



DRAFT BASIC ASSESSMENT REPORT
PROPOSED RESIDENTIAL DEVELOPMENT ON THE OLD
DAIRY SITE, HILTON COLLEGE, HILTON, UMGENI
MUNICIPALITY, UMGENI LOCAL MUNICIPALITY,
KWAZULU-NATAL.

July 2017

Draft for Public Connect

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Verification	Capacity	Name	Signature	Date
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Authorised by	Executive Associate	M. van Rooyen		07/07/2017

Executive Summary

Terratest (Pty) Ltd has been appointed by Gwens Stream Estates to undertake the environmental services required for the proposed construction works associated with the development of a residential estate at Hilton College, Hilton, KwaZulu-Natal. The site proposed for development is known as "The Old Dairy site", as historically, the site was operated as such. The selection of the proposed development site has been informed from the outcomes of several strategic and planning initiatives which have been commissioned by the Board of the Hiltonian Society since 2005 and in March 2010 the land use proposals were adopted in the Municipal Integrated Development Plan (IDP). In April 2010 the National Department of Agriculture released the proposed development site, amongst others areas on the estate, from the provisions of Act 70 of 1970 (Subdivision of Agricultural Resources) which permits the Applicant to subdivide and develop the site for its intended use for a residential estate.

The proposed development is located on Portion 10 of the Farm Hilton No. 12304 which is approximately 174.63 hectares in extent. A proposed sub-division of 42.7 hectares of the aforementioned property to form Portion 167 (of 10) has been approved by the uMngeni Municipality and zoned as Urban Transition 1. This approval will be registered with the Surveyor General once the necessary environmental approvals have been obtained by the Applicant. This process will be concluded in the Town Planning Application which is currently underway and will be submitted to the uMngeni Local Municipality once a decision on Environmental Authorisation has been obtained.

The proposed development footprint located on the abovementioned property (Portion 10 of the Farm Hilton 12304) is approximately 32.7 hectares in extent and will cater for 81 residential stands, a club house located on stands 16 & 17, and associated access and service infrastructure. Of the aforementioned development footprint area, approximately 19.8 hectares has been cultivated within the past 10 years and approximately 12.9 hectares comprises indigenous vegetation which has not been cultivated within the preceding 10 years. The proposed residential stands are on average approximately 2 150 square metres in extent.

Electrical provision will be via Eskom supply, potable water will be provided by the existing treatment works at Hilton College and the sewage will be reticulated from the site to the existing Waste Water Treatment Works at Hilton College. No activities listed in terms of the NEMA: EIA Regulations of 2014, as amended 07 April 2017 are triggered for the sewer treatment and reticulation requirements, nor for the provision and reticulation of potable water to the site. A Water Use License Application (WULA) will however be required from the Department of Water and Sanitation for the abovementioned sewer and potable water services.

The proposed entrance to the site will be off the existing D494. Access along the D494 will be upgraded to black top and the intersection of the D494 and Hilton Avenue will be upgraded to a Type B2 intersection, to a standard which meets Department of Transport design requirements. The Public Participation Process involves consultation with the relevant authorities, non-government organisations (NGO's), neighbouring landowners, community members and other identified Interested and Affected Parties (IAPs). Newspaper advertisements were published at the outset of the project to inform the general public of the BA Process. An advertisement was published in English on 6 May 2016 in The Witness and again on the 6 July 2017 in the Witness and the Ilanga. Site notices were erected on and surrounding the site. A Public Meeting will be held at Hilton College on the 1st August 2017 at 5pm, notification letters confirming the exact venue will be sent out to registered interested and affected parties a week prior to the meeting taking place.

A Heritage Impact Assessment was undertaken by Active Heritage to determine if any items of cultural or historical value would be impacted on during construction. A baseline Wetland and Riparian Identification and Delineation Assessment was undertaken by Terratest (Pty) Ltd to determine the impact that the proposed construction would have on surrounding wetlands and watercourses. A Biodiversity Assessment was undertaken by Terratest (Pty) Ltd to determine the impact that the proposed construction would have on

surrounding natural environment. No fatal flaws were identified by any of the Specialist Studies provided that certain mitigation was put in place. Several key recommendations were also made in order to sustain and preserve the identified wetland systems and biodiversity features on the site. A Visual Impact assessment and an Agricultural Potential Assessment were carried out; no fatal flaws were identified. Furthermore, a Water Use Licence Application will need to be undertaken as the proposed construction falls within 500m of three wetland systems. This process is currently being undertaken by Roy Mottram and Associates.

