term growth, localisation and potential specialisation of retail and wholesale sector
4.2.3.1	LIGHT-INDUSTRIAL ACTIVITY	Short term competition between proposed development and Tongaat Industrial Park industrial activity.	Medium term competition between proposed development and Tongaat Industrial Park industrial activity.	-
4.2.3.2		-	-	Opportunity for the development of more efficient production systems due to competition. E.g., better customer care, quicker technologies, better services, more competitive prices, in an attempt to attract business. The impact is that customers will benefit from the above.
4.2.3.3		Permanent opportunity for expansion of previously limited and “boxed in” light industrial development.	-	-
4.2.3.4		Potentially permanent opportunities created for linkages/ value chains between existing industry in the northern region of eThekweni and the anticipated light industrial activities on site. Specifically, high end production of electronics or more specifically business orientated production is closely aligned to both the Tongaat LED and the Tongaat Manufacturing Cluster as well as the on-site commercial focus for allied activities.	-	-
4.2.4	PROPERTY VALUES	Short term increase in property values, this means more profits for property owners.	Medium term stabilisation in property values as a result of new and modern properties permanently added to the region. Potentially less growth in profits for property owners.	Long term equalisation of property values as region becomes denser and more people demand Tongaat property.
4.2.5.1	POVERTY	Short term decrease in unemployment	Medium term decrease in unemployment	Large long term drop in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy.

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4.2.6	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	.-	.-
4.2.7	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis.	-	-
4.2.8	SKILLS DEVELOPMENT	-	-	Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat setas and other identified training programmes.

4.3. GREATER NORTH ETHEKWINI / SOUTH KWADUKUZA REGION

EXISTING SOCIAL FACILITIES

No pressure on social facilities is expected as no residential units are planned at the proposed development.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

The establishment of the proposed development is aligned to the existing Northern Spatial Development Framework (NSDF) of the eThekweni Municipality, which encourages the establishment of a densification of development in the northern eThekweni region. While the development will serve the localised market of Tongaat and Dube Trade Port, all northern eThekweni/ southern KwaDukuza nodes are expected to benefit significantly from the growth of the entire northern eThekweni region due to increased exposure and increased market size. This will result in a long term positive impact for the region. In the long run, it is also expected that the proposed development will become a large regional node, serving the region between Umhlanga/ Mount Edgecombe and Ballito to the south and north respectively, and eastern Ndwedwe to the west.

LIGHT INDUSTRIAL AND COMMERCIAL ACTIVITY

It is anticipated that commercial and associated light industrial activity in the region is expected to experience a significant increase. It is expected that industrial activity (particularly the finishing of manufactured goods; production of high end electronics and similar exportable goods) in the northern region will be concentrated around the Dube Trade Port region. The proposed development is expected to impact the region such that there will be more specialised light industrial activity within the development area. There will be more opportunity for service value chains not only for export firms but also for the expanse of commercial activities anticipated in the development. It is also expected that all commercial land will be more competitively priced due to the availability of more zoned land.

According to both the iLembe and eThekweni Draft Industrial Development Strategy (2010), there is a significant recent shortage of industrial (both heavy and light) land in eThekweni and iLembe. As a result, the growth in rental price for zoned industrial land has been significant - particularly within recent years. While growth in the rental price of commercial land has grown by an average 10% from 1995 - 2008, the growth rate has doubled, and grown by an average of 20% from 2005 - 2008. This is mainly due to the shortage of adequately zoned heavy and light industrial land in the region, and in eThekweni in general.

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Therefore, the proposed development is expected to result in regional competition in commercial activity in the short run, and in the long run, the proposed development is expected to encourage regional specialisation in each light industrial node supporting the regional commercial value chains through clean and business focussed production.

DUBE TRADE PORT

In the short run, the effect of the proposed development on DTP industrial activity has the potential to impact on potential tenants, industries / companies which need to be near cargo aircraft but do not need to be located directly on the DTP premises may opt to rent space in the proposed development. There is anticipation that proposed development may be more affordable for medium-sized light industrial enterprise. Specifically on-site activity more closely aligned to commercial and retail nature of the uShukela tenant mix than the export platform of DTP is anticipated within the light industrial complex. It must be noted that the DTP value-offering is specifically targeted, whereas the uShukela development has no specific parameters in place for potential tenants.

POVERTY

Poverty in the region is expected to be positively impacted, mainly through employment creation. The jobs creation is expected to decrease unemployment in the whole region. There is expected to be significant economic migration from surrounding areas and sub-places as a result, which in the long run may counteract parts of the initial impact of a reduction in poverty

INFORMAL SECTOR DEVELOPMENT

The impact on the regional informal sector will be a positive impact on and around the taxi industry. There are expected to be new taxi routes developed, with the proposed development as a destination resulting in a significant boost in business activity for regional taxi ranks offering trips to the development. Informal traders will increase accordingly in all regional taxi ranks.

SKILLS DEVELOPMENT

The proposed development will require (and therefore provides opportunities) the development of tertiary institutions in north eThekweni and KwaDukuza for vocational training. In addition, the region will also become a national priority in terms of the provision of Sectorial Education and Training Centres. This will assist to develop practical skills through internships and practical in-service training. In general the proposed development will provide opportunity for more skills acquisition through employment for residents of the northern region.

SUMMARY OF IMPACTS ON THE NORTH OF ETHEKWINI/SOUTH OF KWADUKUZA:

These are detailed in the table below on the following page.

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.3.1.1	EXISTING BUSINESSES (retail and light commerce)	No significant impact	-	-
4.3.1.2		-	-	Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. More large-scale regional services, business branches, and possibly administrative government offices added to the regional economy. More convenience for the population of the region.
4.3.2.1	LIGHT INDUSTRIAL ACTIVITY	Short term competition in light industrial (service) activity between proposed development and other industrial nodes such as Dube Trade Port and some industrial firms in eThekweni North and KwaDukza. Potentially less-than-anticipated profits for businesses.	-	-
4.3.2.2		Short term relief of pressure for light industrial land. More competitive pricing of zoned land.	Medium term relief of pressure for light industrial land. More competitive pricing of zoned land.	More regional inward investment, due to competitive pricing of zoned land due to increased supply.
4.3.2.3		-	-	More light industrial activity and regional value chains in production. Therefore more value adding light industrial processes kept in area, benefitting existing businesses.
4.3.4.1	POVERTY	Due to the large scale of the development and therefore the large number of jobs created, poverty is expected to be significantly reduced.	-	-

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	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.3.4.2		-	-	There is expected to be significant economic migration from surrounding areas and sub places, which in the long run may reduce the initial impact of a reduction in poverty
4.3.5	BEE AND SMME DEVELOPMENT	Permanent opportunity for the regional expansion of BEE and SMME companies.	-	-
4.3.6	INFORMAL SECTOR DEVELOPMENT	Permanent growth in size and activity of the informal sector, mainly in and around taxis and Tongaat taxi rank, as a result of increased activity on and therefore around uShukela Highway	-	-
4.3.7	SKILLS DEVELOPMENT	Permanent skills development through increased employment opportunities	-	-
4.3.8	SKILLS DEVELOPMENT	-	-	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni south KwaDukuza region. This assists in long term skills development and employability.

4.4 VERULAM

EXISTING FACILITIES

No strain on existing social facilities in Verulam is expected as no residential units are expected to be constructed at the proposed development. The use of additional policing services and backup fire-fighting services will be expected.

EXISTING BUSINESSES (RETAIL AND EXISTING COMMERCE)

The impact on Verulam's existing businesses is expected to be similar to that of Tongaat, in that the latter business will initially benefit from fuel and convenience shopping expenditure (including lunch time expenditure). The duration of the impact of the proposed development on Verulam businesses, particularly those along the R102 corridor, is long term as this activity corridor will be linked to the M4 via the uShukela Highway Development.

COMMERCIAL AND INDUSTRIAL ACTIVITY

As there is limited non-retail commercial services activity in Verulam to be impacted by the proposed development, it is in fact the local Verulam industrial businesses will benefit initially from the proposed development's business establishing costs. It is expected that there will be complementarities of in industrial activity in Verulam and the proposed commercial development at the site. The competition between the proposed development's light industrial activity and that which exists in Verulam therefore is not expected to be significant.

PROPERTY VALUES

As business activity increases at the proposed development, demand for residential housing is expected to increase in Verulam due to its proximity to the workplace, raising property values. With added economic activity in the area, the production of supply services nearby the DTP will also likely provide a stimulus to suppliers based in Verulam, resulting in greater businesses in the area. As a result, demand for commercial and industrial property in Verulam will also increase.

POVERTY

Poverty in the Verulam area is set to decrease as increased employment opportunities will become available to Verulam's unemployed, reducing household dependencies and poverty indices.

BEE AND SMME DEVELOPMENT

The existence of new economic opportunities in the proposed development will provide opportunities for black-owned enterprises to enter markets, or to enter a competitive location (next to highly marketed DTP). This is also true for existing black business/ investors in (predominantly African and Indian) Verulam, who wish to expand northward or relocate their premises.

INFORMAL SECTOR DEVELOPMENT

Verulam informal sector remuneration forms 7% of formal and informal remuneration in Verulam. However, unlike Tongaat, Verulam informal sector remuneration has been growing slower than formal remuneration (at constant 2005 prices). Still, the Verulam informal sector is a central part of the Verulam economy, and will be positively boosted by the proposed development. An increase in employment in the development will result in higher public transport utilisation and it is anticipated that there will be opportunities for the local taxi and bus service providers to create new routes to the site.

As a result of informal transport economic activity, an increase in vendors and informal traders around these areas is expected, more than those in Tongaat. **The informal sector will therefore grow in size and magnitude.**

SKILLS DEVELOPMENT

The development will create opportunities to strengthen skills development in Verulam, therefore having a positive effect. Thus the working age of Verulam will be more employable, and contribute to poverty alleviation.

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
4.4.1	EXISTING FACILITIES	No significant Effect	-	-
4.4.2	EXISTING BUSINESSES (retail and commerce)	Short / medium term boost in retail activity of proposed development and Verulam CBD by increased commuters heading northward towards uShukela.	Localisation of retail and wholesale businesses such that they will be secondary to the proposed development. Also increase in profits as retail businesses get more exposure.	Permanent increase in profits for businesses dependant on transient traffic. More exposure to market. Mainly the petrol filling stations, and retail stores in close proximity to R102 Inanda Rd intersection. Overall/ long term growth, localisation and potential specialisation of retail and wholesale sector. More profits for businesses in area, especially near transient traffic routes for secondary impact.
4.4.3.1	LIGHT INDUSTRIAL ACTIVITY	Short to medium term competition between proposed development and Verulam light industrial activity.	Medium term competition between proposed development and Tongaat Industrial Park industrial activity.	-
4.4.3.2		Short term opportunities created for linkages in finishing and light industrial activity, mainly for Tongaat industrial businesses to supply starting up materials and services.	Opportunities created for linkages in finishing and light industrial activity for support and supplier industrial activities, as businesses starting up in proposed development source supplies/ start up materials from Verulam industrial businesses(as opposed to sourcing from larger nodes such as Durban, Ballito, etc).	Potentially permanent/ Long term opportunities created for linkages/ value chains in industrial activity, mainly for Verulam industrial businesses to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.
4.4.3.3		Short and medium term opportunity for expansion of activity, due to a new centre of demand northward.		
4.4.3.4		-	-	Opportunity for the development of more efficient / customer focussed production and operating systems due to competition. Customers benefit.
4.4.4	POVERTY	Short term decrease in unemployment in secondary catchment	Medium term decrease in unemployment in secondary catchment	High long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional

	IMPACT AREAS	IMPACT DESCRIPTION		
		SHORT TERM	MEDIUM TERM	LONG TERM
				economy
4.4.5	BEE AND SMME DEVELOPMENT	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity for existing business to enter markets and grow.	-	-
4.4.6	INFORMAL SECTOR DEVELOPMENT	Some anticipated growth in size and activity of the informal sector, mainly in and around taxis and Verulam taxi rank, as a result of increased activity on and therefore around the R102 northward towards uShukela.	-	-
4.4.7	SKILLS DEVELOPMENT	-	-	Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam SETAS and other identified training programmes. More accessibility to job opportunities for Verulam residents.

4.5 WESTERN RURAL AREAS

EXISTING SOCIAL FACILITIES

The proposed development is not expected to have any visible impact on social facilities in the western rural areas, due to the scarcity of the western region's facilities, as well as the approximate 20km distance from the proposed development.

EXISTING BUSINESSES (RETAIL AND LIGHT COMMERCE)

The impact of the proposed development on the existing businesses in the western rural areas is not expected to be notable, or significant. This is again due to the distance between the western rural businesses (albeit few), and the proposed development.

LIGHT INDUSTRIAL ACTIVITY

There is currently no identified nor notable light industrial activity in the western rural areas within close proximity, and therefore no impact is anticipated.

PROPERTY VALUES

Property values are not expected to be changed in western rural areas, as this land is predominantly owned by Ingonyama tribal authorities.

POVERTY

Living standards in the western rural areas are expected to be positively impacted, particularly by the availability of low skilled jobs during the initial decade and/or the construction phase of the development.

BEE AND SMME DEVELOPMENT

It is not expected that the proposed development will impact on formal BEE and SMME development in the western rural areas. The impact of the proposed development on existing BEE and SMME activity will be primarily evident in the informal sector, as briefly discussed below.

INFORMAL SECTOR DEVELOPMENT

Informal business is expected to be boosted due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. There will be an increase in trading activity, as well as increased customers for taxi operators. This will positively increase informal business activity. Informal Ndwedwe businesses are also expected to migrate in and around the proposed development, receiving greater business opportunities.

SKILLS DEVELOPMENT

It is expected that there would be a permanent improvement in skills levels adequate for semi- and unskilled occupations as Ndwedwe/western rural area residents become employed in proposed development.

SUMMARY OF IMPACTS ON THE WESTERN RURAL AREAS

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IMPACT AREAS	IMPACT DESCRIPTION		
	SHORT TERM	MEDIUM TERM	LONG TERM
EXISTING FACILITIES	No visible/ significant effect	-	-
EXISTING BUSINESSES	No visible/ significant effect	-	-
INDUSTRIAL ACTIVITY	No visible/ significant effect	-	-
PROPERTY VALUES	No effect	-	-
POVERTY	A decrease in unemployment	Assuming temporary jobs are taken only taken by Ndwedwe residents, during construction, a medium term drop in unemployment from 17.4% to 4.2% is expected.	A long term drop in unemployment, mainly in semi-skilled and unskilled jobs not taken up by Tongaat and Verulam residents.
BEE AND SMME DEVELOPMENT	No significant effect, except on informal sector.	-	-
INFORMAL SECTOR DEVELOPMENT	Permanent boost due to increased activity in and around Ndwedwe and both Driefontein Taxi Ranks. Relocation of other Ndwedwe informal businesses close to Ndwedwe and both Driefontein Taxi Ranks.	-	-
SKILLS DEVELOPMENT	Permanent improvement in mainly elementary skills levels, as Ndwedwe residents are employed in proposed development.	-	-

5 IMPACT QUANTIFICATION

The purpose of the following section is to quantify impact previously identified, by means of the impact rating method.

5.1. METHODOLOGY OF QUANTITATIVE ASSESSMENT

The assessment of the specific impact areas will be conducted using the Impact Rating Methodology. The exact assessment technique used in assessing the socio-economic impact of the proposed development is described in this section.

The significance of an impact is defined as the combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine the impact consequence are presented in the table below:

RATING	DEFINITION OF RATING	SCORE
A. Extent – the area over which the impact will be experienced		
None		0
Local	Confined to project or study area or part thereof (e.g. site).	1
Regional	Confined to the immediate region, e.g., the northern eThekweni and southern KwaDukuza region.	2
Wider Area	Municipality wide (eThekweni); Provincially, and beyond.	3
B. Intensity-the magnitude of the impact in relation to the sensitivity of the receiving environment		
None		0
Low	Natural and/or social/ and or economic functions and processes are negligibly altered.	1
Medium	Natural and/or social/ and or economic functions and processes continue albeit in a modified way.	2
High	Natural and /or social/ and or economic functions and processes are severely altered.	3
C. Duration-the time frame for which the impact will be experienced.		
None		0
Short-term	Up to 2 years	1
Medium -term	2 to 15 years	2
Long-term	More than 15 years	3

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The combined scores of these criteria translate into a consequence rating, which is shown in the table below:

Combined score (A+B+C)	0-2	3-4	5	6	7	8-9
Consequence Rating	Not significant	Very low	Low	Medium	High	Very high

Once the consequence rating has been derived, the probability of the impact occurring is considered using the probability classifications listed in the table below:

Probability of impact- the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Probable	40%-70% chance of occurring
Highly probable	>70%-90% chance of occurring
Definite	>90% chance of occurring

The overall significance of the impact will be determined by considering consequence and probability using the rating system presented below:

SIGNIFICANCE RATING	CONSEQUENCES		PROBABILITY
Insignificant	Very low	and	Improbable
	Very low	and	Possible
Very low	Very low	and	Probable
	Very low	and	Definite
	Low	and	Improbable
	Low	and	Possible
Low	Low	and	Probable
	Low	and	Definite
	Medium	and	Improbable
	Medium	and	Possible
Medium	Medium	and	Probable
	Medium	and	Definite
	High	and	Improbable
	High	and	Possible
High	High	and	Probable

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SIGNIFICANCE RATING	CONSEQUENCES		PROBABILITY
Very high	High	and	Definite
	Very high	and	Improbable
	Very high	and	Possible
	Very high	and	Probable
	Very high	and	Definite

The significance of the outcomes for each impact is explained below:

- **Insignificant:** The potential impact is negligible and will not have an influence on the decision regarding the proposed activity/development.
- **Very Low:** The potential impact should not have any meaningful influence on the decision regarding the proposed activity/development.
- **Low:** The potential impact may not have any meaningful influence on the decision regarding the proposed activity/development.
- **Medium:** The potential impact should influence the decision regarding the proposed activity/development.
- **High:** The potential impact will affect the decision regarding the proposed activity/development.
- **Very High:** The proposed activity should only be approved under special circumstances.

This section will therefore quantify the earlier identified impacts. Where there have been multiple time frames identified (e.g. short, medium and long term), the rating will be conducted on the final impact across all time frames- e.g. the resulting long term effect.

Therefore unless it is of particular importance- if an impact has a short term positive effect, which is offset by a long term negative effect, only the overall/ final (negative) effect will be rated. Similarly, if an impact has a short term negative effect which is offset by a long term positive effect, only the overall/ final (positive) effect of the impact will be rated.

5.2. TONGAAT IMPACT RATING

From the table below, it will be seen that

- ✓ The highest and most positive impacts are impact no. 5.9 - the long term expected significant drop in unemployment.
- ✓ The impact of the development on property values 5.8 was found to be positive, and in addition an associated positive impact on residential markets is anticipated.
- ✓ Competition between local firms and those within the proposed development. While it is noted as a negative impact, it is felt that firms will adapt in the long run, and as a result develop more efficient systems. It is also felt that while there may be lower profits or turnover due to

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competition; this will be offset by the increased exposure which the northern region will experience, the resulting opportunity in business growth.

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.1	Overall/ long term growth, localisation and potential specialisation of retail and wholesale sector. More potential profits for businesses in area.	The impact is: Local - in this case, the specific growth and localisation is felt by Tongaat (and Verulam) businesses only. Medium - business activity will continue, but with more profits, while businesses may be more specialised. Long term - the effect is long term.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable
5.2	Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will proceed, yet potentially with better operating/ competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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		production, continually benefiting the customer.							
5.3	Short and Medium term competition between proposed development and Tongaat Industrial Park supporting light industrial activity on site. Tongaat businesses may experience lower profits.	The impact is: Local - it is felt by Tongaat businesses. Medium - business activity in Tongaat will proceed, yet potentially with less profits. Short/ Medium term-businesses will eventually adjust and specialise/improve their operating systems.	Negative	Local : 1	Medium: 2	Short-Medium Term: 1- 2	4 / 5	Low	Highly Probable
5.4	Opportunity for the development of more efficient/ customer focussed production and	The impact is: Local- it is mainly felt by Tongaat customers who use Tongaat services/ buy from Tongaat shops. Medium - business activity in Tongaat will	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable

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	operating systems due to competition. Customers benefit.	proceed, yet potentially with better operating/competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.							
5.5	Permanent opportunity for expansion of previously limited and “boxed in” development. Business owners in Tongaat have opportunity to grow.	The impact is: Local - it is felt by Tongaat based economic activity. High - expansion of commercial activity is high on the priority list of the Tongaat community. Long term- commercial activity is expected to expand over the long term	Positive	Local : 1	High: 3	Long Term : 3	7	High	Highly Probable
5.6	Potentially permanent opportunities created for linkages/ value chains in commercial	The impact is: Local - it is felt by Tongaat firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium	Highly Probable

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	activity, mainly for Tongaat based firms to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Tongaat industrial firms.	linkages/ value chains could potentially be permanent.							
5.7	An increase in residential rental demand in the short term, due to additional employment opportunities. Higher resulting prices and higher profits for property owners and rental agencies.	The impact is: Local - it is felt by Tongaat rental businesses/ property owners. Medium- business activity will continue - with the potential for higher profits. Short term- eventually as more residential units are built in the region, prices will fall.	Positive	Local : 1	Medium: 2	Short Term : 1	4	Very Low	Highly Probable
5.8	Impact on commercial property sales due to the nature of the development. Competitive	The impact is: Local- although many tenants/ buyers will be from out of Tongaat, the impact will occur locally. Medium- business activities will continue-with more benefits	Positive	Local : 1	Medium: 2	Medium Term: 2	5	Low	Highly Probable

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	pricing in Tongaat properties will be encouraged, and upgrading of rental properties to attract tenants.	for the consumer. Medium term- eventually as the region expands with more business, competition will decrease.							
5.9	Long term elimination in unemployment in 2022. The impact is felt by Tongaat residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is: Wider than regional - the impact is on Tongaat residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable
5.10	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is: Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue - with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable

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<p>5.11</p>	<p>Permanent growth in size and activity of the informal sector, mainly in and around taxis. The opportunity to make higher profits.</p>	<p>The impact is: Local - it is felt by Tongaat informal businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to grow permanently, as region grows.</p>	<p>Positive</p>	<p>Local : 1</p>	<p>Medium: 2</p>	<p>Long Term : 3</p>	<p>6</p>	<p>Medium</p>	<p>Highly Probable</p>
<p>5.12</p>	<p>Employability of Tongaat's youth in the long run through skills development, mainly through links created between the proposed development and Tongaat SETAs and other identified training programmes. More accessibility to job opportunities for Tongaat residents.</p>	<p>The impact is: Local - it is felt by Tongaat residents. Medium-chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.</p>	<p>Positive</p>	<p>Local : 1</p>	<p>Medium: 2</p>	<p>Long Term : 3</p>	<p>6</p>	<p>Medium</p>	<p>Probable</p>

5.3 ETHEKWINI AND KWADUKUZA CORRIDOR IMPACT

From the table below, it will be seen that

- ✓ The highest and most positive impacts are impact no. 5.13 which identifies the establishment of proposed development as regional node, linking Umhlanga, Ballito and Tongaat.
- ✓ Impact 5.14 identifies the positives of local increased circulation of revenue within the region as value chains deepen.
- ✓ Impact 5.16 reviews the positives of more investment is attracted into the area, and
- ✓ Impact 5.17 confirms the long term expected significant drop in unemployment.