The Draft Basic Assessment (BA) Report and Environmental Management Programme (EMPr) have been circulated to IAPs for review and comment as part of the legislated 30-day public participation process. Comments received on the Draft BA Report and EMPr will be consolidated and included into a Final BA Report, which will be submitted to the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for a decision on Environmental Authorisation.

This BA Report has been drafted in accordance with the EIA Regulations, 2014 as amended 07 April 2017 and adheres to the requirements contained in Appendix 1 of GNR 326, as noted in Table 1.

TABLE 1: Content of a BA Report (2014 EIA Regulations)

2014 EIA Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BAR
Appendix 1, Section 3 (a)	Details of – (i) The EAP who prepared the report; and the expertise of the EAP; and (ii) The expertise of the EAP, including a curriculum vitae.	Section 2 & Appendix 1
Appendix 1, Section 3 (b)	The location of the activity, including – (i) The 21-digit Surveyor General code of each cadastral land parcel; (ii) Where available, the physical address and farm name; (iii) Where the required information in items (i) and (ii) is not available, coordinates of the boundary of the property or properties	Section 3
Appendix 1, Section 3 (c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Section 3
Appendix 1, Section 3 (d)	A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered; (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 4
Appendix 1, Section 3 (e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 5
Appendix 1, Section 3 (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Section 6
Appendix 1, Section 3 (h)	A full description of the process followed to reach the proposed preferred activity, site and location within the site, including- (i) Details of all alternatives considered; (ii) Details of the Public Participation Process undertaken in terms of Regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) The impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which the impacts- (aa) Can be reversed; (bb) May cause irreplaceable loss of resources; and (cc) Can be avoided, managed, or mitigated. (vi) The methodology used in deterring and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographic, physical, biological, social, economic, heritage and cultural aspects; (viii) The possible mitigation measures that could be applied and level of residual risk; (ix) The outcome of the site selection matrix;	Section 7 Section 8 Section 8 Section 9 Section 11 Section 11 Section 12 Section 13 Section 13

2014 EIA Regulations	Description of EIA Regulations Requirements for BA Reports	Location in the BAR
	(x) If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and; (xi) A concluding statement indicating the preferred alternatives, including preferred location of the activity.	Section 13 Section 13
Appendix 1, Section 3 (i)	A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including- (i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.	Section 11
Appendix 1, Section 3 (j)	An assessment of each identified potentially significant impact and risk, including- (i) Cumulative impacts; (ii) The nature, significance and consequences of the impact and risk; (iii) The extent and duration of the impact and risk; (iv) The probability of the impact and risk occurring; (v) The degree to which the impact and risk can be reversed; (vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) The degree to which the impact and risk can be avoided, managed or mitigated.	Section 12
Appendix 1, Section 3 (k)	Where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report.	Section 10
Appendix 1, Section 3 (l)	An environmental impact statement which contains- (i) A summary of the key findings of the environmental impact assessment; (ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.	Section 14
Appendix 1, Section 3 (m)	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr.	Section 15
Appendix 1, Section 3 (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation.	Section 15
Appendix 1, Section 3 (o)	A description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	-
Appendix 1, Section 3 (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Section 15
Appendix 1, Section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	Section 16
Appendix 1, Section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.	Section 18
Appendix 1, Section 3 (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	-
Appendix 1, Section 3 (t)	Where applicable, any specific information required by the Competent Authority.	-
Appendix 1, Section 3 (u)	Any other matter required in terms of section 24(4) (a) and (b) of the Act.	-

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1 INTRODUCTION

Terratest (Pty) Ltd has been appointed by Gwens Stream Estates (Pty) Ltd to undertake the environmental services required for the proposed construction works associated with the development of a residential estate at Hilton College, Hilton, KwaZulu-Natal. The site proposed for development is known as “The Old Dairy site”, as historically, the site was operated as such.

The proposed development is located on Portion 10 of the Farm Hilton No. 12304 which is approximately 174.63 hectares in extent. A proposed sub-division of 42.7 hectares of the aforementioned property to form Portion 167 (of 10) has been approved by the uMngeni Municipality and zoned as Urban Transition 1. This approval will be registered with the Surveyor General once the necessary environmental approvals have been obtained by the Applicant. This process will be concluded in the Town Planning Application which is currently underway and will be submitted to the local Municipality once a decision on Environmental Authorisation has been obtained.

Extensive pre-planning and assessment work undertaken by the Applicant has informed the selection of the site proposed for development and this is elaborated on further in other sections of this report. In summary the selection process for the proposed development site was informed from the outcomes of several strategic and planning initiatives which have been commissioned by the Board of The Hiltonian Society since 2005. In March 2010 the land use proposals were adopted in the Municipal Integrated Development Plan (IDP) and in April 2010 the National Department of Agriculture released the proposed development site, amongst other areas on the estate, from the provisions of Act 70 of 1970 (pertaining to the Subdivision of Agricultural Resources) which permits the Applicant to subdivide and develop the site for its intended use for a residential estate.

The proposed development footprint located on the abovementioned property (Portion 10 of the Farm Hilton 12304) is approximately 32.7 hectares in extent and will cater for 81 residential stands, a club house located on stands 16 & 17, and associated access and service infrastructure. Of the aforementioned development footprint area, approximately 19.8 hectares has been cultivated within the past 10 years and approximately 12.9 hectares comprises indigenous vegetation which has not been cultivated within the preceding 10 years. The proposed residential stands are on average approximately 2 150 square metres in extent.

Electrical provision will be via Eskom supply, potable water will be provided by the existing treatment works at Hilton College and the sewage will be reticulated from the site to the existing Waste Water Treatment Works at Hilton College. No activities listed in terms of the NEMA: EIA Regulations of 2014, as amended 07 April 2017 are triggered for the sewer treatment and reticulation requirements, as well as for the provision and reticulation of potable water to the site. A Water Use License Application (WULA) will, however, be required from the Department of Water and Sanitation for the abovementioned sewer and potable water services. The Applicant in this regard has appointed Dr Roy Mottram and Associates to undertake the WULA process which is currently underway.

The proposed entrance to the site will be off the existing D494. The access along the D494 will be upgraded to black top from the entrance of the development to the intersection of the D494 and Hilton Avenue. The intersection of the D494 & Hilton Avenue will be upgraded to a Type B2 intersection, to a standard which meets Department of Transport design requirements.

As per the amended 2014 EIA Regulations, dated 7 April 2017, a BA Process must be undertaken in such a manner that the environmental outcomes, impacts and residual risks of the proposed Listed Activity being applied for are noted in the BA Report and assessed accordingly by the Environmental Impact Assessment Practitioner (EAP). In this regard, the requirements of the BA Process are noted in the amended EIA Regulations (2014), Listing Notice 1, Appendix 1 of GNR 326 and are consequently adhered to in this report (please refer to Table 1 of the Executive Summary). For reference purposes, it is important to note that the Listed Activities in terms of GN R327 & R324 of the amended EIA Regulations, 2014, applicable to this proposed project pertain only to the “development”/construction of infrastructure associated with the

proposed residential development. In this regard, this BA Report focuses to a large extent only on construction phase impacts and mitigation measures.

Ultimately, the outcome of the BA Process is to provide the Competent Authority, the Department of Economic Development, Tourism and Environmental Affairs (EDTEA), with sufficient information to provide a decision on the Application in terms of Environmental Authorisation (EA), in order to avoid or mitigate any detrimental impacts that the activity may impose on the receiving environment.

2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

As noted previously, Terratest (Pty) Ltd has been appointed by Gwens Stream Estates to undertake the BA Process for the proposed Hilton Dairy residential development, uMngeni Local Municipality, KwaZulu-Natal. Details of the qualified EAPs involved in undertaking the BA Process are noted in Table 2 and the Curriculum Vitae (CV) of the relevant EAPs attached as Appendix 1.