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.13	Establishment of proposed development as regional node, between Umhlanga, Ballito and Ndwedwe. More large scale regional services, business branches, and possibly administrative government offices added to the regional economy. Higher prioritisation of the northern region by eThekwini.	The impact is: Regional. Medium - service utilisation will continue, albeit more conveniently. Long term - the regional node and its benefits will be long term.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Highly Probable
5.14	More commercial activity and regional commercial value chains development. Therefore more value adding commercial processes kept in region, less economic revenue leakage outside the region, therefore	The impact is: Regional. Medium - business activity will continue, with significantly more profits. Long term - the business value chains and resulting increased business revenue and strengthening of the economy will be long term.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Highly Probable

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	benefitting existing businesses and the economy of the region.								
5.15	Short term competition in commercial activity between proposed development and other commercial nodes such as Dube Trade Port and some commercial firms in Tongaat and Verulam. Potentially less than anticipated profits for businesses.	The impact is: Regional- it will be a general regional effect. Medium - business activity in region will proceed, yet potentially with potentially less profits than anticipated. Short term- businesses are expected to adjust and find their regional niche.	Negative	Regional: 2	Medium: 2	Short Term : 1	5	Low	Probable
5.16	More investment, due to competitive pricing of commercial land due to increased supply.	The impact is: Regional- it will be a general regional effect. Medium - business activity in region will proceed, yet potentially with potentially less profits than anticipated. Short term- businesses are expected to adjust and find their regional niche.	Positive	Wider than regional : 3	Medium: 2	Long Term : 3	8	Very High	Highly Probable
5.17	Due to the large scale of the development, and therefore the large number of jobs created, poverty is expected to be permanently significantly reduced.	The impact is: Wider than regional- it will be a regional effect, which feeds into District, and provincial and national ASGISA priorities. High: The creation of just under 165 000 permanent sustainable, new jobs will close to eliminate unemployment and significantly reduce poverty.	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable

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Long term- the effect is expected to be permanent.									
5.18	There is expected to be significant economic migration from surrounding areas (particularly in the form of economic settlers) and sub places as a result, which, in the long run may reduce the initial impact of a reduction in poverty.	The impact is: Regional- more informal settlements are added to the region. Medium - the construction of subsidy housing in the proposed development and proposed Wewe development will reduce the impact. Medium Term - there is expected to be municipal housing initiatives in the region which will address this.	Negative	Regional: 2	Medium: 2	Medium Term: 2	6	Medium	Highly Probable
5.19	Permanent opportunity for the regional expansion of BEE and SMME companies. Therefore more exposure to markets and more growth of BEE businesses and SMMEs.	The impact is: Regional. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term-business relationships/linkages and permanent exposure will be available to these companies.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Probable
5.20	Permanent growth in size and activity of the informal sector, mainly in and around transport services along the uShukela Highway	The impact is: Regional - mainly taxi networks throughout the region will be busier to and from proposed development. Medium-business activity will continue-but with higher profits. Long Term - general informal business activity will be permanently and continually	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Definite

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growing.										
5.21	Permanent skills development through increased employment opportunities. Increased employability of economically active in region, assisting in employment creation.	The impact is: Regional. Medium- chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Regional: 2	Medium: 2	Long Term : 3	7	High	Probable	
5.22	Pressure and therefore opportunity for supply of tertiary institutions and SETAs in the northern eThekweni and south KwaDukuza region. This assists in long term skills development, and employability.	The impact is: Regional. High- the impact of a tertiary institution in the region would assist significantly in skills development. Long term- skills learnt will be permanently beneficial.	Positive	Regional: 2	High: 3	Long Term : 3	8	Very High	Probable	

5.3. VERULAM IMPACT RATING

From the Verulam table below, it will be seen that

- Transport opportunities (5.31) linking the KwaDukuza – Umhlanaga Corridor to the R102 corridor. Promotes accessibility for commercial activity linking Business Park to Umhlanga Ridge via the uShukela Highway.
- 5.24 noted the opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.
- 5.28 indicated an increase in commercial rental demand in the short term, as first movers seek adjacency to the development. Higher resulting prices, and higher profits for property owners and rental agencies.

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.23	Overall/ long term growth, localisation of retail and wholesale and potential specialisation in the sector. More profits for businesses in area, especially near transient traffic routes.	The impact is: Local - in this case, the specific growth and localisation is felt by Verulam (and Verulam) businesses only. High - Particularly businesses Around the R102 will experience a significant increase in exposure, turnover and profits. Long term - the effect is long term.	Positive	Local : 1	High: 3	Long Term : 3	7	High	Definite

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.24 Opportunity for the development of more efficient/ customer focussed operating systems due to competition. Customers benefit.	The impact is: Local- it is mainly felt by Verulam customers who use Verulam services/ buy from Verulam shops. Medium - business activity in Verulam will proceed, yet potentially with better operating/ competitive systems. Long term- permanent increases in business activity in the area mean that businesses will always have to keep upgrading their services and production, continually benefiting the customer.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Highly Probable
5.25 Short and Medium term competition between proposed development and Verulam commercial activity.	The impact is: Local- it is felt by Verulam businesses. Medium - business activity in Verulam will proceed, yet potentially with less profits. Short/ Medium term- businesses will eventually adjust and specialise/ improve their operating systems.	Negative	Local : 1	Medium: 2	Short-Medium Term: 1- 2	4 / 5	Low	Probable
5.26 Short and medium term opportunity for expansion of previously limited and commercial development, linked to municipal shortage in zoned land.	The impact is: Local- it is felt by Verulam commercial activity. High - expansion of economic activity is high on the priority list of the Verulam community. Long	Positive	Local : 1	High: 3	Long Term : 3	7	High	Highly Probable

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
	term- commercial activity is expected to expand over the long term							
5.27	Potentially permanent opportunities created for linkages/ value chains in commercial activity, mainly for Verulam industrial businesses to supply starting up materials and services, and to thereafter to continue business relations. More profits/ business for Verulam industrial firms.	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium	Highly Probable
5.28	An increase in commercial rental demand levels in the short term, as first movers seek adjacency to the development. Higher resulting prices and higher profits for property owners and rental agencies.	Positive	Local : 1	Medium: 2	Short Term : 1	4	Very Low	Highly Probable

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.29 Long term drop in unemployment in 2022. The impact is felt by Verulam residents , who have a higher standard of living, better access to education, health, and savings, and spend more money regionally, uplifting the regional economy	The impact is : Wider than regional - the impact is on Verulam residents, but represents a key eThekweni and KZN socio-economic and ASGISA/ Vision 2014 goal. High- this impacts on standards of living and opens up social opportunities. Long term- the effects will be felt permanently	Positive	Wider than regional : 3	High: 3	Long Term : 3	9	Very High	Highly Probable
5.30 Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is: Local - it is felt by Tongaat BEE and SMME businesses owners. Medium- business activity will continue - with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable
5.31 Permanent growth in size and activity of the informal sector, mainly in and around taxis. This is particularly true for the routes linking R102 to uShukela Highway through Tongaat CBD.	The impact is: Local - it is felt by Verulam informal businesses owners. High- particularly transport business activity will continually expand. Long term- businesses have the opportunity to grow permanently, as region grows.	Positive	Local : 1	High: 3	Long Term : 3	7	High	Definite

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OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating	Probability of Impact
5.32 Employability of Verulam's youth in the long run through skills development, mainly through links created between the proposed development and Verulam SETA's and other identified training programmes. More accessibility to job opportunities for Verulam residents.	The impact is: Local - it is felt by Verulam residents. Medium-chances of being employed are higher, although not guaranteed. Long term- skills learnt will be permanently beneficial.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium	Probable

5.4. WESTERN RURAL AREAS IMPACT RATING

From the Western Rural Areas table below, it will be seen that

- Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow is identified as the most important impact on the western rural areas (5.35).
- Positive impact of 5.33: improvement in base skills level through the opportunities created in the development for unskilled labour absorption.

	OVERALL IMPACT AREA DESCRIPTION	IMPACT CONSIDERATION	Direction of Impact	Extent of Impact	Intensity	Duration of Impact	Consequence Score	Consequence Rating
5.33	Permanent improvement in mainly elementary skills levels, as local residents are employed in proposed development. Therefore more employability for the regions' economically active.	The impact is: Local- it is felt by rural residents.Low - while skills are acquired, these are mainly for low skilled, temporary and casual jobs, which have a low impact on social status. Long term - skills will forever be useful.	Positive	Local : 1	Low : 1	Long Term : 3	4	Very Low
5.34	Potentially permanent opportunities created for linkages/ value chains in commercial activity, there are currently few linkages for the small scale businesses in the outer-west areas	The impact is: Local - it is felt by Ndwedwe firms. Medium - business activity will continue- albeit with the potential for significantly higher profits. Long term- business relationships/ linkages/ value chains could potentially be permanent.	Positive	Local : 1	Medium: 2	Long Term : 2 - 3	6	Medium
5.35	Permanent opportunity for the expansion of BEE and SMME companies. Opportunity to enter larger markets, and grow.	The impact is : Local - it is felt by Ndwedwe's BEE and SMME businesses owners. Medium- business activity will continue- with the potential for higher profits. Long term- businesses have the opportunity to enter larger markets permanently.	Positive	Local : 1	Medium: 2	Long Term : 3	6	Medium

5.5. MAIN IMPACTS AND MITIGATING MEASURES

The main impacts identified in the assessment above are those impacts which should influence the decision making of the project. Where the intended impacts are positive and very high, this is an indication of the success of the project. Where the impacts are high and negative, the project should either not be pursued, or pursued only under special circumstances, or rigorous mitigation actions should be planned. The course of action chosen will depend on the particular project.

The main positive impacts include those which scored 7 and above, and therefore have a high or very high consequence rating. Inter alia- the consequences of that particular impact are high, or very high.

Overall, impact of the proposed development is primarily positive, with the negative impacts mostly offset by the positive impacts. Positive impacts were mainly identified as being highly significant in the decision making of the development, while negative impacts were mainly found to be of low significance to decision making of the proposed development- but nonetheless still in need of mitigating measures to address them.

There are 15 main positive impacts, which are tabulated on the following page.

Those which scored a consequence score of 9 (i.e. consequences of the highest intensity) are the following:

- The reduction of poverty through the long term drop of unemployment - in both Tongaat and Verulam.
- A significant reduction in regional poverty due mainly to a large supply of jobs.

Those positive impacts which are identified as being definite are:

- The reduction of poverty through the medium term and long term increase of employment in the region.
- Overall growth of Tongaat businesses (particularly those located along/ near uShukela Highway link to M4 corridor).
- Linkages to the M4 Commercial Services Corridor linking Umhlanga to Tongaat and KwaDukuza
- Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node and the subsequent promotion of suitable densification within eThekweni's boundary.
- The opportunity for expansion of currently constrained economies of Tongaat and Northern eThekweni/Southern KwaDukuza
- Reduction of leakage of economic revenue, due to the establishment of new regional industrial value chains.
- The growth of the regional economy, through encouraged commercial investment (due to the increase in supply of zoned land).
- Regional opportunities for the expansion of BEE and SMME companies.
- Permanent regional growth of the regional taxi/ public transport industry.
- Increase in employability of regional population through skills development through employment.
- Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).

IMPACT NO	IMPACT	CONSEQUENCE SCORE	CONSEQUENCE RATING	PROBABILITY OF IMPACT	SIGNIFICANCE RATING
1	The opportunity for expansion of currently constrained economies of Tongaat and Northern eThekweni/Southern KwaDukuza	7	High	Highly Probable	Very High
3	The reduction of poverty through the long term drop of unemployment in the impact areas	9	Very High	Highly Probable	Very High
4	Overall growth of Tongaat businesses (particularly those located along/ near M4 corridor).	7	High	Definite	High
5	Permanent growth of the informal sector (particularly taxis)	7	High	Definite	High
6	Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	7	High	Highly Probable	Very High
7	Reduction of leakage of economic revenue, due to the establishment of new regional industrial value chains.	7	High	Highly Probable	Very High
8	The growth of the regional economy, through encouraged commercial investment (due to the increase in supply of zoned land).	8	Very High	Highly Probable	Very High
9	Significant reduction in regional poverty due mainly to a large supply of jobs.	9	Very High	Highly Probable	Very High
10	Regional opportunities for the expansion of BEE and SMME companies.	7	High	Probable	High
11	Permanent regional growth of the regional taxi/ public transport industry.	7	High	✓ Definite	High
12	Increase in employability of regional population through skills development through employment.	7	High	Probable	High
13	Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).	8	Very High	Probable	Very High

The three identified possible negative impacts are:

- Short and Medium term competition between proposed development Existing regional commercial activity may experience lower profits.
- Possible lower profits for businesses for existing local businesses (as a result of short and medium term competition between proposed development existing commercial activities. Potentially less than anticipated profits for businesses –due to short (and medium) term competition in industrial activity between proposed development and other commercial nodes such as Dube Trade Port.
- There is expected to be economic migration from surrounding areas and subplaces outside of the catchment areas, which, in the long run may reduce the initial impact of a reduction in unemployment in the region.

Those which are with regards to less profits due to competition, are seen as being offset in the long run by the positive effects of exposure to a larger market, and increased revenue from potential business partnerships with the proposed development’s new businesses. However, it must be noted that there may be some businesses in the existing nodes, currently running at break point, which may not be able to adapt and therefore survive competition, even in the short run.

With regards to competition between Dube Trade Port, and the proposed development, it is expected that in the long run businesses will adjust through specialisation.

While the negative impacts are of low significance, they are still identified as requiring careful mitigating attention. Mitigating measures are suggested below:

Table 7- Negative Impacts of the proposed development

		Consequence Rating	Probability of Impact	Mitigating Measure
1	Short term competition in commercial activity between proposed development and other commercial nodes such as Dube Trade Port and some commercial firms in Tongaat and Verulam. Potentially less than anticipated profits for businesses.	Low	Highly Probable	Creation of incentives for new businesses in the proposed development to source start up supplies from local firms
2	There is expected to be significant economic migration from surrounding areas and subplaces as a result, which, in the long run may reduce the initial impact of a reduction in unemployment	Medium	Highly Probable	Developing a hire-local policy for construction phase will mitigate this influx issue. In addition the existing skills profile of the area reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela.

6. SUMMARY AND RECOMMENDATIONS

In summary, the impact assessment has shown that the proposed development will not only have a significantly positive impact on the primary and secondary impact areas, but provides a much needed unlocking of land resources required for their further economic development in a currently constrained area.

There are **two significant positive impact areas**, and two identified negative impact areas. The two main positive impact areas include:

- ✓ **6.1. Nodal and regional economic development and expansion:** This relates to the provision of access to zoned land as well for further industrial and commercial use by existing businesses, and the expansion of the northern most region of eThekweni to the business corridor along the M4 to KwaDukuza;
- ✓ **6.2. Nodal and regional poverty reduction:** This relates to the reduction and alleviation of poverty in the impact areas. This is anticipated to occur through the reduction in nodal unemployment levels and thus within the region. There is an increase in household earnings anticipated as employment opportunities are taken up within these areas.

The **two main negative impact areas** include;

- ✓ **6.3. Potentially reduced revenue of existing businesses due to competition:** This relates to the possibility of mainly inefficient existing businesses not surviving competition. Here it is recommended that there be dialogue with business chambers and forums (specifically the Tongaat Chamber, and Tongaat UIP, the iLembe Chamber and the Durban Chamber of Commerce and Industry) about the creation of incentives packages which encourage business linkages between existing business and the proposed development's new firms.
- ✓ **6.4. An influx of job-seekers to the region increase in surrounding informal settlements due to economic immigration:** This relates to the increase in the potential for the establishment informal households from job seekers; migrating towards the development site from a the wider surrounding poorer regions. Developing a hire-local policy for construction phase will mitigate against this influx issue. Additionally, it should be noted that the existing skills profile of the primary and secondary impact area specifically, reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela Development.

The following subsections discuss the summarised main impacts further.

6.1. NODAL AND REGIONAL INDUSTRIAL AND ECONOMIC DEVELOPMENT AND EXPANSION

Nodal Development and Expansion

Tongaat has been identified as a as populous and densely settled node, currently constrained for additional zoned commercial land which is required for outward commercial growth and expansion. For mainly spatial reasons, their economic and industrial growth has been restricted and limited, therefore stifling their economic potential. The proposed Ushukela Highway Development will provide Tongaat and the greater impact area with the opportunity to access new industrial and commercial space and thus promote their much needed growth.

In particular, the proposed development will impact positively by creating opportunities for business owners to establish new markets as well as new physical outlets. It will also supply opportunities for the creation of production and service value chains between the above businesses and the new businesses in the proposed development. Lastly, it will draw in a significantly large number of people into the area, therefore resulting in

exposure of existing businesses to a larger market. This is expected to occur most notably along the M4 (Umhlanga – Tongaat – Ballito) corridor and linking to the Dube Trade Port. In general, the proposed development will supply existing local businesses with the opportunity to expand and increase profits in the short, medium and long term.

The commercial centres of the primary impact area and secondary impact areas (Tongaat and Verulam respectively) will benefit from such business opportunities, however, it is expected that Tongaat will benefit more due to its location along the M4-uShukela corridor. Notably, from both Durban and KwaDukuza bound traffic travelling south along the M4 to the proposed development site adjacent Dube Trade Port.

Regional Development and Expansion

Each impact of the proposed development on both nodes, collectively results in a combined impact which is regional in nature. The overall regional impact of the proposed development will result in significant growth in economic activity in the whole of north eThekweni/ south KwaDukuza region.

In particular, the proposed development is in alignment with eThekweni’s Draft North Spatial Development Framework, which states the development of an economic node is a north spatial development priority. The proposed development also positively impacts the region by reducing the strain on current eThekweni available commercial and industrial zoned land, due to the shortage of industrial land in the City and province.

The proposed development is expected in time to become the a major driver of economic growth within the north most region of eThekweni, supporting the secondary service nodes of Tongaat and Verulam . Both of which benefit from the proposed Ushukela Highway’s proximity and associated market pull.

6.2. NODAL AND REGIONAL POVERTY REDUCTION

Nodal Poverty Reduction

With regards to unemployment while northern eThekweni has a relatively low existing unemployment rates, there are components of the impact area – notably rural western areas and Ndwedwe which have higher levels of unemployment. The creation of a develop such as uShukela will have a significant impact on local employment generation which will in turn allow for an overall reduction in nodal poverty as more households become income generators. Specifically, there are identified opportunities aligned to both the construction phase as well as the operational phases which are suitable for the skills profile take up in both the primary and secondary catchment areas.

Regional Poverty Reduction

It is estimated that regional employment creation by the proposed development will exceed the level of unemployment anticipated in the catchment areas; in short it , which will result in labour sourcing from the broader region. The overall regional impact is expected to be a significant reduction of unemployment in the long run, taking into account the combined effect of the proposed development, the proposed Wewe/ Driefontein development, and the newly constructed Dube Trade Port/ King Shaka Airport on the region.

6.3. POTENTIALLY REDUCED REVENUE OF EXISTING BUSINESSES DUE TO COMPETITION

The impact assessment has identified that there may be reduced revenues or profits for some existing businesses due to competition with the proposed development. However, it is felt that this negative impact will be largely offset by increased revenues from new business linkages, new value chains, and increased exposure to a growing market. It is still expected that there may be some existing inefficient businesses operating at breakeven point in the impact area, which may not survive this competition.

It was earlier noted that there will be potential for Tongaat and Verulam businesses to benefit from new firms in the proposed development by supplying their start up and operational materials. This will result in the creation of new value chains, and the reduction of industrial/ business expenditure leakage outside of the region to larger nodes.

MITIGATING MEASURE:

Initiating and encouraging business linkages are recommended as a mitigating measure. It is recommended that there be discussions between the proposed development's steering committee, and local businesses (e.g. Tongaat Business Chamber of Commerce and Industry), about the creation of incentives packages for new businesses in the proposed development, if they source start up supplies from Tongaat and surrounds. This will encourage expenditure in the catchment area by the proposed development's businesses. It is also recommended that the eThekweni Business Support Unit be included to address potential linkages with weaker businesses (SMMEs). This will encourage long term business partnerships and linkages between existing business and the proposed development, and reduce or completely offset negative impacts of competition.

6.4 ALIGNMENT OF IDENTIFIED IMPACT AREAS TO TONGAAT LOCAL ECONOMIC DEVELOPMENT STRATEGY

Importantly for integrated planning in Tongaat and surrounds, there is good cohesion between the 2008 LED Strategy for Tongaat and the identified positive impact areas resulting from the Ushukela development.

The vision developed for the Tongaat LED was: "By 2010 and beyond, the Greater Tongaat will be a preferred investment destination with superior and continuing quality service delivery; thereby providing sustainable employments and addressing social ills for the majority of people".