TABLE 2: Details of the EAP

EAP	Qualifications & Professional affiliations	Experience at environmental assessments	Contact details
Mr J. Richardson Environmental Scientist	BSc. Hons Environmental Management, IAIAAsa	9 years	Terratest (Pty) Ltd Tel: (033) 343 6789 Email: richardsonj@terratest.co.za
Mrs T. Strydom Environmental Consultant	BSocSc. Geog and Environmental Management, IAIAAsa	7 years	Terratest (Pty) Ltd Tel: (033) 343 6789 Email: strydomt@terratest.co.za

3 LOCATION OF THE ACTIVITY

The proposed activity is located within Ward 6 of the uMngeni Local Municipality on Portion 10 of the Farm Hilton No. 12304. The 21-digit Surveyor General (SG) code for the site is as follows: NOFT00000001230400010.

Although not listed in terms of the amended NEMA 2014 Regulations EIA, dated 7 April 2017, the potable water and sewage pipelines to supply the proposed development bisects the following additional properties, also owned by the applicant:

1. Portion 2 of the Farm Hilton No. 12304 (Sewer and Water Reticulation) – SG 21 Digit Number - NOFT00000001230400002
2. Remainder of the Farm Ongegend No. 795 (Sewer and Water Reticulation) – SG 21 Digit Number - NOFT00000000079500000

A Locality Map is included as Figure 1. A Layout Plan is included as Figure 2.

(Please see Figures 1 and 2 attached in Appendix 3 and service drawings in Appendix 4)

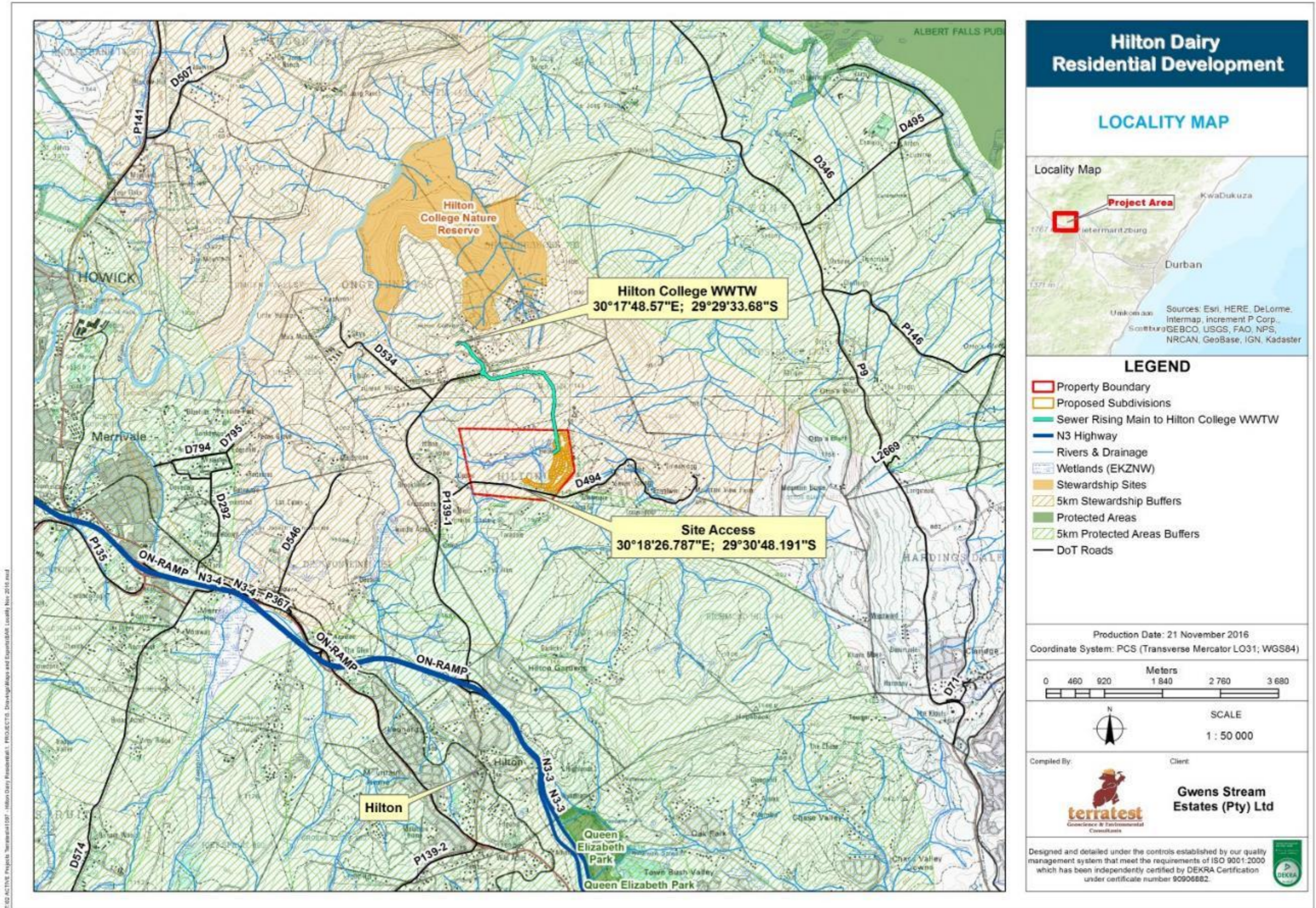


FIGURE 1: Locality Map

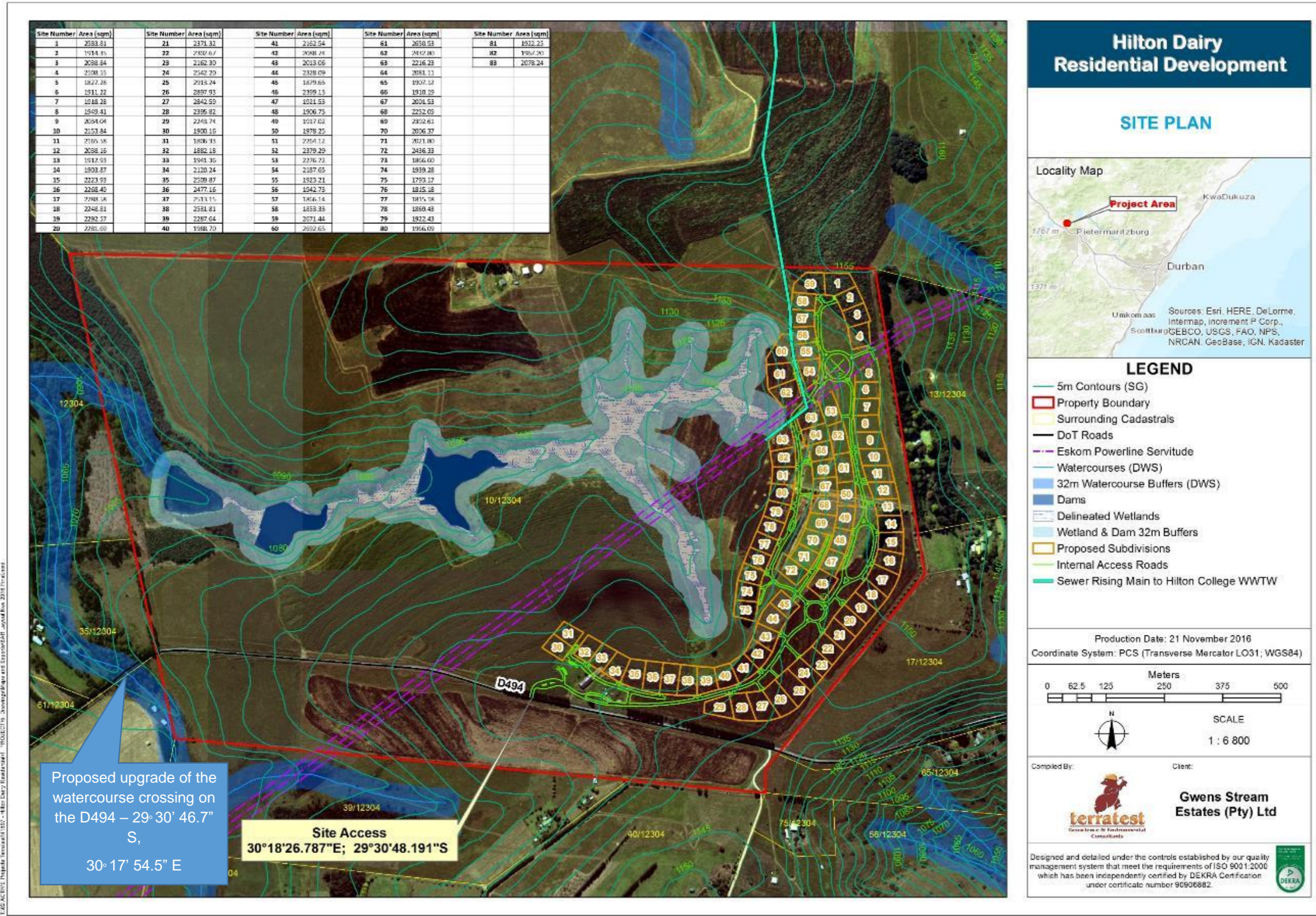


FIGURE 2: Site Layout Plan

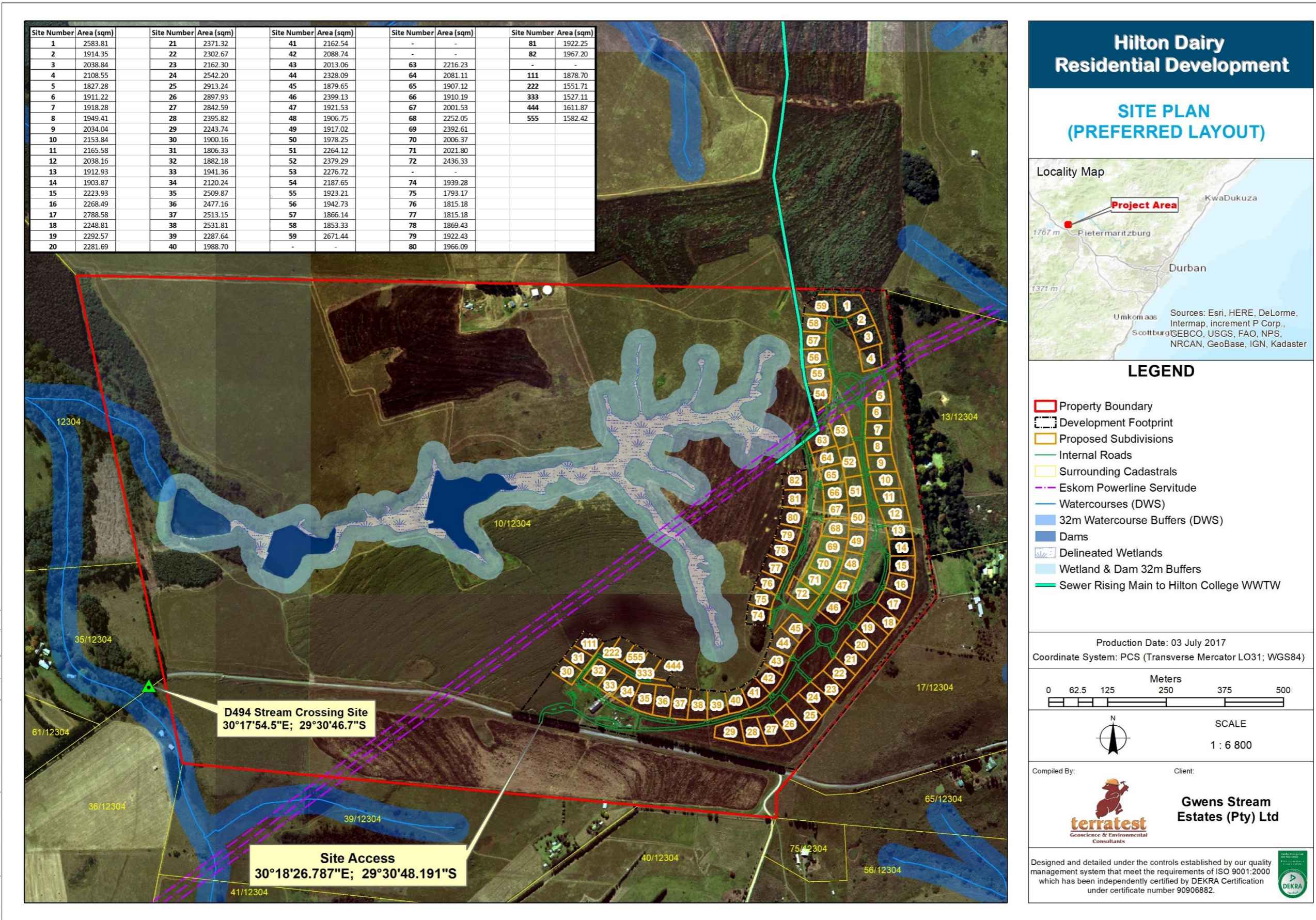


FIGURE 3: Preferred Site Layout Plan

4 ACTIVITY DESCRIPTION

4.1 APPLICABLE LISTED ACTIVITIES

In terms of the Environmental Impact Assessment (EIA) Regulations (2014), dated 7 April 2017, promulgated in terms of the National Environmental Management Act, 1998 (NEMA), certain Listed Activities are specified for which either a Basic Assessment (GN R 327 and 324) or a full Scoping and EIA (GN R 325) is required.

The following Listed Activities in Government Notice (GN) R 327 (Listing Notice 1) and 324 (Listing Notice 3) requiring a Basic Assessment (BA) Process are applicable to the proposed residential development:

- **GNR 327, Item 12:** “The development of (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse and (c) if no development setback line exists, within 32 metres of a watercourse, measured from the edge of a watercourse.”
 - *This Listed Activity is relevant as the proposed upgrade/ black topping of the D494 crosses a watercourse crossing at 29° 30' 46.7" S; 30° 17' 54" E.*
- **GNR 327, Item 19:** “The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.”
 - *This Listed Activity is relevant as the proposed upgrade/ black topping of the D494 crosses a watercourse crossing at 29° 30' 46.7" S; 30° 17' 54.5" E.*