Based on the above vision, the following goals were developed as the key economic thrusts to in this strategy:

- **To establish the economic foundations of the greater Tongaat.**

The stagnant economy of Tongaat suffers from the lack of a number of economic assets including the infrastructure and land availability for its improvement. The lack of those economic assets impacts strategically on the overall development of Tongaat area.

- **To initiate economic growth of Tongaat**

This goal deals with economic sectors' opportunities in terms of employment/unemployment, incomes, and growth. Many sectors in Tongaat including manufacturing, industrial, retail and commerce, informal economy, tourism and the like have many opportunities that can be capitalised on to improve the economy of the area.

- **To initiate a development environment**

The goal deals with BEE, skills development issues, HIV/AIDS, health care and social assistance, and women and youth empowerment issues. Skills development, HIV/AIDS and other social issues are among major concerns threatening the social capital in Tongaat.

- **To maximise effort in order to establish institutional structures for implementation**

The significance of this goal is that it allows the rational interconnection of the other preceding goals. For instance, the economic foundations, the sectors' opportunities and the skills development cannot improve the economy if they are un-co-ordinated and fragmented. Therefore, liaisons, management and regulations need to be put in place.

These in turn were developed into a **Key LED Strategies** (listed below) for the region – the table on the following page, (Table 15) highlighted strategies represent highlights the areas of integration between the LED Strategy and Ushukela Development

1. Enhance sector competitiveness
2. Further development of emerging and niche sectors
3. Business retention and investment promotion
4. Innovatively package industrial sites for development
5. Develop priority investment nodes and corridors
6. Regional strategy and development
7. Sector skills alignment
8. Enhance labour productivity, literacy and numeracy skills
9. Knowledge economy
10. Implement key logistics and economic infrastructure
11. Bulk infrastructure to match economic growth
12. Direct the infrastructure required for economic growth
13. Provide strategic enterprise development support to emerging and informal enterprises
14. Centres of excellence
15. Cyber City

SOCIO-ECONOMIC IMPACT ASSESSMENT STUDY OF USHUKELA DEVELOPMENT - 2013

As is shown in the table below – these strategies are aligned to the following anticipated positive impacts resulting from this development:

Table 8 Impact Areas Alignment to LED Strategy

IMPACT	LED STRATEGY ALIGNMENT	SPECIFIC LED STRATEGY
The opportunity for expansion of currently constrained economies of the northern eThekweni Region	Yes	Enhancing sector competitiveness: to facilitate the optimal strategic functioning of industry organisations to drive the local economy.
		Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key commercial nodes
The reduction of poverty through the long term drop of unemployment	Yes	Further development of emerging and niche sectors and down-stream business support activities: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
Permanent growth of the informal sector supporting new commuter networks (along uShukela Highway).	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
Higher prioritisation of the northern region by eThekweni, due to proposed development becoming regional node.	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
Reduction of leakage of economic revenue, due to the establishment of new regional commercial value chains.	Yes	Business retention and investment promotion: to improve the mechanisms of investment facilitation and business retention in key commercial nodes
		Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
The growth of the regional economy, through encouraged investment (due to the increase in supply of correctly zoned land).	Yes	Bulk infrastructure to match economic growth: to innovatively package and deliver bulk services infrastructure in key nodes within the EMA.
		Develop priority investment nodes and corridors: to conceptualise and package the economic significance of economic nodes at various levels from city-wide nodes to community level nodes, for investment and development

SOCIO-ECONOMIC IMPACT ASSESSMENT STUDY OF USHUKELA DEVELOPMENT - 2013

IMPACT	LED STRATEGY ALIGNMENT	SPECIFIC LED STRATEGY
Significant reduction in regional poverty due mainly to a large supply of jobs.	Yes	Further development of emerging and niche sectors: to facilitate the removal of barriers-to-entry in high-value-add, higher order business services and niche sectors
Regional opportunities for the expansion of BEE and SMME companies.	Yes	Knowledge economy: to facilitate the establishment of higher learning and entrepreneurial culture centres in key nodes of the EMA
		Provide strategic enterprise development support to emerging and informal enterprises: to bridge the gap between first and second economy by facilitating the process of business evolution and global market integration for priority sectors.
Permanent regional growth of the regional taxi/ public transport industry.	Yes	Implement key logistics and economic infrastructure: to develop an infrastructure for economic growth, plan to address capacity constraints and encourage further investment into the region.
Increase in employability of regional population through skills development through employment.	Yes	Sector skills alignment: to facilitate the alignment between skills supply (by secondary and tertiary – FET) and industry demand in priority sectors
		Enhance labour productivity, literacy and numeracy skills: to facilitate the improvement (value-adding) of labour practices and efficiency in priority sectors
Opportunity for a long term increase in employability of the regional population, (due to an increased pressure for tertiary institutions).	Yes	Sector skills alignment: to facilitate the alignment between skills supply (by secondary and tertiary – FET) and industry demand in priority sectors

6.5 CONCLUDING COMMENTS

A development of this magnitude is anticipated to have significant impact on the regional socio-economic fabric of Northern eThekweni. Certainly, not all of these impacts will be positive in the short term, however, by identifying and providing for suitable mitigation activities during the planning stages, these negative externalities can be greatly reduced.

Only two negative impacts were identified that require planned mitigation:

- Possible lower profits for businesses for existing local businesses (as a result of short and medium term competition between proposed development existing commercial activities). This is only likely for firms competing for similar markets – it should be noted that established firms with identified markets are likely to increase niche or specialisation in order to compensate.
- There is expected to be economic migration from surrounding areas and subplaces outside of the catchment areas, which, in the long run may reduce the initial impact of a reduction in unemployment in the region.

Suggested Mitigation:

- Support for business linkages and networks for new businesses in the proposed development to source start up supplies from local firms to create linkages between new (within development) and existing businesses (within catchment area) where possible; this could take the form of a business expansion and retention programme or a buy-local campaign.
- Developing a hire-local policy for construction phase will mitigate this influx issue. In addition the existing skills profile of the area reflects the ability of the local community to take up skilled and semi-skilled employment opportunities as they arise in uShukela.

In contrast, the significant positive impacts were identified as

- **Nodal and regional economic development and expansion and**
- **Nodal and regional employment creation**

These are supported by the indicated areas of alignment between the anticipated impacts and the key goals and strategies of the Tongaat LED as reviewed in Table 9.

The positive impacts of the development are of high significance to the socio-economic well-being of the region, and significantly outweigh the anticipated negative impacts. The Ushukela Development will enable the northern eThekweni region, and Tongaat and KwaDukuza in particular, to access a vast range of economic opportunities that complement the existing logistical infrastructure of the Dube Trade Port and King Shaka Airport, and thus positively enhance the regional competitiveness.

Appendix 21: Socio-Economic Impact Assessment of the uShukela Highway Development

**SOCIO-ECONOMIC IMPACT ASSESSMENT OF
USHUKELA HIGHWAY DEVELOPMENT**

FINAL REPORT

SUBMITTED TO



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SOCIO-ECONOMIC IMPACT ASSESSMENT OF USHUKELA HIGHWAY DEVELOPMENT

EXECUTIVE SUMMARY

The purpose of the executive summary is to outline the main findings of the socio-economic impact assessment of the proposed development (i.e. Ushukela Highway Development). The first part of the executive summary focuses on the background of the study. Part two (2) summarizes the main findings whereas part three (3) presents the conclusion and implications for socio-economic and economic intervention.

PART 1: BACKGROUND

Gabhisa Planning and Investments was appointed by Tongaat Hulett Developments to undertake “An Empirical Socio-economic Impact Assessment”. The analysis (based on simulation approach) intends to develop a more comprehensive understanding of the impacts that come with the development of **Ushukela Highway**.

This report undertakes an empirical study of socio-economic direct and relevant indirect/induced impacts of the proposed development with the primary focus on considering the full extent of the development's impact (socially and economically) on the local economy¹ of eThekweni Metropolitan mainly, from the actual infrastructure and building/top-structure investments unlocked, to the stimulation of economic growth that the development's presence can cause in a local situation – as well as highlighting and determining the extent of these impacts.

PART 2: SOCIO-ECONOMIC IMPACT ASSESSMENT

An initial estimate is that Ushukela Highway development will generate approximately **R11 Billion** (Infrastructure investment of approximately R2.07 Billion and building/top-structure investment of approximately R8.88 billion) of construction's costs. The development will entail conference, management, recreational, leisure, hotel, Business Park, offices, showrooms, retail warehouse, Business Park, offices, light and service industry.

¹ The same socio-economic impacts extend to provincial (KwaZulu-Natal) and national economy (South Africa at large)

- ❖ Investment - if the spending of this **R11 Billion** was to happen all at once, it would unlock the purchase of new goods and services of approximately **R31 Billion over the ten years of construction** or investment returns of approximately **R2.83 per R1 investment** over the ten years of construction (on average this translates to approximately **R3.1 Billion** per annum).
- ❖ Gross Domestic Product (constant 2010 prices) - the impact of the above activities is estimated to contribute a total of approximately **R10.712 Billion** (constant 2010 prices) to the eThekweni Metropolitan's GDP (Gross Output) (on average this translates to approximately **R1.071 Billion** per annum).
- ❖ Employment - site preparation, and construction and construction-related jobs that will directly be created by Ushukela Highway development are estimated to be approximately **83,275** over the construction period (on average this translates to approximately **R8,328** per annum).
- ❖ These direct jobs are created through on-site construction and construction-related economic activities carried out at the proposed Ushukela Highway development. These include but are not limited to employing construction-related labor, purchase of locally produced goods and services (workers spending their salaries/wages), and contracting for construction and capital improvements, etc. The number of indirect/induced jobs that will be created through the multiplicative effect of Ushukela Highway development in the local economy of eThekweni Metropolitan is estimated to be approximately **56,634** during the construction period (on average this translates to approximately **5,663 indirect/induced jobs per annum**).
- ❖ These indirect/induced jobs are the consequences of off-site construction and construction related economic activities that supply to Ushukela Highway development businesses. These include but are not limited to off-site development business activities associated with the Ushukela Highway development throughput (i.e. the local economy of eThekweni Metropolitan and the rest of South Africa's suppliers of building/construction materials, hospitality industry, retail industry, tourism, agencies, etc), or the impacts resulting from successive rounds of spending in the local communities in eThekweni area. Therefore, the total number of (direct and indirect/induced) jobs that will be created and sustained throughout the ten years of construction is estimated to be approximately **139,909** new sustainable job opportunities (on average this translates to approximately **13,991** per annum).

It is expected that out of these **139,909** new sustainable jobs generated above, approximately **55,544** are **permanent** (construction and construction-related) jobs during the ten years of construction phase and beyond (on average this translates to approximately **5,554** permanent job per annum),

approximately **61,140 are temporary** (construction and construction-related) jobs (in average this translates to between **6,114** temporary jobs per annum) and approximately **23,225 are secondary** (construction and construction-related) jobs (on average this translates to **2,323** secondary jobs per annum).

- ❖ Additional Public Sector Revenues from Taxes (constant 2010 prices) - In terms of public sector's (including eThekweni Metropolitan's) potential revenues and financial implications, it is anticipated that its outlays in this proposed Ushukela **Highway** development will be more than defrayed by tax receipt streams. It is expected that the VAT raised (indirect taxes) during the ten years of construction phase alone would likely yield approximately **R630 Million** in tax receipts. It is expected that tax on income/payroll and workforce would likely yield approximately **R360 Million** throughout the ten years of construction in tax receipts. It is expected that, the company tax incidence on profits of building/construction companies supplying the Ushukela Highway development would likely yield approximately a further **R225 Million** throughout the ten years of construction in tax receipts. It is expected that once fully developed, the property rates incidence on the properties would likely yield approximately an additional **R161.1 Million** throughout the ten years and accumulate over the life span of the Ushukela Highway development based on the property rates applicable in eThekweni Metropolitan. Adding on all above tax receipts, the total tax receipts that will accrue to the public sector (including eThekweni Metropolitan) and would likely yield approximately **R5 Billion** over the ten years of construction phase (on average this translates to **500 Million** per annum).
- ❖ Additional Payroll - it is expected that Ushukela Highway project when fully developed would generate an annual payroll of approximately **R5 Billion** paid as salaries and wages that will be available for households to spend in the local economy of eThekweni Metropolitan and that would recur yearly over the life span of the Ushukela Highway development.

There is a need to outline that the above tax revenues and fiscal implications for the public sector (including eThekweni Metropolitan) encompass anticipated permanent tax on income/payroll and workforce (of permanent jobs), company tax, property rates and substantial redistributable rates income that will recur yearly as well as other public receipts (administrative fees, electricity, water supply and sanitation, sewage services, levies, and other utilities) that will be boosting the local economy² of

² Local government finance statistics have been related directly to national accounting concepts which allow quantifying government revenues and used in the macro-econometric model to simulate revenues implications.

eThekwini Metropolitan. This is anticipated to present a continued flow of expenditures to the local economy of eThekwini that will extend over the life span of the Ushukela Highway development.

PART 3: CONCLUSIONS AND IMPLICATIONS FOR SOCIO-ECONOMIC AND ECONOMIC INTERVENTION

The Ushukela Highway development is likely to attract the interest of the public sector and private investors which will catalyze a stream of economic benefits to the public sector, citizen, and taxpayers living in eThekwini Metropolitan area.

Notwithstanding, the analysis suggests that the development will substantially contribute towards the economy of eThekwini Metropolitan in terms of GGP, employment and other income stream benefits. The development amongst other benefits is likely to unlock over R31 billion as purchase of goods and services during the construction period. The project will generate 139,909 direct and indirect/induced jobs over the ten years. Out of these jobs approximately 55,544 will be permanent (construction and construction related) and approximately 61,140 will be temporary (construction and construction related) jobs. Nonetheless, approximately 23,225 will be secondary (construction and construction related) jobs. In addition, the development is anticipated to generate approximately R5 Billion as salaries and wages which will likely to be spent within the eThekwini Metropolitan economy. Finally, the development is also anticipated to generate approximately R10.712 Billion to the eThekwini Metropolitan's GDP (Gross Output) during the construction period which translates to R3.356 Billion per annum.

SOCIO-ECONOMIC IMPACT ASSESSMENT OF USHUKELA HIGHWAY DEVELOPMENT

1.0 BACKGROUND

Tongaat Hulett Developments intends to undertake development in Ushukela Highway area around the new King Shaka International Airport and Dube TradePort development at La Mercy near the town of Tongaat. The development will include *inter alia*, mixed-use commercial/residential, medium density residential, trade zone/business park/offices, logistics hub/industrial, and open space.

Gabhisa Planning and Investments was appointed by Tongaat Hulett Developments to undertake “An Empirical Socio-economic Impact Assessment”. The assessment is based on a simulation approach. In this report, particular emphasis is placed on estimating the full extent of the development’s direct and relevant indirect/induced impacts socio-economic on the local economy³ of eThekweni Metropolitan area mainly, from the actual infrastructure and building/top-structure investments unlocked, to the stimulation of economic growth that the development can cause in a local situation – as well as determining the extent of these impacts.

To this end, the approach of the assessment is based on a model that is adapted from existing generally accepted models in order to quantify the project impacts. The assessment also makes reference to other similar researches to clarify assumptions between various aspects of the intended Ushukela Highway development and each of the socio-economic indicators.

It is however cautioned that this report is by no means an exhaustive socio-economic assessment of the Ushukela Highway development, since various levels of assumptions had to be made regarding specifics for the development of which the real data will only be known in the future. This somewhat resulted to undervaluing pre-construction and post-construction impact. The results of this report should also be interpreted in this context.

³ The same socio-economic impacts extend to the local economy of KwaDukuza Municipality and will spill-over to ILembe District Municipality at large

2.0 OBJECTIVES

The objective of this report is to undertake an empirical study of socio-economic impacts of the proposed Ushukela Highway development with the primary focus on considering the full extent of the development's socio-economic direct and relevant indirect/induced impacts on the local economy of eThekweni Metropolitan from the actual infrastructure and building/top-structure investments unlocked, to the stimulation of economic growth that the development's presence can cause in a local situation – as well as highlighting and determining the extent of these impacts.

Theoretically, this entails outlining major macroeconomic and microeconomic goals or objectives and then measuring the socioeconomic impacts in respect of each of these objectives. Although methodologies may differ from country to country, macroeconomics, microeconomics, and social analyses (integrative country-social analyses) are conducted in many countries to examine the socioeconomic impact of any investment on the economy's macroeconomic and microeconomic objectives (Fedderke, Perkins, and Luiz; 2006).

Gabhisa Planning and Investments acknowledges that any socio-economic impact assessment assumes (requires) that it is premised primarily on facts and figures on the structure of the local economy (eThekweni Metropolitan) and thereafter, on the structure of provincial (KwaZulu-Natal) and national economy (South Africa at large). In this regard, the scope of measuring the impact of this development was therefore wider and broader than just investigating the direct economic impact of the Ushukela Highway development and its neighborhood. It was necessary to look beyond the related activities unlocked as a result of the Ushukela Highway development's outlays to the broader operations that would develop around the infrastructure and building/top-structure in the post-construction phase.

Some specific objectives of this empirical socio-economic impacts assessment are:

- ❖ To consolidate all relevant information to quantify the direct and indirect/induced socio-economic impacts of the Ushukela Highway development on the different sectors of the immediate economy of eThekweni Metropolitan in which the development is located, KwaZulu-Natal province economy, and of the South African economy as a whole. Refer to Figure 2 for an indication of the location of the Inyaninga development.

- ❖ To develop an understanding of the Ushukela Highway development as an economic activity and to ensure all impacts are fully captured with the application of a macro-econometric simulation modeling technique in a local, regional, provincial, and national context.
- ❖ To interpret the results in terms of implications for socio-economic and economic intervention.

This report documents and measures in terms of rand value, jobs created, personal earnings generated, sales and value added, and tax revenues produced by Ushukela Highway development. Gabhisa Planning and Investments ensured that an economic and solid quantitative base underscored this socio-economic impacts assessment of the proposed development.

Nonetheless, this report avoided the temptation to allow a priori prejudices and beliefs to sully an objective appraisal of macroeconomic and social trends and let the statistics, graphs and figures that will be computed after the assessment speak for themselves.

3.0 SCOPE OF WORK

In order to construct a more representative set of activities that would be associated with the proposed development, a broader range of activities were identified and included in the macro-econometric simulation modeling assumptions. These included order of magnitude relating to, among others, the following:

- ❖ Development investment
- ❖ Infrastructural investment
- ❖ Employment/jobs creation
- ❖ Local economic development
- ❖ Municipal rates and taxes
- ❖ Corporate tax
- ❖ Individual tax
- ❖ Property rates
- ❖ VAT, and
- ❖ Any other economic and social spillover impacts.

Therefore, this report covers above socio-economic variables/indicators, and how these are impacted by the proposed development.

4.0 APPROACH

An approach followed to construct the socio-economic variables/indicators above builds on the initial base-case assumptions formulated by many urban and development economists (Stats SA, 2008; KZNDED, 2008; Fedderke, Perkins, and Luiz, 2006; IDC, 2005; Global Insight Southern Africa, 2004; URBAN-ECON, 2008) and relates these activities to other existing activities in the local real estate market, while also making assumptions regarding the probability that these activities would realize within the Ushukela Highway development.

The socio-economic impacts were assessed by running simulations with a macro-econometric model for the period 2012 up to 2022⁴. The idea was that these simulations have to incorporate broader possible selected economic activities not directly attributable to the physical site, infrastructure and building/top-structure as a result of the proposed development. These economic activities included in the overall simulation encompassed mainly the construction-related activities of the proposed development, core facilities such as (1) Conference/Management/Recreational/Leisure/Hotel; (2) Business Park/Offices/Showrooms/Retail Warehouse; (3) Business Park/Offices; (4) Light/Service Industry/Business Park; and (5) Open space and other ventures such as the King Shaka International Airport and Dube TradePort development which are in the direct neighborhood.

Due to the implications of time and resources to investigate all the various combinations of low, base, and high case assumptions for each of the various elements of the proposed development, Gabhisa Planning and Investments in consultation with the management of Tongaat Hulett Developments have agreed that it would not be necessary to do so.

The **results presented are only based on the base-case simulations (high case simulations are appended for sensitivity analysis)** from the various aspects and activities of the proposed development. Therefore, one should keep in mind and view the results as realistic and conservative and attempt to quantify the potential socio-economic implications and ramifications of the proposed development.

⁴ See the Appendix A for the model development and assumptions

5.0 IMPACTS OF KEY ELEMENTS ON THE LOCAL ECONOMY OF eTHEKWINI MUNICIPALITY

Socio-economic impact that will spring from Ushukela Highway development depends heavily on the platform and the landscape of the business milieu across the province of KwaZulu-Natal and South Africa at large. That is, the performance of the South Africa's macroeconomic indicators has a causal effect on Ushukela Highway socio-economic impact. Figure 1 below illustrates that the South African rand has depreciated against the currencies of South Africa's main trading partners. Since 2002, the rand has appreciated before it started to depreciate again in 2006. From 2006 to early 2008, the rand weakened. From the mid 2008 to date the rand has been appreciating steadily (Parkin, 2010: 575).

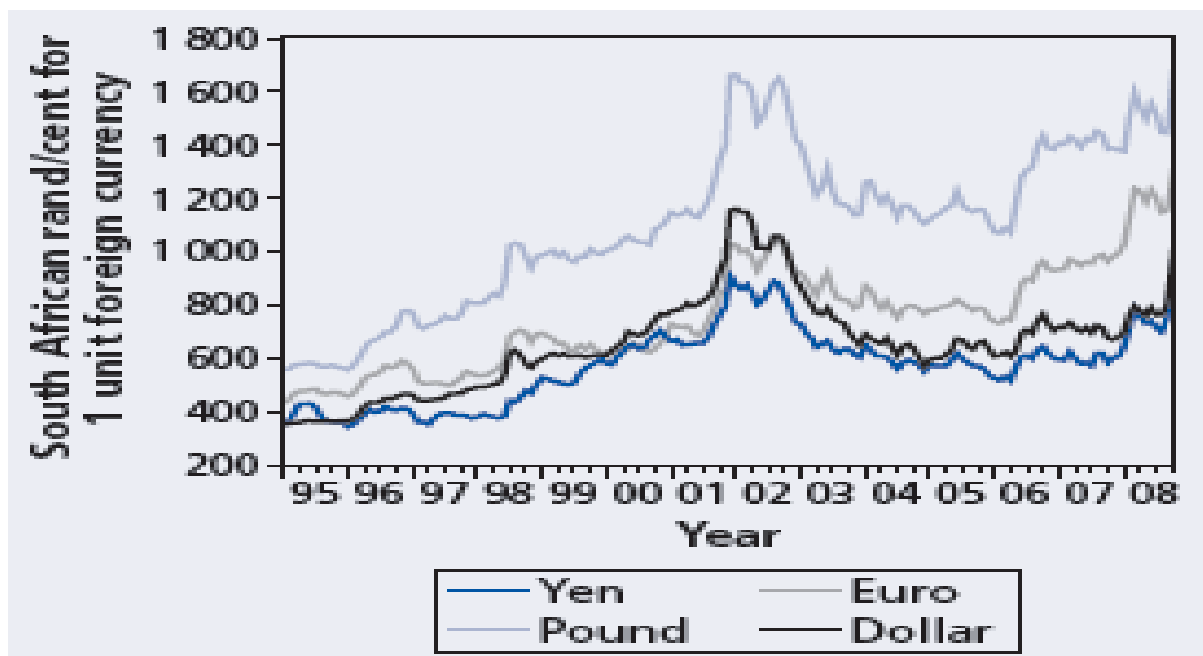


Figure 1: The South African Rand against Four Other Currencies of Main Trading Partners

Source: South African Reserve Bank.

The major strengths of the South African economy are its strong physical and economic infrastructure, its abundant natural resources, and its growing manufacturing sector and considerable tourism potential. However, the overall economic growth in South Africa for the first nine months of 2008 according to Stats SA stood at 3.7%. This trend declined to 3.1% towards the end of 2008, then plummeted to - 2% following the South African economy heading for a substantial slowdown/recession during the first three quarters of 2009, before embarking in a positive growth path of 2% in the last quarter of 2009 indicating that the South African economy is bouncing back to a positive economic growth after a recession (Reuters, 2009).

Tongaat Hulett Developments transformed itself alongside South Africa post 1994, whilst continuing to be committed to high management standards, sustainability, and empowerment of communities with the aim to expand capital expenditure on its land holdings. Tongaat Hulett Developments is renowned for commercial, industrial, residential and mixed-use urban developments in mostly eThekweni and KwaDukuza municipalities of KwaZulu-Natal province. Some of the developments are Zimbali, Mount Edgecombe, Ilala Ridge, Kindlewood, Briardene, Canelands, RiverHorse Valley, La Lucia Ridge Office Estate, Umhlanga Ridge Town Centre and Bridge City. In addition, Tongaat Hulett Developments has new developments including Cornubia, Sibaya and Ushukela that are currently in the planning phase.

The Ushukela Highway development is located in the magisterial district of Inanda (MD code 502), within the borders of the eThekweni Metropolitan Council (Global Insight Southern Africa, 2004). Located at about 35 kilometers from the eThekweni's city centre and with immediate freeway access, the development will provide a new urban core to the north of eThekweni Metropolitan and also will bridge the communities of Ballito, Inanda, Ndwedwe, Phoenix, Tongaat, and Umhlanga amongst others. The expectation is that this development will supply (1) Conference/Management/Recreational/Leisure/Hotel; (2) Business Park/Offices/Showrooms/Retail Warehouse; (3) Business Park/Offices; (4) Light/Service Industry/Business Park; and (5) Open spaces.

The proposed developments are highlighted in different colors and include:

- (1) Conference/Management/Recreational/Leisure/Hotel of 4 Ha (in Yellow).
- (2) Business Park/Offices/Showrooms/Retail Warehouse of 45 Ha (in Blue).
- (3) Business Park/Offices of 12 Ha (in Peach/Apricot).
- (4) Light/Service Industry/Business Park of 50 Ha (in Red/Maroon/Reddish Purple) and
- (5) An open space of 12 Ha (in Green).

Refer to Figure 2 below for an indication of the location of the Ushukela Highway development.

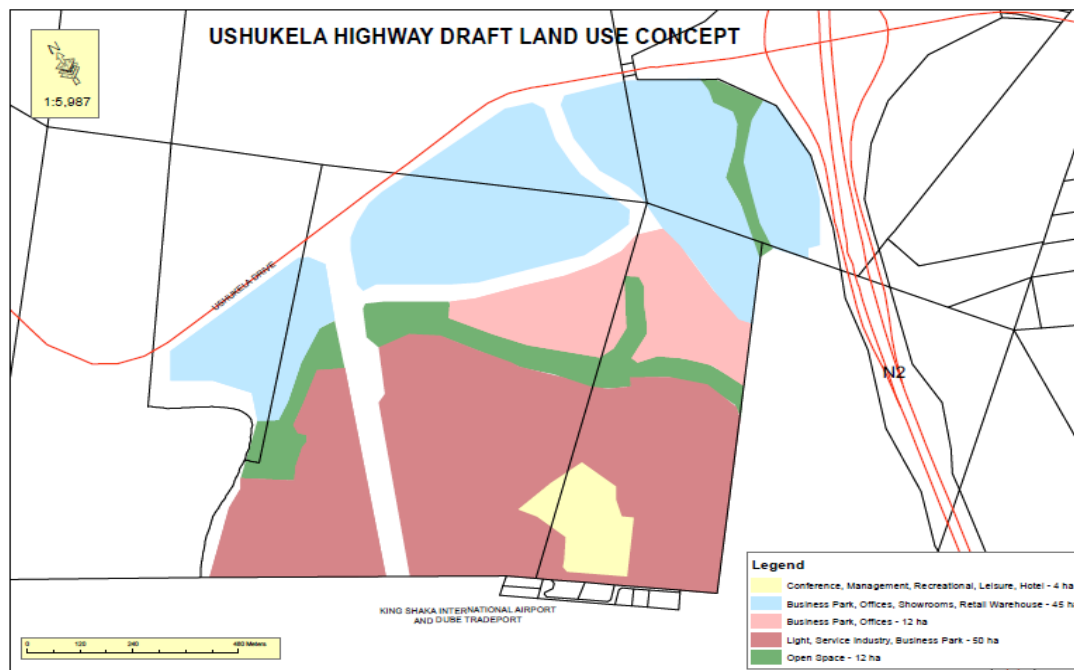


Figure 2: Location of the Ushukela Highway Development in eThekweni Metropolitan

To determine the macro-economic part of the socio-economic impact that the Ushukela Highway development might have on the eThekweni Metropolitan economy, it is essential that a far-reaching socio-economic impact assessment is done. The total socio-economic impacts will comprise two components: direct and indirect/induced impacts. **Direct impacts** will be the consequences of on-site economic activities carried out at Ushukela Highway development (on-site construction and construction-related activities). These include but are not limited to employing construction-related labor, purchasing locally produced goods and services (workers spending their salaries and wages), and contracting for construction and capital improvements, etc. The distinguishing feature of a **direct impact** is the project's immediate economic activities that it will trigger.

Indirect and induced impacts will be the consequences of off-site economic activities that supply on the intended development's businesses (off-site construction and construction-related activities). These include but not limited to off-site development business activities associated with the intended development throughput (i.e. eThekweni Metropolitan and the rest of South Africa suppliers of building/construction materials, hospitality industry, retail industry, tourism, agencies, etc), or the impacts resulting from successive rounds of spending and re-spending over and over again in the local community.

Two logic assumptions are that the expansion of economic activities in eThekweni Metropolitan would drive demand for the following uses: conference/management/recreational/leisure/hotel; business park/offices/showrooms/retail warehouses; business park/offices; light/service industry/business park; and open space of the Ushukela Highway development. Similarly, the development is likely to source for labor force from Inanda, Ndwedwe, Phoenix, and Tongaat which is anticipated to make a substantial contribution in decreasing the level of unemployment and poverty in these areas. However, the forecasts based on these assumptions were beyond the scope of this report.

Since the regional or localized impacts of the Ushukela Highway development will extend on the KwaZulu-Natal province's economy, it is informative to present a brief economic overview of the KwaZulu-Natal. A few key demographic and socio-economic characteristics are summarized in the Table 1 below and put in context to the South African national perspective.

Table 1: KwaZulu-Natal Key Economic and Socio-economic Statistics (2003, estimate)

Key Statistics	KwaZulu-Natal	South Africa
Region area (sq km)	92,417	1,221,246
Population	9,728,381	46,710,858
Population density (nr of people per sq km)	105	38
No of households	2,224,915	12,144,712
Average household income (Rand, current prices)	65,117	71,162
Annual per capita income (Rand, current prices)	14,893	18,502
Gini coefficient	0.64	0.64
Formal sector employment estimates	1,279,494	9,058,793
Informal sector employment estimates	379,109	1,699,327
Poverty gap (R million)	7,106	32,960
Human development index (HDI)	0.56	0.59
Index of Buying power (IBP)	0.17	1.00
Economic output (GVA Rand Million current prices)2003	165,239	1,100,929
Economic output (GVA R Million constant 1995 prices) 2003	94,148	619,791
International Trade - Exports Rand Million 2003	51,560	291,386
International Trade - Imports Rand Million 2003	33,373	262,769
Key Statistics	KwaZulu-Natal (in %)	South Africa (in %)
As % of National Area	7.6%	100.0%
As % of National Population	20.8%	100.0%
Economically active population (as % of total population)	36%	39%
As % of National Formal Employment	14.1%	100.0%
Unemployment rate	47%	41%
Percentage of persons in poverty (GVA as % of national 2003 current prices)	50%	46%
Economic growth performance (GVA % growth pa constant 1995 prices) 1996-2003	15.0%	100.0%
GVA as % of national 2003 constant 1995 prices	2.49%	2.49%
(as % of National Exports in 2003 current prices)	15.2%	100.0%
(as % of National Exports in 2003 current prices)	17.7%	100.0%
(as % of National Exports in 2003 current prices)	12.7%	100.0%

Source: Gabhisa Planning and Investments Own Inquiry into the Literature.

Table 1 above highlights four KwaZulu-Natal statistics that are not on par with those of South African economy:

- ❖ KwaZulu-Natal is nearly 3 times densely populated when compared with national population density suggesting that there are backlogs in terms of housing that require investments to minimize them.
- ❖ KwaZulu-Natal houses about 20.8 percent of the South Africa's population (to date, this trend should have increased over the years).
- ❖ KwaZulu-Natal's unemployment rates are higher than the national average (still higher in 2008 with 28.7% as compared to 19.8% and 16.3% of Gauteng and Western Cape respectively, above the South Africa's national average of 23.1% (KZNDED, 2008)). This suggests that there are backlogs in terms of jobs creations that require investments to reverse the trend of high unemployment rate.
- ❖ KwaZulu-Natal's percentage of people in poverty (50% of people) is also higher than the national average (46% of South Africa's population).

The average percentage contribution to KZN GDP and real GDP growth trends per district are summarized in the Table 3 below:

Table 3: Average % Contribution to KZN GDP and Real GDP Growth Trends per District 2000-2007

District	Average % contribution to KZN GDP	Average growth trends
eThekwini	61.1	4.8
UMgungundlovu	10.8	3.7
UThungulu	7.2	4.8
UThukela	3.5	4.5
Amajuba	3.5	2.6
UGu	3.4	2.7
ILembe	3.3	2.5
Zululand	2.8	4.1
UMzinyathi	1.6	4.5
Sisonke	1.6	3.9
UMkhanyakude	1.2	4.1

Source: Gabhisa's own adaptation from Quantec.

Nonetheless, since 2000 to date, eThekweni Metropolitan remains the major economic power house of KwaZulu-Natal province contributing an average of 60.5% to provincial GDP and having an average economic growth of 4.8% (KZNDED, 2008) which is also reflected in table 3.

In comparison with capital expenditures on infrastructure and building/top-structures that have been unlocked elsewhere in the eThekweni Metropolitan, this development is a substantial addition to the assets of the region. The socio-economic impacts of this development will extend to business development, job creation, incremental returns in tax revenues, and empowerment of the communities in the local economy of eThekweni Metropolitan and will spill-over to KwaZulu-Natal province, and South Africa at large.

Ushukela Highway development offers the potential of creating a vibrant, integrated commercial, business park, logistical efficiencies as well as bringing infrastructure and services, new jobs, and tax base to eThekweni Metropolitan.

Ceteris paribus, modeling and simulating above efficiencies within the macro-econometric model were beyond the scope of this report due to the interactions between investment on the project, prices of factors of production, employment implications, domestic demand, inflation and interest rates, and other socio-economic variables discussed in **Section 4**. However, the resulting implications and ramifications of these efficiencies as well as potential for a stream of benefits and substantial savings in terms of reducing costs in the number of economic activities and distribution system were analyzed.

In order to shed some light on the potential socio-economic implications of the individual key elements of the proposed development in the eThekweni Metropolitan economy, the impacts relating to these key elements are isolated and presented in **Section 7**. However, practically building/top-structure activities take place after the initial infrastructure investment. Nonetheless, the development will phase-out and unlock relative demand in the process. These isolated impacts are presented for illustrative purposes. Therefore, the socio-economic impacts of the full combined pre-construction, construction, and post-construction of the Ushukela Highway development are assessed and highlighted in **Sections 6 and 7** of this report.

6.0 PROPOSED OUTLAYS OF THE DEVELOPMENT

The value of the Ushukela Highway development will extend well beyond its initial construction value. In order to establish the full measure of its socio-economic impacts, the pre-construction, construction, and post-construction outlays associated with the development must be calculated. To this end, this section examines the outlays⁵ (capital (CAPEX) and operational expenditures (OPEX)) of the Ushukela Highway development.

6.1 Capital Expenditure (CAPEX)

Capital Expenditure (CAPEX) in this report is defined here as all capital expenditures that the development would require (irrespective of the source of funding) including infrastructure and building/top-structure development (business park/offices, logistics hub/industrial, roads, railways, open space, and related environmental and development projects). Two data are needed to compute the CAPEX namely:

- 1) The master plan land-use and zoning (also referred to as the floor areas of different uses in the development), and
- 2) The estimated total capital cost of a specific development's construction.

Note

The total **construction cost per square metre** in the different land-uses and zones is multiplied by the **total square metres of a specific land-use and zoning** to arrive at the **Rands value of the CAPEX** on building/top-structure investment (**referred to here as CAPEX-1**). Then, **add on the CAPEX of the infrastructure** investment (**referred to here as CAPEX-2**) to compute the **Total CAPEX**.

Algebraically:

$$\text{Total CAPEX} = \text{CAPEX-1} + \text{CAPEX-2}$$

The Capital Expenditure for the proposed development according to the information sourced from Tongaat Hulett Developments management amounts to approximately **R10.95 Billion (CAPEX-1= and R8.88 Billion CAPEX-2= R2.07 Billion)**.

⁵ Outlays (CAPEX) are all spending associated with the construction of the buildings (on-and off-site expenditures) and outlays (OPEX) are those annual expenditures associated with building operations include management, maintenance and repair, and operations (security, cleaning services, utilities, taxes)

Assumptions on the estimated average costs of construction per square meter of different land-use and zoning sourced from the master plan land-use/zoning and used to compute CAPEX-1 of approximately R8.88 Billion are indicated below:

- (1) Conference/Management/Recreational/Leisure/Hotel of 40,000 bulk square meters @R8,000/sq. m.
- (2) Business Park/Offices/Showrooms/Warehouse of 450,000 bulk square meters @ R8,000/sq. m.
- (3) Business Park/Offices of 120,000 bulk square meters @ R8,000/sq. m.
- (4) Light/Service Industry/Business Park of 500,000 square meters @ R8,000/sq. m. and
- (5) Open Space of 120,000 bulk square meters.

CAPEX-1 above should be added on the computed total average capital expenditure on the infrastructure services investment of the development (approximately **R2.07 Billion**) as illustrated in the following Table 2.

Table 2: Infrastructure CAPEX of the Ushukela Highway Development

USHUKELA HIGHWAY AREA DEVELOPMENT		
DEVELOPMENT	Infrastructure Services Internal	Infrastructure Services Bulk
	(Rand-value)	(Rand-value)
USHUKELA HIGHWAY AREA	R 1,700,000,000	R 370,000,000

Source: Tongaat Hulett Developments' Master Plan Land-use and Zoning.

6.2 Operations Expenditure (OPEX)

Whilst the above CAPEX represents a significant contribution to the local economy of eThekweni Metropolitan, the Ushukela Highway development once fully developed, a substantial portion of its benefits will cease. However, operating outlays that support the new buildings' operations will be ongoing and shall be registered as annual sources of economic benefits that recur yearly and accumulate over the life span of the buildings. As a result, these OPEX will take over and expand/build the local economy of eThekweni Metropolitan.

Daily and regular operation and maintenance outlays of the above activity, offices, business park, industrial, and logistics hub space will involve to the purchase of goods and services from local, provincial, and national providers, human resources cost, maintenance cost, office cost, bank charges, repair, expenditures associated with tenant improvement, custodial (cleaning) services, utilities and management. Outlays for management alone encompass a wide range of services including building supervision, marketing, leasing, security, building engineering services, finance and accounting amongst others. Each of these services has a significant portion of the multiplier effects across the local economy of eThekweni Metropolitan.

The job growth and salaries/wages generated and supported by annual operations expenditures on buildings, infrastructure, services, and structures; the cumulative economic benefits resulting from the re-spending of these outlays over and over again which also supports jobs across all sectors of the eThekweni Metropolitan economy and generates new personal earnings to the benefit of local economy will be realized.

Since the total OPEX for Ushukela Highway development is not yet quantified⁶ and will only be available after the completion of the development, Gabhisa Planning and Investments in consultation with the management of Tongaat Hulett Developments have agreed that it would not be necessary to fully assess its socio-economic impacts for now.

It is however cautioned that, in real terms the value of the Ushukela Highway development will be greater than the sum of its construction outlays or its assessed valuation. The Ushukela Highway development, construction, and operations will create a ripple effect in the local economy of eThekweni Metropolitan. That is, its contribution will consist of annual direct expenditures for new development and construction and annual expenditures to operate existing infrastructure, buildings, and services. Additional important economic benefits – which are also known as the ripple effect – will also be derived from the continuous spending of salaries and wages supported by direct construction and operating outlays, and purchases of construction-related materials and services from vendors and supporting industries. The combination of these direct and indirect (induced) outlays will constitute the total output or contribution to the local economy of eThekweni Metropolitan bringing with it an array of incremental returns through rates and taxes, job growth among others that will accumulate over the life span of these buildings.

⁶ Billion of rands that will be overlooked and undervalued in the simulation models of this socio-economic impact assessment.

7.0 LIKELY SOCIO-ECONOMIC IMPACT ASSESSMENT

The total outlays for Ushukela Highway development are approximately **R10.95 Billion** (Infrastructure Investment of approximately R2.07 Billion and Building/top-structure investment of approximately R8.88 Billion).

It is important to unpack the above investments into as much detail as possible in order to undertake the macro-economic assessment of the socio-economic impact of the proposed development on the local economy of eThekweni Metropolitan in terms of production (GDP), purchase of goods and services, and employment opportunities as well as the micro-economic part of the socio-economic impact on the local economy.

Equation (3) discussed in *Appendix A* is utilized here as an impact simulation model to determine and quantify the direct and spin-off (indirect and induced) socio-economic impacts flowing from the Ushukela Highway development in the eThekweni Metropolitan economy mainly. Some surrogates (proxies) were also developed for the non-quantifiables. Results are presented in Table 3 below.

As indicated in Table 4 below, the spending of this CAPEX of approximately **R10.95 Billion** on capital goods and projects at once⁷ is expected to unlock the purchase of new goods and services of approximately **R31 Billion over the period 2012-2022** (10 years or a decade-long construction). This translates to approximately **R3.1 Billion per annum** or investment returns of approximately **R2.83 per R1 investment** over ten years.

Construction and construction-related jobs that will be directly created are estimated to be approximately **83,275 over the period 2012-2022** (10 years or a decade long-construction). This translates into approximately **8,328 construction and construction-related direct jobs per annum** for 10 years. These direct jobs are created through on-site economic activities carried out at the proposed development (on-site construction and construction-related activities). These include but are not limited to employing construction-related labor, purchasing locally produced goods and services (workers spending their salaries and wages), and contracting for construction and capital improvements, etc.

⁷ It is however cautioned that, in real terms this project will be phasing and unlocking in the process the relative demand.

The number of indirect/induced jobs that will be created through the multiplicative effect in the economy is estimated to be approximately **56,634 over the period 2012-2022** (10 years or a decade-long construction). This translates to approximately **5,663 indirect/induced jobs per annum** for 10 years. These indirect/induced jobs are consequences of off-site economic activities that supply on the project of Ushukela Highway businesses (off-site construction and construction-related activities). These include but not limited to off-site development business activities associated with the proposed development of Ushukela Highway throughput (i.e. eThekweni Metropolitan suppliers of building/construction materials, hospitality industry, retail industry, tourism, agencies, etc), or the impacts resulting from successive rounds of spending in the local community.

Therefore, the total number of (direct and indirect/induced) jobs that will be created and sustained throughout the period 2012-2022 (10 years or a decade long-construction) is estimated to be approximately **139,909 jobs**.

It is expected that out of these **139,909** new sustainable jobs generated above, approximately **55,544** are **permanent** (construction and construction-related) jobs which translates to approximately **5,554 permanent** jobs per annum during the 10 years of construction phase and beyond; approximately **61,140 are temporary** (construction and construction-related) jobs and approximately **23,225 are secondary** (construction and construction-related) jobs which translates into approximately **6,114** temporary jobs and approximately **2,323 secondary** jobs respectively per annum during the 10 years of construction phase.

Table 3: Economic Impact of the Ushukela Highway Development's CAPEX

Variable		Estimated CAPEX	
Building/Top-structure Investment		R8.88 Billion	
Infrastructure Services (Int & Ext) Investment		R2.07 Billion	
Total Estimated Capital Investment		R10.95 Billion	
Direct Impact			
	Purchase of New Goods and Services	GDP	Employment Affected*
Total (Direct) impact	R14.235 Billion	R4.712 Billion	83,275
Indirect and Induced impact			
Total (Indirect and Induced) impact	R16.545 Billion	R6 Billion	56,634
Total Impact			
Grand Total	R30.78 Billion	R10.712 Billion	139,909

Source: Gabhisa Planning estimated based on the macro-econometric (Input/Output) model.

**Note: Employment affected is the number of job opportunities either created; existing ones secured, or displaced as a result of the relevant CAPEX injection of the Ushukela Highway development.*

The impact of the above activities is estimated to be able to contribute approximately **R10.712 Billion** to the eThekweni's GDP (Gross Output) over the period 2012-2022 (10 years or a decade long-construction). This translates into approximately **R1.071 Billion per annum for 10 years**. This suggests that outlays in this development will produce incremental returns through cash circular flows.

7.1 Isolation of Selected Socio-economic Impacts

7.1.1 In Terms of Industrial and Business Park Building Space Opportunities

The master plan land-use and zoning indicates that there will be substantial units of conference, management, recreational, leisure, and hotel. It is therefore, likely that the development would yield a total of 12,000 lower- and medium-priced commercial/residential units, all within good reach of public transport and other amenities. The development will make an inroad on the backlogs of low income (priced) houses in eThekweni Metropolitan area which needed to be addressed (see Table 1). In comparison with what has been built in other areas of the city, the development will be a substantial addition to the assets of the city in terms of boosting tourism and providing outlets for the hospitality industry.

7.1.2 Jobs Creation Impacts

The creation of jobs is a key indicator of socio-economic impacts for several reasons, including the very high unemployment rate in the eThekweni Metropolitan area and the imperative need to raise income amongst the poor people of eThekweni Metropolitan as a whole. The creation of jobs also makes skills development a priority and this is in line with the eThekweni Metropolitan Industrial Development Strategy and Skills Enhancement goals as well as Tongaat Hulett Developments empowerment objectives. Job creations in the local economy of eThekweni Metropolitan are likely to accrue as a result of Ushukela Highway development in two main forms: (1) site preparation and on-site and off-site construction related jobs, and (2) jobs created by operations of Ushukela Highway once fully developed during the post-construction period.

The combined impact of the spending of the **infrastructure budget of** approximately **R2.07 Billion**, *ceteris paribus*, alone as indicated in the Table 3 above, is estimated that the initial investment would likely stimulate and unlock potential investments and economic activities of approximately **R6.72 Billion**. The initial investment would accrue with approximately **R3.78 Billion** over the period 2012-2022 (a decade-long construction). This translates to about **R378 Million per annum** for 10 years or investment returns of approximately **R1.83 per R1** investment over ten years (measured as the additional investment originating from the development).

The GDP (Gross Output) of eThekweni Metropolitan will have increased by approximately **R2.012 Billion from 2012** as a result of the above activities of the CAPEX on infrastructure. This translates to approximately **R201 Million per annum** for 10 years from 2012.

7.1.2.1 Site Preparation and Construction-Related Jobs

At the outset of this project, the site preparation and construction-related jobs with the CAPEX on infrastructure services (internal and external/bulk) would create approximately **15,752** direct (construction and construction-related) jobs whilst the number of jobs that will be created through the multiplicative effect in the economy is estimated to be approximately **10,708 indirect/induced** (construction and construction-related) **jobs**.

Therefore, the overall employment impact is the total number of jobs (direct + indirect + induced) that will be created and sustained throughout the ten years period, which is estimated to be approximately **26,460 new sustainable jobs by 2022**. This translates into approximately **2,646 new jobs per annum** for 10 years from 2012.

7.1.2.1.1 Permanent Jobs

There will be permanent new jobs in the new premises, amongst which one needs to distinguish between those that are a likely result of relocations from existing jobs in eThekweni area versus those of new business expansion facilitated by the opening of the new premises. It is expected that out of the between 26,460 new sustainable (construction and construction-related) jobs that will be generated be approximately **10,517 permanent jobs** and these jobs will be sustained beyond the construction period of Ushukela Highway development.

7.1.2.1.2 Secondary and Temporary Jobs

It is expected that out of the 26,460 new sustainable (construction and construction-related) jobs generated above, approximately **11,568 are temporary** (construction and construction-related) **jobs** translating to approximately **1,157 jobs per annum** for 10 years. There will be approximately **4,375 secondary** (construction and construction-related) **jobs** during the development phases translating into approximately **438 jobs per annum**.

As pointed out in **Sub-Section 6.2**, once the Ushukela Highway development is completed, substantial portion of the outlays' (CAPEX) economic benefits will cease and job opportunities (i.e. jobs created during construction phase) will cease/drop. Outlays (OPEX) that support the new buildings' operations will add as on-going annual sources of economic benefits that will accumulate over the life span of the development.

The report attempted to forecast a few socio-economic impacts of Ushukela Highway development's outlays (OPEX) in terms of employment densities using standard jobs-per-square metre estimates, turnover (also referred to as trading densities), and the average salary per annum, during the post-construction phase based on assumptions in Table 5 below.

Using standard jobs-per-square meter estimates, total jobs created in Table 4 totaled to approximately **44,395 jobs**, out of which approximately **1,818 jobs** would mainly be for hospitality industry (e.g. food and beverage managers, restaurant managers, hotel managers, waiters and waitress, cashiers, hostess, receptionists and reservationists, chefs amongst others created in conference/leisure/hotels units (722 permanents, 795 temporary, and 302 secondary jobs). The actual figures may be higher since lower assumptions were used in the simulation. Approximately **20,455 jobs** would mainly be wholesale and retail jobs created in mixed-used commercial/residential units (8,121 permanents, 8,939 temporary, and 3,396 secondary jobs). Approximately **5,455 jobs** would mainly be administrative jobs created in offices/business Park (2,166 permanents, 2,384 temporary, and 906 secondary jobs). Finally, approximately **16,667 jobs** would mainly be stevedoring, warehouses and storage facilities related jobs (6,617 permanents; 7,284 temporary; and 2,767 secondary).

Out of the total **45,000 new sustainable jobs** generated in specific development above (administrative, domestic, wholesale and retail, construction and construction-related, stevedoring, etc), approximately **17,865 jobs will be permanent**. Approximately **19,665 jobs will be temporary**, and approximately **7,470 jobs will be secondary**.

Due to its geographic location, it is assumed that the project will source a substantial portion of its labor from Inanda, Ndwedwe, Phoenix, and Tongaat, hence making an inroad in decreasing the high level of unemployment and poverty. Similarly, the project will provide a source of income for the communities in these poverty stricken areas.

Table 4: Simulation of Job Creation, Salaries/wages and Taxes of the Development

Variable		Estimated CAPEX	
40,000 sq. m of Conference/Management/etc		@R8,000 = R 0.320 Billion	
450,000 sq. m. of Business Park/Offices/etc		@R8,000 = R3.6 Billion	
120,000 sq. m. of Business Park/Offices		@R8,000= R0.960 Billion	
500,000 sq. m. of Light/Service Industry/Business		@R8,000 = R4 Billion	
120,000 sq. m. of Open space			
1,230,000 bulk sq. m. to be developed		Total Costs of Building/Construction of Top-structure = R8.88 Billion	
Direct and Indirect /Induced Impacts			
	Employment Affected	Permanent Jobs	Salaries/Wages Generated
Conference/Management/Leisure per 22 sq. m.	1,818	722	R181.8 Million @100,000 per annum
Business Park/offices/Show/Warehouse per 22 sq. m.	20,455	8,121	R2.046 Billion @100,000 per annum
Business Park/Offices per 22 sq. m.	5,455	2,166	R982 Million @180,000 per annum
Light/Service Industry/Business Park per 30 sq. m.	16,667	6,617	R1.667 Billion @100,000 per annum
Total Impact	44,395	17,626	R4.877 Billion
Durban Metropolitan Potential Revenue Impact			
Income/Payroll Tax @ 10% of 40%	VAT @14% of 50%	Company Tax @25% of 10%	Rates @1.79% of Building/Top-struct.
R360 Million	R630 Million	R225 Million	R161.1 Million ⁸
Grand Total = R1.38 Billion			

Source: Gabhisa Planning and Investments estimated based on the macro-econometric (Input/Output) model.

It is expected that from 2022, an annual payroll of approximately **R4.877 Billion** paid to salaries and wages would be available for households to spend in the eThekweni Metropolitan economy and this will be a continuing flow of expenditures that extend over the life span of the mixed-use commercial/residential (houses, warehouses, whole and retails, etc), medium density residential, trade zone/business park/offices, logistics hub/industrial, open space, and other structures of the Ushukela Highway development during the post-construction phase.

The number of households in the eThekweni Metropolitan that earn between **R40,000 per annum** and **R180,000 per annum** would likely increase in different percentage points in different simulations due to differential in jobs created in specific land-use and zoning.

⁸Low cost residential units are exempted from property rates.

Above jobs growth, the payroll they will support, the value of the work they will perform and the operations of the post-construction phase of the development as well as the productive capacity they add to existing building stock altogether have the potential to be essential to the vitality of the eThekweni Metropolitan economy and they will provide the essential capacity required for the eThekweni Metropolitan economy to grow each year.

7.2 Public Sector Potential Revenue and Financial Implications

Gabhisa Planning and Investments was also requested to attempt to quantify the potential revenues implications for the public sector including potential revenues implications for eThekweni Metropolitan that may arise as a result of the Ushukela Highway development. Based on the master plan land-use and zoning, it was possible to calculate the potential local municipal revenues and financial implications such as property rates and taxes, regional services council levies (if it is assumed that this will still continue to be implemented in the period of the development), and bulk services such as electricity and water supply, sanitation and sewage services, etc.

Beyond the significant stream of benefits and lowering costs to the public sector, citizen, and taxpayers; there are also anticipated revenues streams for the public sector including eThekweni Metropolitan against its outlays in the development as suggested in Tables 7 and 8 above.

In terms of public sector's potential revenues and financial implications, it is anticipated that its outlays in this proposed development will be more than defrayed by tax receipt streams.

- ❖ It is expected that, the VAT raised (indirect taxes) during the construction phase alone would likely yield approximately **R630 Million** throughout the ten years of construction phase as tax receipts.

If the balance between the public sector's outlays on infrastructure services (external/bulk) in this particular development of approximately **R370 Million** (See Table 2) and the potential benefits and revenues yielded have to be outlined, this VAT receipts accrued alone (indirect taxes from private to public transfers) would have more than defrayed its CAPEX inputs.

- ❖ It is expected that, tax on income/payroll and workforce would likely yield approximately **R360 Million** throughout the ten years of construction phase in tax receipts.

- ❖ It is expected that, the company tax incidence on building/construction companies' profits would likely yield approximately **R225 Million** throughout the ten years of construction phase in tax receipts.
- ❖ It is expected that once fully developed, the property rates incidence on the Ushukela Highway properties would likely yield an additional **R161.1 Million** throughout the ten years of construction phase) in tax receipts. However, once fully developed **this amount will tumble to a per annum rate that would recur yearly over the life span of the buildings** based on the property rates of eThekweni Metropolitan.
- ❖ In addition to all above tax receipts, eThekweni Metropolitan revenues from the total tax receipts should be significant, and would likely yield approximately **R5 Billion** over the ten years of construction phase. On average this will translate to **accrued tax revenues (i.e. VAT, Income Tax, Company Tax and rates) of approximately R500 Million that would recur yearly over the life span of the Ushukela Highway development.**

Note

The above tax revenues and fiscal implications for the public sector including eThekweni Metropolitan on income/payroll and workforce (of permanent jobs), company tax, property rates and taxes, substantial redistributable rates income that recur yearly, etc as well as other public receipts (administrative fees, electricity, water supply and sanitation, sewage services, levies, and other utilities) that will be boosting the local economy of eThekweni Metropolitan for perpetuity (if it is assumed that they will still continue to be implemented in the period of the development and beyond).

7.3 Other Opportunity Costs and Benefits Assessment

With the Dube TradePort and new King Shaka International Airport reaching completion, and the ports of Durban and Richard's Bay already handling about 80 percent of South Africa's bulk cargo tonnage; KwaZulu-Natal and particularly the city of eThekweni is positioning itself as the premier gateway to the world. Business infrastructure, outlets for the hospitality industry and tourism needs to be developed to facilitate this industrial boom and the (1) Conference/Management/Recreational/Leisure/Hotel; (2) Business Park/Offices/Showrooms/Retail Warehouse; (3) Business Park/Offices; (4) Light/Service Industry/Business Park; and (5) Open space of the intended development of Ushukela highway is perfectly situated to play an instrumental role in boosting this expansion of the eThekweni economy.

It is indicated in the master plan land-use and zoning that the development is intended to also spend approximately **R2.07 Billion** on core infrastructure services (external/bulk) below (See Table 2):

- (1) An open space of 12 Ha.
- (2) Potential new roads.
- (3) Upgrading existing roads, and
- (4) Upgrading existing railways.

In addition to the benefits shown in this report, there will be other streams of benefits to the public sector which should partly defray their costs such as the real estate market development which in turn will increase the value of square metre of land in the Ushukela Highway development and of contiguous land in the area. The proposed development will bring a critical balance between economic development and environmental sustainability in its efforts to create a platform capable of serving as a significant source of permanent and sustainable employment in the local economy of eThekweni Metropolitan.

The Ushukela Highway development as a whole has the potential of skilling and improving the welfare of prospective workers. That is, the Ushukela Highway development in all likelihood will make a positive contribution to skills development in a number of sectors in the local economy of eThekweni Metropolitan. If some of the envisioned services materialize, it will provide employers (particularly those from Inanda, Ndwedwe and Tongaat) with opportunities to improve their skill levels so as to meet their job demands

Other public revenues deriving from the Ushukela Highway development such as municipality services and levies, user charges, property taxes, administrative fees, and bulk utilities including electricity, water supply and sanitation, sewage services, amongst others are also likely to be very substantial and will contribute to defray all the public sector's outlays including eThekweni Metropolitan during the construction phase and beyond.

Similar studies done in South Africa tend to be in line with the findings of this report. BIFSA (Building Federation of South Africa) in 2000 computed that for every **R1 Million** spent on construct project in South Africa, **ten** 'on-site' jobs were directly created and **20** 'off-site' jobs were indirectly created. If this

has to be considered as a benchmark, Ushukela Highway development's CAPEX of **R35 Billion** would have created **1,050,000 jobs** in the 2000 (110,000 on-site jobs and 220,000 off-site jobs). Extant studies adjusted BIFSA figures and computed in 2006 showed that for every **R1 Million** spent on Urban development project in the KwaZulu-Natal province, about **18 jobs** are created (direct and indirect/induced). Based on that Ushukela Highway development's CAPEX of **R35 Billion** would have created **630,000 jobs** in the year 2006.

It is worth comparing that in terms of 2010. This will mean that for every **R1 Million** spent on Ushukela Highway development, **13 jobs** would be created (**eight** 'on-site' jobs were directly created and **five** 'off-site' jobs were indirectly created). Given the elapse of time and costs of factors of production adjustment to steadily increasing inflation rate, jobs creation in Ushukela Highway development is in line with BIFSA computation. An alternative explanation would be that spectacular advance in technology over past years unlocked increases in capital intensity in construction projects and in the process having a negative causal effect on the labour intensity.

Results of Ushukela Highway development are also in line with McCord and van Seventer (2004). McCord and van Seventer (2004) computed a social accounting matrix (SAM) for the South African economy using data from a labour based road rehabilitation programme and reflecting a hypothetical CAPEX of **R3 Billion** suggested that: (1) it is expected to create a **0.96 % increase** in capital returns and **0.62% increase** in labour returns; (2) these respective multipliers suggested that capital owners stand to benefit more from CAPEX than owners of labour. However, both stand to benefit from the demand injection associated with the development.

8.0 CONCLUSIONS AND IMPLICATIONS FOR SOCIO-ECONOMIC AND ECONOMIC INTERVENTION

The proposed Ushukela Highway development is likely to attract the interest of the public sector and private investors which will catalyze a stream of economic benefits to the public sector, citizen, and taxpayers living in eThekweni Metropolitan area.

Notwithstanding, the analysis suggests that the development will substantially contribute towards the economy of eThekweni Metropolitan in terms of GGP, employment and other income stream benefits. The development amongst other benefits is likely to unlock over R31 billion as purchase of goods and services during the construction period. The project will generate 139,909 direct and indirect/induced jobs over the ten years. Out of these jobs approximately 55,544 will be permanent (construction and construction related) and approximately 61,140 will be temporary (construction and construction related) jobs. Nonetheless, approximately 23,225 will be secondary (construction and construction related) jobs. In addition, the development is anticipated to generate approximately R5 Billion as salaries and wages which will likely to be spent within the eThekweni Metropolitan economy. Finally, the development is also anticipated to generate approximately R10.712 Billion to the eThekweni Metropolitan's GDP (Gross Output) during the construction period which translates to R3.356 Billion per annum.

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APPENDIX A

1.0 THEORETICAL SOCIO-ECONOMIC IMPACT ASSESSMENT

Socio-economic impacts are the outcome of the economic interaction among various sectors of the economy and are measured for a specific geographical area, province, country or region either for a specific timeframe, i.e. a year, or at a point in time i.e. at the end of a financial year. Though various economic indicators exist to express these impacts, the more commonly-used and overarching ones are: (1) Business output or sales volume, (2) Value added or Gross Domestic Product (GDP) on a local, provincial, or national level, and (3) Job creation. These indicators provide an indication of the change, i.e. the improvement or the deterioration, in the economic welfare or the quality of life of the people, which is the main goal of economic development.

Socio-economic impacts also lead to fiscal impacts, which are changes in government revenues and expenditures, since socio-economic impact on total business sales, personal income or wealth affect government revenues by expanding or contracting the tax base.

Socio-economic impact assessment therefore is seen as the study of the way in which the direct benefits and costs of an organization/project affects the local, provincial, national or regional economy. Particularly, socio-economic impacts refer to the effects on the level of economic activities in a given area because of some form of external intervention in the economy. The intervention can be in the form of new investment in infrastructure (CAPEX) or operation and maintenance (OPEX), new development, or adoption of a new policy or services. These interventions subsequently have a diverse effect on the economic environment. Figure 3 below summarizes the theoretical socio-economic impact of the intended Ushukela Highway development.

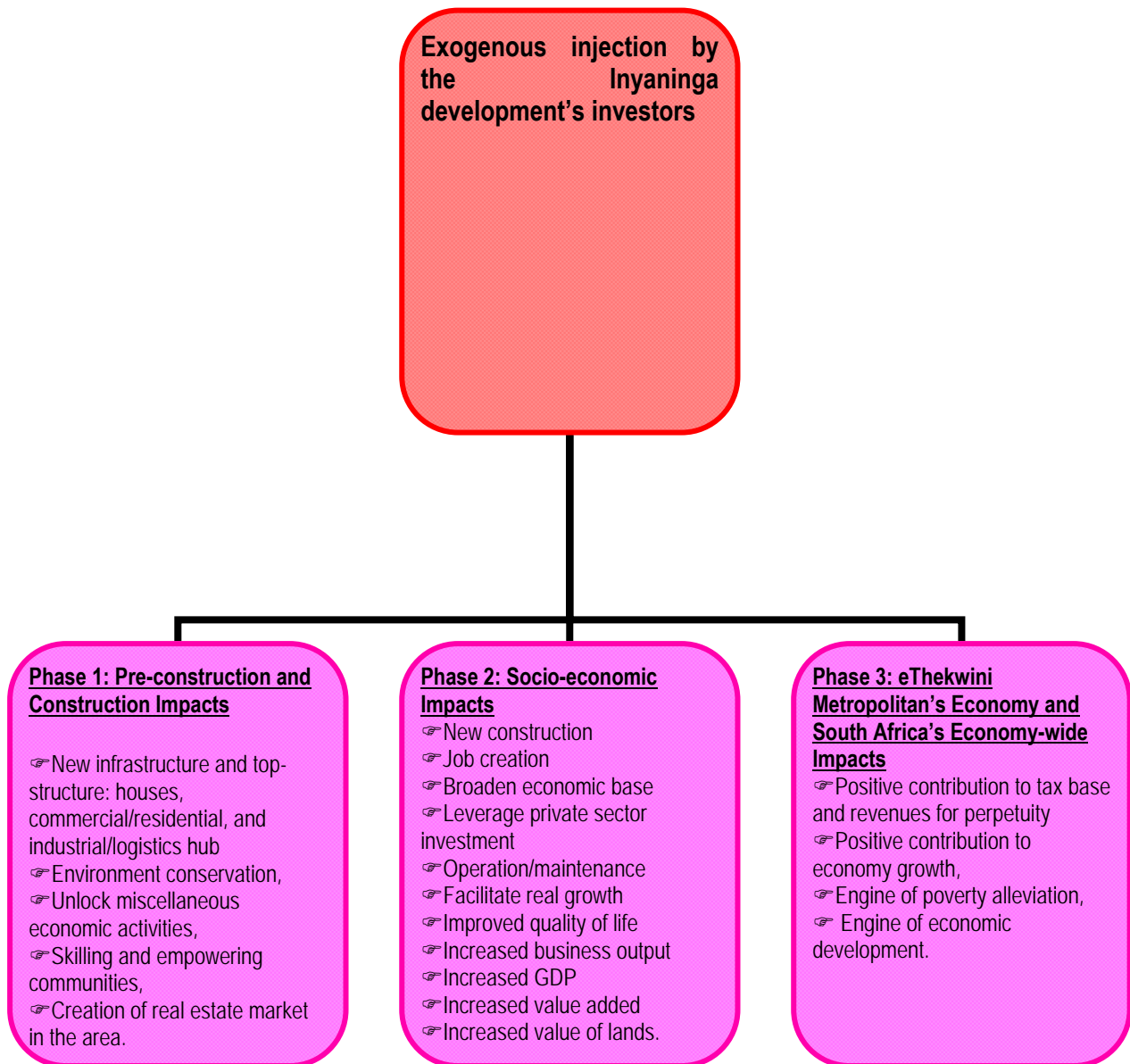


Figure 3: Schematic Socio-economic Impact Analysis

Source: Gabhisa Planning and Investments Own Inquiry into the literature.

Figure 3 suggests that the expenditures (CAPEX and OPEX) on the intended Ushukela Highway development will not only contribute to minimize eThekweni Metropolitan's and South Africa's infrastructure backlogs and problems but also has positive streams of costs saving and benefits on different sectors of the country's economy such as business services, construction, financial, hospitality, manufacturing, tourism, transportation, etc; which in turn will ripple in the welfare of population to take them out of scourges of poverty.

2.0 EMPIRICAL SOCIO-ECONOMIC IMPACT ASSESSMENT

2.1 Model Development

As the Ushukela Highway development is in the planning phase, Gabhisa Planning and Investments in consultation with the management of Tongaat Hulett Developments have agreed that the socio-economic impacts should be estimated by applying a macro-econometric (Input/Output) simulation modeling technique.

This macro-econometric model simulates how the total outlays of the intended Ushukela Highway development of approximately **R11 Billion** would not be confined to the construction, logistics, and transport sectors only; and is likely to further spill-over to other individual sectors, agents of the eThekweni Metropolitan, and the basic structures of the eThekweni Metropolitan economy and South African economy at large.

As it is expected that this development will affect the macro-economy of South Africa, a common tool available to macro-economists in analyzing the socio-economic impact of a major development is the **multiplier analysis**. The literature reviewed suggests that no crowding-out effects must be assumed in this approach so that CAPEX/OPEX injection automatically translates into a rise in Gross Domestic Product (GDP or national income) of eThekweni Metropolitan and South Africa.

Economists have increasingly relied on Social Accounting Matrix (SAM) multiplier approaches to address related issues with an economy-wide dimension (Stats SA, 2008; Fedderke, Perkins, and Luiz, 2006, McCord and van Seventer, 2004). These models belong to the class of fixed-price general equilibrium models, used to assess the socio-economic effects of exogenous changes in income and demand. The common distinguishing features of these models include two basic sets of assumptions:

1. the coefficients of the matrix is parametric, which is equivalent to the fixed coefficients' assumption in Leontief Input-Output (I-O) analysis; and
2. the total activity can passively accommodate a change in final demand with perfectly elastic factor supplies.

Both of these assumptions are based on the long-run assumption that all prices (salaries and wages) ultimately remain the same. Otherwise, a change in relative prices could mean that coefficients change – or, an increase in factor demand may simply drive up factor prices rather than expand output (GDP). Since prices are fixed, conclusions can be drawn about quantities on the basis of value shares.

The second important feature of SAM models is that they are demand-driven. With the idea embedded in the SAM that an economy is characterized by a circular flow of income and expenditure, a change in the demand for the product of one industry would not only affect that industry but all other activities would be affected indirectly through intermediate demand, factor market demand, household demand, and government demand changes. Labor income earned by each labor category feeds into a set of household income classes in addition to income derived from capital and other sources such as transfers as part of fixed household income distribution mapping.

Starting with the vector of final demands, successive rounds of gross outputs necessary to achieve that demand can be calculated. As further and further rounds are included, this converges to the general equilibrium. Thus, the effects eventually die out. A multiplier is the cumulative sum of the endogenous effects. It is inversely related to the exogenous portion of economic activity. However, potential broader impacts on productivity and productive resource (skills) shortages cannot be considered in a generation SAM based model.

With these limitations acknowledged, the remainder of the final report develops below the actual model utilized in the empirical socio-economic impact assessment of the intended Ushukela Highway development in a step-by-step manner.

To illustrate the simple fixed coefficient model used, let matrix **X** denote a vector of activity levels (in rands value terms) in an economy including industry output, demand for commodities, factor income and institutional income of aggregate firms as well as disaggregated households, and matrix **A** denote a matrix of coefficients describing the interrelationships amongst the endogenous variables in per unit terms. That is the amounts of each activity used by each other activity, at rates which are assumed to be independent of the levels of activity in **X** (constant returns to scale). Furthermore, let a vector **D** denote a column of exogenous portion of economic activity including the commodity demand by government, aggregate investment demand and exports.

Total activity **X** satisfies endogenous (**AX**) and exogenous (**D**) uses, that is presented as the following single linear algebraic equation:

$$\mathbf{X} = \mathbf{AX} + \mathbf{D} \quad \text{Equation (1)}$$

Assuming that vector **A** is parametric, any change in **D** must be accommodated by a corresponding change in **X**. Solving for **X**, the relationship between **D** and activity vector **X** is easily shown to be:

$$\mathbf{X} = (\mathbf{I} - \mathbf{A})^{-1} * \mathbf{D} \quad \text{Equation (2)}$$

Where **I** is an identity matrix of appropriate size and the term $(\mathbf{I} - \mathbf{A})^{-1}$ is known as **the multiplier matrix** or **Leontief inverse**. It embodies all the technological information underlying economic production. The multiplier matrix shows the cumulative effect on all activities of a given change in exogenous accounts (under the assumptions noted above).

Given the identity of equation (2), a macro-econometric model can be set up which allows for the impact of a change in final demand of Ushukela Highway development ($\Delta\mathbf{D}$) to be evaluated in terms of a change in the endogenous variables ($\Delta\mathbf{X}$). This is presented as the following single linear algebraic equation (3):

$$\Delta\mathbf{X} = (\mathbf{I} - \mathbf{A})^{-1} * \Delta\mathbf{D} \quad \text{Equation (3)}$$

A number of auxiliary variables can be derived from the change in the endogenous variables, $\Delta\mathbf{X}$, including imports, government revenue and also employment, as it is generally assumed amongst economists that for all sectors that will indirectly receive a boost as a result of a stimulus (CAPEX) such as Ushukela Highway development, the average employment – output ratios of the relevant industries apply (Fedderke, Perkins, and Luiz; 2006; McCord and van Seventer, 2004).

The elements in **a specific column account of the multiplier matrix** in the SAM show the effects on the row sectors and institutions of a one Rand (R1) change in exogenous activity (CAPEX/OPEX of Ushukela Highway development) in the column account. Thus, the column coefficients show the backward linkages of a sector (purchases from sectors upstream). A specific account row shows how

that account is affected by one Rand (R1) changes in the column accounts, or, forward linkages of the sector (sales to sectors downstream). This is the hallmark of linkage analysis. Whether the impacts of an exogenous demand injection lead to sustained real effects ultimately depends on the shape of the aggregate supply function. If one were to believe it to be vertical, then there would be no lasting real impact and all that would be observed is higher levels of inflation. If the aggregate supply function were upward-sloping, then there would be some sustained real effects following the demand injection in Ushukela Highway development.

In South Africa, SAMs have been used for several different analyses.

McCord and van Seventer (2004) have used SAM analysis to study the impact of the labor intensification of infrastructure in public works programmes. Townsend and McDonald (1998) used a similar analysis to analyze the impact of agricultural policies on income distribution.

Above studies indicated that the SAM models based on input-output tables are able to estimate impacts within each industry in the model and thereby provide much more information than simple total socio-economic impacts on income, output, and employment. Using, for example, new investment (CAPEX) or operational expense (OPEX) data of Ushukela Highway development, multipliers are calculated to estimate different impacts, such as how the Rand spent on a development investment, ripples through the eThekweni Metropolitan economy. Measures of input also take into account imports to - and exports from eThekweni Metropolitan.

Above studies also concurred on one modeling issue of the choice of closure rules. In the South African SAM-multiplier simulation, activities, commodities, factors, enterprises, and households are specified as endogenous accounts. Government recurrent expenditure, direct and indirect taxes, government investment, capital, and the rest of the world are exogenous. Thus, only two kinds of shocks are possible, working through the commodities and the household accounts.

The model used in this final report also assumed that the structures of the eThekweni Metropolitan and South African economy will remain constant following the modeled stimulus (total outlays) of Ushukela Highway development, meaning that the SAM analysis is comparative static and ignores any dynamic effects, including substitution between the production factors (particularly labor and capital) and between domestically and imported intermediate purchases as well as the compounding effects.

This approach is adequate for the purpose of modeling the socio-economic impact of the intended Ushukela Highway development, since a stimulus of approximately **R11 Billion** is not likely to fundamentally change the structure of the South African economy which the Gross Domestic Product (GDP) worth about **R2,284 Trillion** (Reuters, 2009)

This report also imported some multipliers to assess the empirical socio-economic impact of non-quantifiables of the intended Ushukela Highway development. The elements of the modeling technique imported are based on the input-output analysis principles outlined by Townsend and McDonald (1998), McCord and van Seventer (2004), and Feddeke *et al*(2006).

Equation (3) discussed above is utilized in this report as an impact simulation model to determine and quantify the direct and spin-off (indirect and induced) socio-economic impacts flowing from the Ushukela Highway development in the eThekweni Metropolitan economy mainly. Some surrogates (proxies) were also developed for the non-quantifiables. Results are presented in **Tables 3 and 4 of the final report.**

Appendix 22: Heritage Impact Assessment of Inyaninga / uShukela Highway Mixed Use Development,
Tongaat, KwaZulu-Natal, South Africa

HERITAGE IMPACT ASSESSMENT OF
INYANINGA / USHUKELA HIGHWAY MIXED USE DEVELOPMENT,
TONGAAT, KWAZULU-NATAL, SOUTH AFRICA

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25 November 2009

Management summary

eThembeni Cultural Heritage was appointed by Tongaat Hulett Developments to undertake a heritage impact assessment of a proposed mixed use development near Tongaat, in terms of the National Heritage Resources Act No 25 of 1999. Two eThembeni staff members inspected the area on 22 and 23 September 2009, and completed a controlled-exclusive surface survey, as well as a database and literature search.

Observations

Various buildings dating to the 1960s are located in Tongaat and are listed on Amafa aKwaZulu-Natali's Conserva database as having heritage significance, which may be considered medium at the local and regional level, at least, for their aesthetic, architectural, historic and social values. Although they will not be affected directly by the proposed development, the viewscape from these heritage resources could be affected significantly.

Recommended mitigation measures

Amafa aKwaZulu-Natali's Built Environment Committee should make recommendations to minimise the impact on the viewscape from the historic buildings caused by the proposed development.

Recommended monitoring

As deemed appropriate by the Built Environment Committee.

Conclusion

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa aKwaZulu-Natali in fulfilment of the requirements of the National Heritage Resources Act. The client may contact Ms Wesuwe Tshabalala at Amafa's Pietermaritzburg office (telephone 033 3946 543) in due course to enquire about the Council's decision.

If permission is granted for the development to proceed, the client is reminded that the Act requires that a developer cease all work immediately and notify Amafa aKwaZulu-Natali should any heritage resources, as defined in the Act, be discovered during the course of development activities.

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Specialist competency

Len van Schalkwyk is accredited by the Cultural Resources Management section of the Association of South African Professional Archaeologists to undertake heritage impact assessments in South Africa.

Mr van Schalkwyk has a master's degree in archaeology (specialising in the history of early farmers in southern Africa) from the University of Cape Town and 20 years' experience in heritage management. He has worked on projects as diverse as the establishment of the Ondini Cultural Museum in Ulundi, the cultural management of Chobe National Park in Botswana and various archaeological excavations and oral history recording projects. He was part of the writing team that produced the KwaZulu-Natal Heritage Act 1997. He has worked with many rural communities to establish integrated heritage and land use plans and speaks good Zulu.

Mr van Schalkwyk left his position as assistant director of Amafa aKwaZulu-Natali, the provincial cultural heritage authority, to start eThembeni. During the past ten years he has directed more than 800 heritage impact assessments throughout South Africa, as well as in Mozambique.

Beth Wahl has a BA Honours African Studies (first class), with archaeology and sociology majors, and has completed various Masters courses in Heritage and Tourism at the University of KwaZulu-Natal. She is a member of the Association of Southern African Professional Archaeologists (ASAPA).

Ms Wahl has undertaken more than 800 heritage impact assessments and monitoring projects throughout South Africa. She was an excavator and logistical coordinator for Glasgow University Archaeological Research Division's heritage programme at Isandlwana Battlefield; has undertaken numerous rock painting surveys in the uKhahlamba / Drakensberg mountains, northern KwaZulu-Natal, the Cederberg and the Koue Bokkeveld in the Cape Province; and was the principal excavator of Scorpion Shelter in the Cape Province, and Lenjane and Crystal Shelters in KwaZulu-Natal.

Ms Wahl has undertaken surveys and monitoring of archaeological sites, excavation of a human skeleton and subsequent community liaison, and written a heritage management plan for Catalina Bay in the iSimangaliso Wetland Park World Heritage Site. She compiled the first cultural landscape management plan for the Mnweni Valley, northern uKhahlamba/Drakensberg, and undertook an assessment of and made recommendations for cultural heritage databases and organisational capacity in parts of Lesotho and South Africa for the Global Environment Facility of the World Bank for the Maloti Drakensberg Transfrontier Conservation and Development Area. She developed the first cultural heritage management plan for the uKhahlamba Drakensberg Park World Heritage Site, following UNESCO recommendations for rock art management in southern Africa.

Declaration of independence

We declare that Len van Schalkwyk, Beth Wahl and eThembeni Cultural Heritage have no financial or personal interest in the proposed development, nor its developers or any of its subsidiaries, apart from in the provision of heritage assessment and management consulting services.

1. Introduction and legislation

eThembeni Cultural Heritage was appointed by Tongaat Hulett Developments to undertake a heritage impact assessment of a proposed mixed use development near Tongaat, in terms of the National Heritage Resources Act No 25 of 1999¹. Section 38(1) of the Act requires such an assessment in case of:

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50 m in length;
- any development or other activity which will change the character of a site—
 - (i) exceeding 5 000 m² in extent; or
 - (ii) involving three or more existing erven or subdivisions thereof; or
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the re-zoning of a site exceeding 10 000 m² in extent; or
- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person;
- battlefields; and
- traditional building techniques.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and

¹ The KwaZulu-Natal Heritage Act No 4 of 2008 has repealed the eponymous Act No 10 of 1997. In the absence of a heritage resources management section in the 2008 legislation, Section 38(1) of the National Heritage Resources Act No 25 of 1999 governs heritage impact assessments in KwaZulu-Natal and elsewhere in South Africa.

- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.

A 'place' is defined as:

- a site, area or region;
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

'Structures' means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

'Archaeological' means –

- material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Palaeontological' means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. Amafa aKwaZulu-Natali and / or the South African Heritage Resources Agency will only issue a permit for the alteration of a grave if they are satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned. eThembeni adheres to the following procedures:

- Notification of the impending removals (using appropriate language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from Amafa aKwaZulu-Natali and / or the South African Heritage Resources Agency;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

2. Terms of reference

A Heritage Impact Assessment must address the following key aspects:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact development on heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

3. Nature of proposed activities (information provided by the client)

The proposal is to develop, in support of the new King Shaka International Airport (KSIA) and particularly in support of the Dube Trade Port (DTP), the ability to create a unique, multi-modal logistics hub at Inyaninga which will be based upon road, rail, air and sea linkages via the existing road and rail networks, DTP and Ports of Durban and Richards Bay.

The Inyaninga precinct will also incorporate industrial and manufacturing opportunities, business parks and service industrial opportunities together with offices and retail opportunities. The proposed development will provide a wide range of residential opportunities from subsidy housing to middle-income apartment opportunities. These residential opportunities will occur at a range of densities and close to the R102 as well as along the western portion of the precinct on the higher lying slopes.

The uShukela Highway precinct, which is located between the new airport, N2, uShukela Highway and Tongaat and with good accessibility to the major road networks, would offer a wide range of opportunities from potential expansion of the trade zone to business park and service industrial opportunities, commercial office park opportunities as well as residential opportunities adjacent to Tongaat. There are also opportunities for the creation of a 'technology hub' that would offer a network of companies, knowledge centres and service industries. It would rely on intensive and innovative cooperation amongst organisations in the sharing and developing of new ideas, concepts and technologies that lead to new inventions, production and sale of innovative products, services, systems and machines.

The development has substantial infrastructural requirements and work is currently being done with regards to what are available, options and implications. Access to the proposed development will be taken from the existing provincial roads including R102, P100 and uShukela Highway.

The preliminary development land use plan indicates the following development details –

- Industrial / Logistics Hub – 250 Ha
- Trade Zone / Business Park / Offices – 600 000 m²
- Business Park / Offices – 1 200 000m²
- Mixed Use (Commercial / Residential) – 240 000m² / 2000 units
- Medium Density Residential – 10 000 units
- Open Space – 300 Ha

The site is strategically located between Tongaat and the new KSIA. The new KSIA and DTP are due to open in May 2010. It has been described as far more than simply a new airport but rather as a stimulator and generator of economic growth for the province and is therefore, one of the Province's major priorities. At the same time, a need has been identified, via the provincially led Local Economic Development process, for new housing, economic and employment opportunities in the greater Tongaat region.

The Inyaninga / uShukela Highway development proposal therefore aims to address both imperatives, namely to support, integrate with and enhance the new Airport and to simultaneously unlock the growth and development potential of the greater Tongaat region.

Apart from providing for an increased number of passengers and direct international flights, the Airport will provide the hub of a new multi-modal logistics platform that is able to provide a gateway between Southern Africa and the rest of the world. The developments within the airport boundary will provide the backbone to this global logistics platform but, for a variety of reasons, can only be expected to do so much.

It is critical, for the long term sustainability and ultimate, real success as a regional growth generator, that the Airport development be leveraged to ensure appropriate and sufficient supporting platforms. These supporting platforms, in a variety of forms, will lead to the creation of more development opportunities, investment, employment and multiplier effects that the Airport and province, requires, to be achieved. The Inyaninga / uShukela Highway Precincts are two such supporting platforms.

4. Site access, description and environmental issues (information provided by the client)

The site that is earmarked for the proposed development comprises two development precincts i.e. Inyaninga and uShukela Highway, approximately 1 200 hectares in extent. The site is zoned undetermined and is currently being used for commercial farming with sugarcane plantations. Most of the site is undulating in nature with some fairly flat parts in Inyaninga.

The site is owned by Tongaat Hulett and the following properties form part of the development site:

- Sub 148 of the Farm Cotton Lands No. 1575
- Rem of Lot 77 No. 1523
- Sub 149 (of 145) of the Farm Cotton Lands No 1575
- Rem of Sub 16 (of 2) of the Farm Buffels Kloof No. 1267
- Sub 9 (of 2) of the Farm Klip Fontein No. 922
- Sub 146 (of 145) of the Farm Cotton Lands No. 1575
- Sub 144 (of 143) of the Farm Cotton Lands No. 1575
- Rem of Sub 248 of the Farm Cotton Lands No. 1575
- Sub 147 of the Farm Cotton Lands No. 1575
- Sub 24 (of 19) of the Farm Klip Fontein No. 922
- Rem of Sub 18 (of 5) of the Farm Klip Fontein No. 922
- Sub 140 of the Farm Cotton Lands No. 1575
- Rem of Sub 14 (of 10) of the Farm Klip Fontein No. 922
- Rem of Sub 3 of the Farm Klip Fontein No. 922
- Sub 15 (of 10) of the Farm Klip Fontein No. 922
- Sub 16 (of 14) of the Farm Klip Fontein No. 922
- Sub 13 (of 3) of the Farm Klip Fontein No. 922
- Rem of Sub 10 (of 2) of the Farm Klip Fontein No. 922
- Rem of Sub 2 of the Farm Klip Fontein No. 922
- Sub 130 of the Farm Buffels Kloof No. 1267
- Sub 15 (of 2) of the Farm Buffels Kloof No. 1267
- Sub 32 (of 29) of the Farm Buffels Kloof No. 1267
- Rem of Sub 13 of the Farm Buffels Kloof No. 1267
- Rem of Sub 6 of the Farm Buffels Kloof No. 1267
- Sub 30 of the Farm Buffels Kloof No. 1267
- Rem of Sub 8 of Lot 49 No. 862
- Sub 11 (of 3) of the Farm Klip Fontein No. 922

Figure 1 illustrates the location of the proposed development.

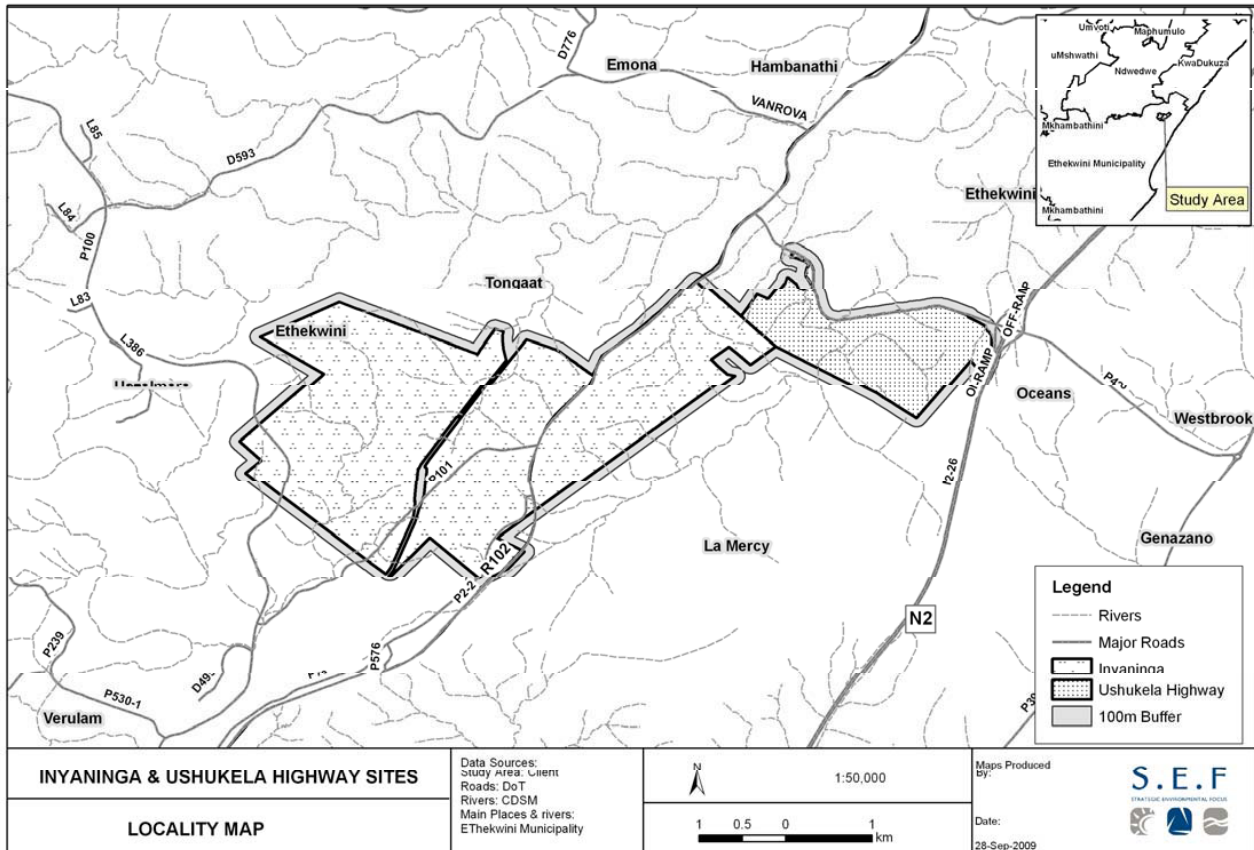


Figure 1. Locality map of the proposed Inyaninga and uShukela Highway development sites.

A few potential issues of concern include the following:

- Impact on groundwater and surface water

Contamination of surface water as a result of construction activities and the consumption of groundwater could lead to a depletion of groundwater as a natural resource. A geotechnical specialist will investigate this in further detail in the EIA phase of the project.

- Impact on wetlands

Potential negative impact as a result of disturbance and destruction of some wetlands. A wetland and freshwater ecosystem specialist will investigate this in further detail in the EIA phase of the project.

- Impact on loss of agricultural land

Loss of good agricultural land through the clearing of all sugar cane and vegetation on site. An agricultural specialist will investigate this in further detail in the EIA of the project.

- Impact of soil compaction

Removal of vegetation and exposure of topsoil could lead to the compaction of soil through construction activity. This could lead to erosion due to construction activities and surface and storm water run-off.

- Impact of loss of flora / vegetation

Should construction activities take place in areas of high ecological significance, this could lead to the fragmentation of the ecosystem and natural processes. The plant species and vegetation types that are worthy of conservation will be destroyed, if careful planning is not implemented. An ecologist will investigate this in further detail during the EIA phase.

- Impact of air pollution

The release of dust from site preparation and construction as well as the emission of fumes from vehicles may pollute the air and impact on the receiving environment.

– Impact of noise

Noise impacts as a result of blasting as well as the construction vehicles accessing the area can lead to an increase in noise levels. Stakeholders may also be concerned that noise will disrupt the area.

– Concerns about waste products

The waste products that will be produced by the development, such as building rubble and domestic waste, may cause environmental impacts if not managed properly, and if allowed to escape into the air, soil or water resources. The potential impacts of each of the waste products will be a source of concern.

– Socio-economic issues

Unemployment and its associated poverty and standard of living are a source of concern in the Tongaat area, as elsewhere in South Africa. Potential socio-economic benefits of the proposed project need to be investigated to ensure that the maximum benefits are obtained. At the same time, influx of potential job seekers to the area may put pressure on existing services and accommodation facilities.

– Impact on existing farm workers

The development will, in its ultimate form, impact existing farm workers and farm operations.

– Impact on existing commercial nodes of Tongaat and Verulam

Concerns have been expressed by local businesses about the potential impact of the development on the existing businesses within Verulam and Tongaat.

– Historic housing proposals at Tongaat South adjacent to Tongaat

Comments have been made in regard to historic housing proposals on a portion of the site adjacent to Tongaat on the R102.

– Visual and amenity impacts

There could be a change of sense of place as a result of the change of land use from green sugar cane land to buildings and infrastructure. Due to the height of the buildings, visual impacts may result not only from the establishment of the new infrastructure, but also due to light at night.

– Safety issues

The construction crew could be compromised unless adequate safety measures are implemented.

– Traffic issues

The development of the site could lead to increased traffic on the surrounding road network.

– Community / Social facilities

There is a strong need to plan for and provide for a sufficient number of schools, clinics, halls, parks, churches and the like – all of which are necessary to ensure a sustainable human settlement.

– Need for involvement of local community

There is a strong need to involve, during all stages, the local community and to include them in the development.

– Need for new housing, economic and employment opportunities

A need has been expressed for new opportunities for housing, economic development and employment.

– King Shaka International Airport / Dube TradePort

Potential linkages to and impact on the new airport and need to ensure synergies and shared use of infrastructure.

– Impact on adjacent landowners

Linkages and impacts upon surrounding landowners.

– Relationship to Municipal Plans

Synergies and / or differences to the Draft Northern Spatial Development Plan and Local Area Plan.

– Infrastructure

Availability of bulk infrastructure such as sewers, water and electricity.

5. Methodology

Two eThembeni staff members inspected the area on 22 and 23 September 2009. We completed a controlled-exclusive surface survey, where 'sufficient information exists on an area to make solid and defensible assumptions and judgements about where [heritage resource] sites may and may not be' and 'an inspection of the surface of the ground, wherever this surface is visible, is made, with no substantial attempt to clear brush, turf, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures that are observed by accident' (King 1978²).

We consulted various provincial databases, including historical, archaeological and geological sources and sourced a concise account of South Africa's pre and postcolonial history (available on request). We assessed the value and significance of heritage resources, as defined in the National Heritage Resources Act 1999 and the criteria contained in Appendix A. Culturally significant landscapes were assessed according to the criteria in Appendix B.

Geographic coordinates were obtained with a handheld Garmin 60 global positioning unit. Photographs were taken with a Nikon Coolpix S200 digital camera. A statement of independence and a summary of our ability to undertake this heritage impact assessment are available on request.

The assumptions and limitations of this heritage impact assessment are as follows:

- We have assumed that the description of the proposed project, provided by the client, is accurate.
- We have assumed that the public consultation process undertaken as part of the Environmental Impact Assessment is sufficient and adequate and does not require repetition as part of the heritage impact assessment.
- Soil surface visibility was moderate to poor. Heritage resources might be present in densely vegetated areas and we remind the client that the Act requires that a developer cease all work immediately and notify Amafa should any heritage resources, as defined in the Act, be discovered during the course of development activities.
- No subsurface investigation (including excavations or sampling) were undertaken, since a permit from Amafa aKwaZulu-Natali is required to disturb a heritage resource.

² King, T. F. 1989. The archaeological survey: methods and uses. Quoted in Canter, L. W. 1996. Environmental impact assessment. Second Edition. New York: McGraw-Hill, Inc.

6. Observations

No development activities associated with the proposed project had begun at the time of our visit, in accordance with heritage legislation. The proposed development site comprises sugar cane lands, as indicated in Figure 2.



Figure 2. Sugar cane plantations in the proposed development area.

We assessed the following categories of heritage resources:

- Living heritage

None were identified within the proposed development area.

- Ecofacts

None were identified within the proposed development area.

- Places, buildings, structures and equipment

None were identified within the proposed development area. However, various buildings dating to the 1960s are located in Station View Road, Tongaat (off Main Road) and Kassie Crescent, Tongaat (off Tesco Drive, on Potties Hill). These former staff cottages are listed on Amafa aKwaZulu-Natali's Conserva database as having heritage significance, which may be considered medium at the local and regional level, at least, for their aesthetic, architectural, historic and social values.

Although they will not be affected directly by the proposed development, the viewscape from these heritage resources could be affected significantly.

- Places to which oral traditions are attached or which are associated with living heritage

None were identified within the proposed development area.

- Historical settlements and townscapes

None were identified within the proposed development area, but see above concerning buildings.

- Landscapes and natural features

The proposed development will alter the landscape permanently and significantly.

- Geological sites of scientific or cultural importance

None were identified within the proposed development area.

- Archaeological and palaeontological sites

None were identified within the proposed development area.

- Graves and burial grounds

None were identified within the proposed development area.

- Movable objects excluding any object made by a living person

None were identified within the proposed development area.

- Battlefields

None were identified within the proposed development area.

- Traditional building techniques

None were identified within the proposed development area.

7. Recommended mitigation measures

- Places, buildings, structures and equipment

Amafa aKwaZulu-Natali's Built Environment Committee should make recommendations to minimise the impact on the viewscape from the historic buildings caused by the proposed development.

8. Recommended monitoring

As deemed appropriate by the Built Environment Committee.

9. Summary of findings in terms of the National Heritage Resources Act 1999 Section 38(3)

- The identification and mapping of all heritage resources in the area affected

Various buildings located close to the proposed development area.

- An assessment of the significance of such resources in terms of the heritage assessment criteria set out in regulations

The buildings have medium heritage significance at the local and regional level, at least, for their aesthetic, architectural, historic and social values.

- An assessment of the impact of development on such heritage resources

The buildings will not be affected directly by the proposed development, but their viewscape could be affected significantly.

- An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development

The benefits of the proposed development outweigh negative impacts on known heritage resources.

- The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources

The client has undertaken such consultation in terms of statutory requirements and retains the relevant documentation.

- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives

Not applicable.

- Plans for mitigation of any adverse effects during and after completion of the proposed development

If permission is granted for the development to proceed, the client is reminded that the Act requires that a developer cease all work immediately and notify Amafa aKwaZulu-Natali should any heritage resources, as defined in the Act, be discovered during the course of development activities.

10. Conclusion

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa aKwaZulu-Natali in fulfilment of the requirements of the National Heritage Resources Act. According to Section 38(4) of the Act the report shall be considered timeously by the Council which shall, after consultation with the person proposing the development, decide –

- whether or not the development may proceed;
- any limitations or conditions are to be applied to the development;
- what general protections in terms of this Act apply, and what formal protections may be applied to such heritage resources;
- whether compensatory action shall be required in respect of any heritage resources damaged or destroyed as a result of the development; and
- whether the appointment of specialists is required as a condition of approval of the proposal.

The client may contact Ms Wesuwe Tshabalala at Amafa's Pietermaritzburg office (telephone 033 3946 543) in due course to enquire about the Council's decision.

APPENDIX A

SIGNIFICANCE AND VALUE OF HERITAGE RESOURCE SITES

The following guidelines for determining site significance were developed by the South African Heritage Resources Agency in 2003. We use them in conjunction with tables of our own formulation (see that for the Southern African Iron Age, below) when considering intrinsic site significance and significance relative to development activities, as well as when recommending mitigatory action.

Type of Resource

Place

Structure

Archaeological Site

Palaeontological Site

Geological Feature

Grave

Type of Significance

1. Historical Value

It is important in the community, or pattern of history

- Importance in the evolution of cultural landscapes and settlement patterns
- Importance in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, Province, region or locality.
- Importance for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, Province, region or community.
- Importance as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period

It has strong or special association with the life or work of a person, group or organisation of importance in history

- Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, Province, region or community.

It has significance relating to the history of slavery

- Importance for a direct link to the history of slavery in South Africa.

2. Aesthetic Value

It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group

- Importance to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
- Importance for its creative, design or artistic excellence, innovation or achievement.
- Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
- In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.

3. Scientific Value

It has potential to yield information that will contribute to an understanding of natural or cultural heritage

- Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
- Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.
- Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.
- Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.

It is important in demonstrating a high degree of creative or technical achievement at a particular period

- Importance for its technical innovation or achievement.

4. Social Value

It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons

- Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
- Importance in contributing to a community's sense of place.

Degrees of Significance

Rarity

It possesses uncommon, rare or endangered aspects of natural or cultural heritage

- Importance for rare, endangered or uncommon structures, landscapes or phenomena.

Representivity

It is important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects

Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class.

Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, Province, region or locality.

Sphere of Significance	High	Medium	Low	
International	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
National	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Provincial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Regional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Local	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Specific Community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-----

What other similar sites may be compared to this site?

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Southern African Iron Age

	Significance		
	- low	- medium	- high
Unique or type site			Yes
Formal protection			Yes
Spatial patterning	?Yes	?Yes	?Yes
Degree of disturbance	75 – 100%	25 – 74%	0 – 24%
Organic remains (list types)	0 – 5 / m ²	6 – 10 / m ²	11 + / m ²
Inorganic remains (list types)	0 – 5 / m ²	6 – 10 / m ²	11 + / m ²
Ancestral graves			Present
Horizontal extent of site	< 100m ²	101 – 1000m ²	1000 + m ²
Depth of deposit	< 20cm	21 – 50cm	51 + cm
Spiritual association			Yes
Oral history association			Yes
➤ Research potential			High
➤ Educational potential			High

Please note that this table is a tool to be used by qualified cultural heritage managers who are also experienced site assessors.

APPENDIX B

THE MANAGEMENT OF CULTURAL LANDSCAPES

The Cultural Landscape Foundation³ defines cultural landscapes as follows:

A cultural landscape is a geographic area that includes resources and natural resources associated with a historic event, activity, or person. Sometimes cultural landscapes are the result of one person or group of people acting upon the land. Other times they are the result of an idea one person or a group had and then created at that time. Cultural landscapes can range from thousands of acres of rural lands to a small homestead with a front yard of less than one acre. They include grand estates, farmland, public gardens and parks, college campuses, cemeteries, scenic highways and even industrial sites.

Four general types of Cultural Landscapes, not mutually exclusive, are:

- Historic Sites
- Historic Designed Landscapes
- Historic Vernacular Landscapes
- Ethnographic Landscapes

Cultural Landscapes can:

- Be man-made expressions of visual and spatial relationships.
- Serve as texts and narratives of cultures.
- Be valuable expressions of regional identity.
- Be works of art that are part of our national heritage.
- Exist in relationship to their ecological contexts.

What are cultural landscapes? by Alice E. Ingerson, Institute for Cultural Landscape Studies⁴

Virtually all landscapes have cultural associations, because virtually all landscapes have been affected in some way by human action or perception. Therefore, the Institute for Cultural Landscape Studies does not use the phrase "cultural landscape" to mean a special type of landscape. Instead, we use "cultural landscape" to mean a way of seeing landscapes that emphasizes the interaction between human beings and nature over time. ICLS also works with many other organizations, some of which have contrasting or even conflicting definitions of "cultural landscape":

individual, special, aesthetic, collective, representative, useful, cultural, related to the arts (consciously designed objects), ideas of enduring value related to the everyday beliefs and practices of a group of people, the work of landscape architects or garden designers, scenery portrayed in a painting or photograph, or that is seen as worth painting or photographing, the land that can be seen from a single vantage point (usually larger than a "site", smaller than a "region"), "nearly everything we see when we go outdoors" — Peirce Lewis 1979

³ Though professional techniques for identifying, documenting, and managing cultural landscapes have evolved rapidly in the past 30 years, the results of the professionals' work often fails to reach the general public. Consequently, many of the places in which we live, work, and play often change considerably—sometimes over years and sometimes overnight! The Cultural Landscape Foundation is the only not-for-profit foundation in America dedicated to increasing the public's awareness of the importance and irreplaceable legacy of cultural landscapes. Through education, technical assistance, and outreach, the Cultural Landscape Foundation aims to broaden the support and understanding for cultural landscapes nationwide in hopes of saving our priceless heritage for future generations. The CLF achieves this mission by: (1) heightening the awareness of those who impact cultural landscapes; (2) assisting those groups and organizations who are working to increase the appreciation and recognition of cultural landscapes; and, (3) developing educational tools for young people to better connect them to their cultural landscape environs.

⁴ From the website of the Institute for Cultural Landscape Studies of the Arnold Arboretum (<http://www.icls.harvard.edu>), © The President and Fellows of Harvard College. The Institute for Cultural Landscape Studies was formed in 1997 to support the emerging community of professionals and volunteers who manage and interpret landscapes with a significant history of human use, particularly in the northeastern United States. These practitioners work with a wide variety of places, from historic gardens and public parks to urban streetscapes, broad agricultural or industrial regions, and conservation or ecological reserves. These landscapes are neither static nor self-contained. Managing them requires active experimentation and continuous learning, to understand how past events and decisions produced today's landscapes, and how today's decisions and events are already producing tomorrow's landscapes. The Institute for Cultural Landscape Studies worked with nonprofit organizations, public agencies, and colleges and universities to capture place-based knowledge about cultural landscapes, and to respond to emerging issues.

The National Park Service and the National Register of Historic Places, as well as organizations that look to these agencies for management models and standards, use the operational definition of "cultural landscape" from the 1996 Secretary of the Interior's . . . Guidelines for the Treatment of Cultural Landscapes:

a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

Historic landscapes, unlike works of art, have to function as contemporary environments — we have literally to enter and become involved with them. — Catherine Howett 1987

Much public discussion about cultural landscapes is about preserving special or historic places. Yet the definition of "special" varies over time, among different cultures, and in different places. A landscape valued by one group may be simply invisible, or even offensive, to another. Next to an official historic district may be a neighborhood that is not eligible for any special treatment but has deep meaning and associations for the people who live there. Mobile homes may be critical to a farm economy, though they jar the sensibilities of visitors expecting to see only white clapboard houses and wooded hillsides from a "scenic overlook" in a state forest. The historic district and the ordinary neighborhood, working farms and protected forests, are all cultural landscapes.

Even when landscape preservation standards are broadened to include a wide range of landscape types, strict preservation is not always an appropriate stance. Designers and communities may also choose to transform existing landscapes or create new ones. Managing cultural landscapes thus involves planning for positive change as well as preventing negative change.

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14 March 2011

Attention: Rory Wilkinson

Heritage Impact Assessment of uShukela Highway Business and Office Park Development, Tongaat, KwaZulu-Natal, South Africa

eThembeni Cultural Heritage undertook a Heritage Impact Assessment of this development in September 2009. However, subsequent to the submission of a single HIA report for the uShukela Highway and Inyaninga developments, dated 25 November 2009, eThembeni was informed by Tongaat Hulett Developments that certain heritage resources had been overlooked during the HIA.

Staff members recorded and assessed these resources and provide descriptions and recommendations for mitigation below. An aerial view of the proposed development and the locations of the heritage resources is included as Figure 1; all other background information is provided in the original report.

1. Description of heritage resources and significance assessment

– Places, buildings, structures and equipment

- A. The estate manager's residence is located within the proposed development area at S29°34.935; E31°8.215. It postdates the 1950s and has been subject to ongoing alteration and refurbishment over the last 25 years (Gavin Ogilvie, Estate Manager - Tongaat Estates pers comm.). It has low heritage significance at the local level for its social value.
- B. The so-called Saunders Residence is located at S29°35.385; E31°7.915, and its precinct is excluded from the proposed development area indicated by Tongaat Hulett Developments. It probably dates to the 1950s and has been subject to

ongoing alteration and refurbishment. It has low heritage significance at the local level for its social value.

- C. Various buildings dating to the 1960s are located in Station View Road, Tongaat (off Main Road) and Kassie Crescent, Tongaat (off Tesco Drive, on Potties Hill). These former staff cottages are listed on Amafa aKwaZulu-Natali's Conserva database as having heritage significance, which may be considered medium at the local and regional level, at least, for their aesthetic, architectural, historic and social values.

– **Graves and burial grounds**

The grave of an unknown person associated with families living in Herrwood is located at S29°35.283; E31°07.335 and immediately adjacent to the proposed development area. Its age is also unknown. All human remains have high heritage significance at all levels for their spiritual, social and cultural values.



Figure 1. uShukela Highway development and heritage resource locations.

2. Assessment of impacts

The proposed change of land use might render the estate manager's residence and the ancestral grave redundant in an industrial/commercial development node. Should the proposed development proceed, the direct impact on both the structure and the grave will be HIGH (Appendix A).

The indirect impact on the Saunders Residence and the historic buildings located in Tongaat will be MEDIUM to HIGH should the proposed development proceed, since their viewscape will be affected significantly.

3. Recommended mitigation measures

The following mitigation measures will reduce the impact of the proposed development on all heritage resources, including potential cumulative impacts, to low significance (Appendix A).

– Places, buildings, structures and equipment

The developer should apply to Amafa's Built Environment Committee for a demolition permit for the estate manager's house, at which time the committee will issue instructions for further mitigation requirements, if any, such as full documentation of the structure.

Amafa's Built Environment Committee should make recommendations to minimise the impact on the viewscape from the Saunders Residence and the Tongaat historic buildings caused by the proposed development.

The developer should apply to Amafa's Built Environment Committee for a permit for any future alterations to the Saunders Residence.

– Graves and burial grounds

The ancestral grave will require exhumation and reinterment in accordance with the procedures described in Appendix B. Management of the grave should be in accordance with Tongaat Hulett Developments' Graves and Cemeteries Policy, which supports all relevant legislation and makes provision for reinterment within existing and proposed memorial gardens on Tongaat Hulett landholdings.

4. Recommended monitoring

None at present, although Amafa might require inspection or monitoring of heritage resources prior to or during demolition or exhumation.

Conclusion

If permission is granted for development to proceed, the client is reminded that the Act requires that a developer cease all work immediately and follow the protocol contained in Appendix C should any heritage resources, as defined in the Act, be discovered during the course of development activities.

Yours sincerely

Len van Schalkwyk and Beth Wahl

Appendix A

Assessment of impacts on heritage resources

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are of an adverse nature and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or
- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative, as implied by the aforementioned examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they must form part of the assessment process. The following assessment criteria have been used to assess the impacts of the proposed development on identified heritage resources:

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific, affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.

Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence (a combination of extent, duration, intensity and the potential for impact on irreplaceable resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	Medium	Intensity is medium and at least two of the other criteria are rated medium.
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all of the other criteria being rated medium or higher.
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.
	High	It is more than 75 % certain that the impact will occur or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	High	High consequence and medium probability. High consequence and high probability.

Appendix B

Management of Graves and Burial Grounds

– Definitions

Grave

The National Heritage Resources Act No 25 of 1999 defines a grave as a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such a place.

The KwaZulu-Natal Cemeteries and Crematoria Act No 12 of 1996 defines a grave as an excavation in which human remains have been intentionally placed for the purposes of burial, but excludes any such excavation where all human remains have been removed.

Burial ground

The term 'burial ground' does not appear to have a legal definition. In common usage the term is used for management purposes to describe two or more graves that are grouped closely enough to be managed as a single entity.

Cemetery

The KwaZulu-Natal Cemeteries and Crematoria Act No 12 of 1996 defines a cemetery as any place

- (a) where human remains are buried in an orderly, systematic and pre-planned manner in identifiable burial plots;
- (b) which is intended to be permanently set aside for and used only for the purposes of the burial of human remains.

– **Protection of graves and cemeteries**

No person may damage, alter, exhume, or remove from its original position any grave, as defined above, without permission from the relevant authority, as detailed in the following table.

Grave type	Relevant legislation	Administrative authority – disinterment	Administrative authority – reburial
Graves located within a formal cemetery administered by a local authority	KwaZulu-Natal Cemeteries and Crematoria Act No 12 of 1996 Human Tissues Act No 65 of 1983	National and / or Provincial Departments of Health	If relocated to formal cemetery – relevant local authority.
Graves younger than 60 years located outside a formal cemetery administered by a local authority and the graves of victims of conflict	KwaZulu-Natal Heritage Act No 4 of 2008 Human Tissues Act No 65 of 1983	Amafa aKwaZulu-Natali, the provincial heritage management organisation	If relocated to private or communal property – Amafa. If relocated to formal cemetery – Amafa and relevant local authority.
Graves older than 60 years located outside a formal cemetery administered by a local authority	National Heritage Resources Act No 25 of 1999 Human Tissues Act of 1983	South African Heritage Resources Agency (SAHRA), the national heritage management organisation	If relocated to private or communal property – SAHRA. If relocated to formal cemetery – SAHRA and relevant local authority.

– **Procedures required for permission to disinter and rebury graves**

The procedure for consultation regarding burial grounds and graves (Section 36 of the National Heritage Resources Act of 1999) is applicable to all graves located outside a formal cemetery administered by a local authority. The following extract from this legislation is applicable to this policy document:

SAHRA or Amafa may not issue a permit for any alteration to or disinterment or reburial of a grave unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

- (a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
- (b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

Any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Services and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

Appendix C

Protocol for the identification, protection and recovery of heritage resources during construction and operation

It is possible that sub-surface heritage resources could be encountered during the construction phase of this project. Many riverine areas have been subjected to repeated inundation in the past, causing layers of silt and soil to bury resources such as archaeological sites and human remains, in particular. Similarly, artefacts and sites are often covered by Aeolian sands in dunefield areas.

The Environmental Control Officer and all other persons responsible for site management and excavation should be aware that indicators of sub-surface sites could include:

- Ash deposits (unnaturally grey appearance of soil compared to the surrounding substrate);
- Bone concentrations, either animal or human;
- Ceramic fragments, including potsherds; and
- Stone concentrations that appear to be formally arranged (may indicate the presence of an underlying burial).

In the event that such indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, the head of archaeology at Amafa aKwaZulu-Natali's Pietermaritzburg office should be contacted; telephone 033 3946 543).
- The South African Police Services should be notified by an Amafa staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.

- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and / or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial heritage impact assessment.

Appendix 23: Architectural Impact Assessment for properties affected by the proposed Tongaat Hulett uShukela Highway Project, Tongaat, eThekweni Metropolitan Council

**Architectural Impact Assessment for properties affected by
the proposed Tongaat Hulett uShukela Highway Project,
Tongaat, eThekweni Metropolitan Council**



Fig 1: Pergola entrance to Herrwood House

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Heritage Impact Assessment of properties affected by the proposed
uShukela Highway Project, Tongaat
Archaic Consulting April 2013

Architectural Impact Assessment for properties affected by the proposed Tongaat Hulett uShukela Highway Project, Tongaat, eThekweni Metropolitan Council

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 - 3.1 Assessment of Herrwood House**
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 - 4. History of Lot 49 and Estate Manager's House**
 - 4.1 Assessment of Estate Manager's House**
 - 4.2 Statement of significance: Estate Manager's House**
 - 5. Conclusions**
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-

1. Introduction

Debbie Whelan of Archaic Consulting was requested by Stephanie Williams of Kerry Seppings Environmental Specialists cc to carry out a Phase II Heritage Impact Assessment on properties located on the parent farms Lot 49 862 and Klipfontein 922. These are identified as being the current Estate Manager's House (S29° 34'935 E31 °8'215) and Herrwood House (S29°35'385 E31°7'915) the latter occupied for some time by the Saunders Family. This instruction was in light of a Phase I Impact Assessment as carried out by eThembeni Cultural Heritage which noted of the two buildings that they dated to around the 1950s, and had low heritage value.

2. Methodology

Debbie Whelan visited the site on 27th March 2013 and inspected both Herrwood and the Estate Manager's House taking photographic documentation. This was supplemented by other information available in the public domain, such as the Land Registers at the Deeds Office in Pietermaritzburg, and the Provincial Archives Repository, also in Pietermaritzburg. Other published materials such as those volumes dealing with the development of the sugar industry and particularly, those volumes published by Christopher Saunders (2007) documenting the history of the Tongaat Hulett Company.

3. History of Klipfontein and Herrwood House

As a property this farmstead dates back to the first alienation of lands to European settlers. Like many similar, Klipfontein 922 was a Dutch farm granted in 1850 to Jan Isaac Meyer. After the Dutch exodus, it was transferred to speculators, in this case E Chiappini and Company. Having entered into business dealings, they sold the property to new partners RM Laffans and WPW Norsworthy in 1857 (Osborn 1964:203) and from thence it was transferred to the notorious Natal Land and Colonisation Company. Three years later, the Remainder of 1078 acres was transferred to James R Saunders who had been employed by the above syndicate as manager of their affairs. In 1896, it was registered in Saunders' own company's name, the Tongaat Sugar Company. Thus much of Klipfontein has been associated with the Saunders family for nearly 150 years.

Herrwood is located on an old subdivision D alienated from the parent farm in 1860 and sold to James Cockburn. It was on this farm that Percy Starling¹, developed the property currently known as Herrwood. He is known to have developed the farm and the homestead. Saunders describes that 'Herrwood farm had been acquired either before or shortly after the flotation of the Tongaat Sugar Company by Percy Starling from a Mr Pelly...Percy Starling was Gertrude Saunder's elder brother, and appears to have done fairly well as he developed the farm 'Herrwood'....the Herrwood farmstead was assumed to have been the home of William Wood, the Reverend Francis Owen's boy interpreter who at the age of 12, was to witness the massacre of Piet Retief...' (Saunders 2007 201).² Starling was a good but hard farmer, and certainly tough on his staff, most of which were indentured Indian labour. Indeed, most archival references to Starling involve complaints to the Protector of Indian Immigrants directed both to him and by him. The earliest mentions of Starling were in 1901, suggesting that he had already been farming for a couple of years by that time.

Saunders notes that 'In January, 1932 Edward was to acquire from his brother in law, Percy Starling, Herrwood farm and house. In regard to this acquisition no money payment was made...There is no further mention or report concerning the acquisition of Herrwood, except that it is known that the house and stables were to be occupied by the Field Manager, Theodore Watson, and an adjacent cottage was to be refurbished and become the bachelor quarters for the newly formed field section of Klipfontein' (Saunders 2007:65). Starling intended to retire in Durban, hence wanting to hand over the farm to his brother-in-law. This property transfer not only indicates that there were dwellings on the site in which Percy Starling lived, but also that it is most likely that the house and outbuildings on the site, including the stables, dated back to at least the beginning of the 20th century.

In his seminal work on Tongaat (1960), Watson, the intended inhabitant of this house, does not elaborate on its state at the time, its extent nor its condition during his tenure, had he lived there. Certainly the 1937 aerial photograph is indistinct as to its extent, but certainly the roofscape appears to differ from today's strongly linear north-west facing house.³

From this point in the research, it is suspected that, at this transaction, the majority of the new works were carried out resulting in the Herrwood House of today. Robert Gwelo Goodman was a good friend of Douglas Saunders, the latter whom assumed the reigns of the company on the death of Edward Saunders in the late 1930s. Not only was Goodman responsible for the noted Hambanathi Village, but also alterations to the house and garden at Amanzimnyama in 1937. He was strongly inspired by the work of Thibault and Anreith, creating an alternative Union Period Cape revival. Ivan Mitford-Barberton, on the other hand, is recorded in both Saunders (2007) and Watson (1960) as having completed the sculptures to the Maidstone Trading Company building, and the Tongaat Market (mid-1940s), as well as sundry other sculptures including the Tongaati Lions and the evocative Tongaat gate posts (Ibid:200 fol.). He does state that 'Vir die Tongaat-suikermaatskappy in Maidstone, Natal het ek drie groot argitetoniese panele (sement) en vyf brons fonteinfigure, asook 'n veselglas-olifant, 'gemaak (Mitford-Barberton 1962:15), suggesting that the third panel could well have been that at Herrwood. Mitford-Barberton was a noted South African Sculptor who lectured at the Michaelis School of Art in Cape Town from the early 1930s. The direct and actual participation of these two artists is unverified at this point in the research.

¹ Edward Saunders married Gertrude Starling of Saffron Walden in 1894 and they moved to live at Inyaninga. Gertrude's brother Percy purchased the farm in 1895.

² The Land Registers note that after Cockburn, the property was transferred to Richard Godden (1862), then to William Berry, to Annie Studd in 1890 and then to Pelly in 1894.

³ An attempt was made at verification of this through establishing who was living in the house in the mid-1930s and the mid-1940s in absence of any clarity in this regard. Unfortunately, the Natal Directories did not provide any evidence as to where Watson or Douglas Saunders was living at the time.

3.1 Assessment of Herrwood House



Fig 2: Herrwood House entrance from south west

The contemporary Herrwood House is a simple Georgian Revival structure located in well established and designed gardens. More specifically, it could be described as 'Gwelo Colonial' after the precedent set by Robert Gwelo Goodman with his buildings built for the Tongaat Hulett Company in the 1930s.⁴ This park-like setting isolates the house from its position in the middle of the canelands north of the King Shaka International Airport. Like many properties settled at the end of the 19th century, it is situated on the top of a low hill which maximises the sea breezes. The house is accessed via a formal driveway that arrives sweeping around the house, giving glimpses of it as one moves around it. This access culminates in a processional covered pergola which ends at the formal entrance to the house. The roof is simply double pitched and covered in Marseilles tiles.

Entrance is via a formal portico to the south east, topped with a pediment which is carved with a scene of Zulu women and children. This is in the style of Ivan Mitford-Barberton, who carried out other sculptures for the Company. Flanking windows to the right are large 9/12 timber sashes, and the substantial entrance door is of a hardwood, perhaps mahogany. To the left, the windows are simple 9 pane timber windows, with the bay below them emphasised with the use of sculpture. A curved wall obscures the building to the right of the entrance, focussing the attention on the entrance portico.



Fig 3: Decorated tympanum, entrance to Herrwood in the style of Ivan Mitford-Barberton.

⁴ Watson 1960:184.

The south west façade is less dramatic, with a simple gable end which has formed into a pediment to echo the entrance using string courses and raking brickwork. Again, fenestration is simple, 9/12 timber sash windows.



Fig 4: South west façade

The northwestern façade that looks out onto the extensive grounds is similarly simply treated. A central predominant gable end collects two 12/16 timber sash windows which flank a central niche in which a sculpture is situated. Pilasters separate these elements creating a rhythm. To the left hand side is a deep, large veranda and to the right French doors opening onto a patio. The north eastern elevation is dominated by veranda and is also heavily shaded.



Fig 5: North western façade

The architectural language throughout is simple and straightforward: it is classically derived, and where pediments are not employed, simple archways are used. However, the symmetry employed in the Georgian idiom is rarely present, rather an intentional asymmetry typical of the early modernists.

The balance of the south eastern façade consists of rear entrances into the kitchen and family rooms. These are informal, compared to the other façades, and this is reinforced by the curving screen wall mentioned in the discussion of the entrance portico.

Internally, the house is restrained and has little diagnostic material to assist in verification of dates. It has most likely been subject to redecoration over the years.



Fig 6: North eastern façade from driveway pergola showing veranda space

Closely associated with the main house are a number of outbuildings. Those close to the house are constructed in the 'Gwelo Colonial' style, and, despite being pastiche in this respect, do contribute to a cohesive architectural fabric. Included in this is the office (below) which is situated in the entrance court to the main house. It is in a Georgian Revival idiom, much downscaled compared with the main house, with cottage pane casement windows and French doors. This is strongly suspected of being of recent construction.



Fig 7: Office at entrance to main house

Certainly of recent construction is a cottage overlooking the putting green to the east of the main homestead. Again, its architectural style is in sympathy, and, even though it is of recent construction, it contributes to the overall architectural and environmental fabric in the spaces created between and within the buildings themselves.

The stable block as mentioned in the property transaction between Starling and Saunders in the early 1930s is still extant, and currently used as garage space. It is of brick, painted white, with a corrugated sheeting roof and elevated ventilator at the apex. The doors are timber stable doors. The building, as with all the buildings on site, is well maintained. The south east elevation reveals that this building sits on an old stone foundation.



Fig 8: Stables gabled end wall



Fig 9: Stables from direction of house



Fig 10: Stables from south east showing stone foundations

There are varieties of staff quarters: a block adjacent to the stable block has an eastern elevation in the vernacular idiom, and a western elevation in a Georgian Revival style, in order to fit into the milieu of the house (see figs 11 and 12 below)



Fig 11: Staff quarters from Labour compound



Fig 12: Staff quarters from main drive

The gardens are well designed, very well established, and consist of a strongly indigenous framework into which selected exotic species such as *Bougainvillea sp* are found. They wrap around the main house isolating it from its surrounding environs. Axes leading to grottoes and focal points in the way of benches reinforce the planned and considered nature of the grounds. Given evidence in the 1937 aerial photographs, these gardens were already established, although perhaps with very different planting plans.



Figs 13 – 17: Front gardens of the homestead Herrwood

A series of labour cottages is found down slope from the eastern side of the house, below the stables and staff quarters. These are utilitarian structures, and form a functional part of an historically operating farmstead. They are of reasonably recent construction and fairly typical examples of a building type of which many examples still exist.



Fig 18 and 19: Labour cottages below stable block

3.2 Statement of significance: Herrwood House and surrounds

Herrwood House is a good example of a sugar cane estate farmhouse constructed in a Georgian style, termed what is loosely defined as ‘Gwelo Colonial’ after Robert Gwelo Goodman, the artist and architect that designed much of the fabric of the Tongaat village in the early 1930s. It is simple architecture, and, although its provenance is not established at this point, it is significant from a variety of aspects:

- The property is strongly associated with both Percy Starling and the Saunders family who were and are pivotal members in the establishment of the sugar industry in South Africa.
- Furthermore, there are possibilities of association with Wood, an interpreter to the Zulu and present at the killing of Piet Retief and his men.
- It is most likely associated with both Robert Gwelo Goodman (design of building) and Ivan Mitford Barberton (sculptures on the tympanum of the main entrance to the house). Both artists carried out well publicised and similar work on public buildings in Tongaat Village. If the sculptures are, indeed by Ivan Mitford-Barberton, then this places the house as an important part of the South African national historical and technical record.
- The gardens are well established
- The new buildings, although pastiche and historicist, are carefully designed to blend into the fabric of the homestead and thus create uninterrupted spatial systems that complement the whole of the homestead.

Significance	Local	regional	national	International
Architectural	High	Medium	Medium	Low
Social	High	High	Medium	Low
Technical	High	High	High	Low
Historical	High	High	Low	Low
Scientific	Low	Low	Low	Low

Recommendations:

Demolition of this property together with its surrounding gardens is not an option. The author strongly recommends reuse of the entire site in the development, as prestige office space or corporate headquarters. Reuse of the house in such a format is very possible. Should alterations be required to the homestead and its outbuildings, it is strongly recommended that the services of an appropriately qualified heritage architect be retained to carry out the work. It is recommended that the outbuilding remain as extant, since they form an important part in the creation of the milieu of house and garden. Should demolition permits for the labour cottages below the stable block be sought, it is in the opinion of the author that this could be considered. Furthermore, it is also suggested that the brick paving leading from the main road to the house be retained in the new development in memory of the house in context with its landscape.



Fig 20: Brick paved access road to Herrwood

4. History of Lot 49 and Estate Manager's house

This house is situated on Subdivision 8 of lot 49 862. The parent farm was originally granted to Edward Chiappini, as was Klipfontein, in 1848. As with Klipfontein, it was also associated with Nosworthy and Laffan as well as the Natal Land and Colonisation Company, suggesting early procurement as speculative. Ultimately, after much vacillation between the above parties, Subdivision 8 was alienated in 1863 as Subdivision G to Landsberg, Hoffman and Company, still speculative. Again, it was transferred to the Natal Land and Colonisation Company until eventually, in 1886 as subdivision P found permanent tenure with Jonathan Peel. In 1896 the Natal Lands and Colonisation Company transferred the remainder to Tongaat Sugar Company. Given the generic property transfer, it is suspected that this house originates in early to mid 20th century as an estate manager's house. Even though the topocadastral maps refer to this property as 'Tongaat', it is patently not Tongaat House which from photographic evidence is much more substantial.

4.1 Assessment of Estate Manager's house

The Estate Manager's house is an example of a much altered very utilitarian cottage vernacular, with a hipped/gambrel corrugated sheeting and partly enclosed veranda. Like Herrwood, this house is situated in an established garden setting, and, as such is intricately connected to its environment. It was possibly constructed in the 1920s, but little diagnostic material still exists to assist in dating it.

The building is of masonry construction which has occasional header courses visible through the bagging and painting. Sections have been plastered in smooth plaster. The French doors have been replaced with Meranti cottage pane doors, most of the windows are standard steel casement types, or timber. The veranda has been tiled in porcelain tiles. Little forethought has gone into the ongoing maintenance of the house, resulting in a series of accretions. Internally, the ceiling is standard, gypsum boarding with timber cover strips. The floors are parquet in good condition.



Fig 21: North-west view of Estate Manager's House



Fig 21: Established garden



Fig 22: View from the north



Fig 23: Accretions facing east



Fig 24: South west corner



Fig 25: Outbuilding

Estate Manager's House	Local	regional	national	International
Architectural	low	low	low	low
Social	low	low	low	low
Technical	low	low	low	low
Historical	low	low	low	low
Scientific	low	low	low	low

The Estate Manager's House is a much altered example of a vernacular veranda cottage. It has little heritage significance on any level, and, should demolition be requested, it is the opinion of the author that this can be granted. The gardens that surround it, however, could possibly be included in the new development.

5. Conclusions

Recommendations for Herrwood House and environs:

Demolition of this property together with its surrounding gardens is NOT an option. The author strongly recommends reuse of the entire site in the development, as prestige office space or corporate headquarters. Reuse of the house in such a format is very possible. Should alterations be required to the homestead and its outbuildings, it is strongly recommended that the services of an appropriately qualified heritage architect be retained to carry out the work. It is recommended that the outbuildings remain as extant, since they form an important part in the creation of the milieu of house and garden. Should demolition permits for the labour cottages below the stable block be sought, it is in the opinion of the author that this could be considered. Furthermore, it is also suggested that the brick paving leading from the main road to the house be retained in the new development in memory of the house in context with its landscape.

Recommendations for Estate Manager's House House and environs

The Estate Manager's House is a much altered example of a vernacular veranda cottage. It has little heritage significance on any level, and, should demolition be requested, it is the opinion of the author that this can be granted. The gardens that surround it, however, could possibly be included in the new development.

6. References

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- Mitford-Barberton, I. 1962. *Ivan Mitford-Barberton : beeldhouer*. Cape Town: HAUM
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- Natal Directory 1945
- <http://www.bowker.info/IvanMitford-Barberton.htm> (accessed 14/04/2013)

KwaZulu-Natal Provincial Archives Repository

Protector of Indian Immigrants files

- II 1/104 I2140/1901 Letter from Percy AN Starling, Herrwood Tongaat: reports that Boodhoo 66359 deserted again and asks if he could be transferred.
- II 1/108 I866/1902 PAA Starling, Herrwood, Tongaat: Applies for a refund of the instalment \$3-10-0 paid on Mangray 76669 who died on November 29, 1900.
- II 1/114 I2722/1902 Percy Starling, Herrwood, Tongaat: Reports desertion of Mary Reddy 94748.
- II 1/117 I902/1903 Percy AN Starling, Herrwood, Tongaat: Reports that Puran Lall 96250 (Male) and Parbati 95978 (Female) deserted.
- II 1/127 I993/1904 Percy A Starling, Herrwood Tongaat: Concerning the punishment of Kandasamy and discipline in general.
- II 1/129 I1739/1904 Percy AV Starling, Herrwood, Tongaat: Indians No. 83680, married and one child registered, and no. 88407, single, are willing to return to India: forwards relative form duly signed.
- II 1/140 I2766/1905 Percy AA Starling, Herrwood, Tongaat: Asks on behalf of Garappah 110661 and Dalamah No. 110651 if their wives Chamba Tenki and Soorama are fit to be sent out to the estate.
- II 1/140 I2778/1905 Percy AA Starling, Herrwood, Tongaat: Reports that Narraidu No. 94747, Sorriah No. 110374, Per Saib No. 110454 and Venketsamy No 110292 deserted.
- II 1/127 I1123/1904 Complaints by Ilahi No. 102089 indentured to Percy AN Starling of Tongaat. Wishes to be transferred where there is no sugar cane.

Master of the Supreme Court Estates

- MSCE 29523/1939 Saunders, Edward George Arthur. (S/S Gertrude Elizabeth; Born Starling).
- MSCE 0 2323/1953 Saunders, Gertrude Elizabeth. Born Starling. Born in Saffron Walden, England. Pr/Sp Saunders, Edward George

Principal Veterinary Surgeon

- PVS 179 1232/1912 Government Veterinary Officer Harber, Durban: Reports an outbreak of Epizootic Lymphangitis on Mr. Starling's Farm "Herwood", Tongaat, Inanda Division.

Killie Campbell Collections

Anonymous. 1970? *Introduction to the North Coast, especially Victoria County which formerly extended from the Umgeni River to the Tongaat River*. Unpublished manuscript

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Appendix 24: Environmental Management Programme

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

FOR THE CONSTRUCTION OF THE USHUKELA HIGHWAY DEVELOPMENT
(EIA no. 12/12/20/2013)



July 2013

KERRY SEPPINGS
ENVIRONMENTAL



MANAGEMENT
SPECIALISTS

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Members: K.A. Stanton (Director)