- **GNR 327, Item 24:** “The development of (i) A road for which an Environmental Authorisation was obtained for the route determination in terms of Activity 5 in Government Notice 387 of 2006 or Activity 18 in Government Notice 545 of 2010; or (ii) A road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding- (a) Roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or (b) Roads where the entire road falls within an urban area.”
 - *This Listed Activity is relevant as the proposed internal access roads with shoulders are likely to be more than 8m wide in certain areas.*
- **GNR 327, Item 27:** “The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) The undertaking of a linear activity; or (ii) Maintenance purposes undertaken in accordance with a maintenance management plan.”
 - *This Listed Activity is relevant as the proposed development footprint is approximately 32.7 hectares, of this, approximately 60 percent (19.80 hectares) has been transformed to croplands / pastures in the preceding 10 years. As such, only 12.9 hectares of indigenous vegetation would be cleared as a result of the proposed development triggering the above Listed Activity.*
- **GNR 327, Item 28:** “Residential, mixed, retail, commercial, industrial or institutional developments where land was used for agriculture or afforestation on or after 01 April 1998 and where such development: (ii) Will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; Excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

- *This Listed Activity is relevant as the proposed property has since 01 April been used for agricultural activities and approximately 19.80 hectares of agricultural land is proposed for residential development, outside of the urban edge. It must be noted that the National Department of Agriculture has already released the entire property from the provisions of Act 70 of 1970 which governs the subdivision of agricultural land, and the Local Municipality has incorporated the proposed development site into the Town Planning Scheme.*
- **GNR 324, Item 4:** “The development of a road wider than 4 metres with a reserve less than 13,5 metres (d) In KwaZulu-Natal: x. Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; xii. Outside urban areas: (aa) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.”
 - *This Listed Activity is relevant as the roads wider than 4m will be constructed and the proposed site falls within 5km of the Hilton College Nature Reserve and James Wakelin Reserve, both of which are Ezemvelo KZN Wildlife Stewardship Sites protected in terms of NEMPAA. Further, the southern tip of the proposed development falls within 5km of the Queen Elizabeth Park Protected Area.*

Based on the above proposed activities a BA Process is required. The associated Environmental Authorisation (EA) Application form is attached to this Report as Appendix 2 and an organogram of the Basic Assessment EIA Process is provided in Figure 4 below for reference purposes.

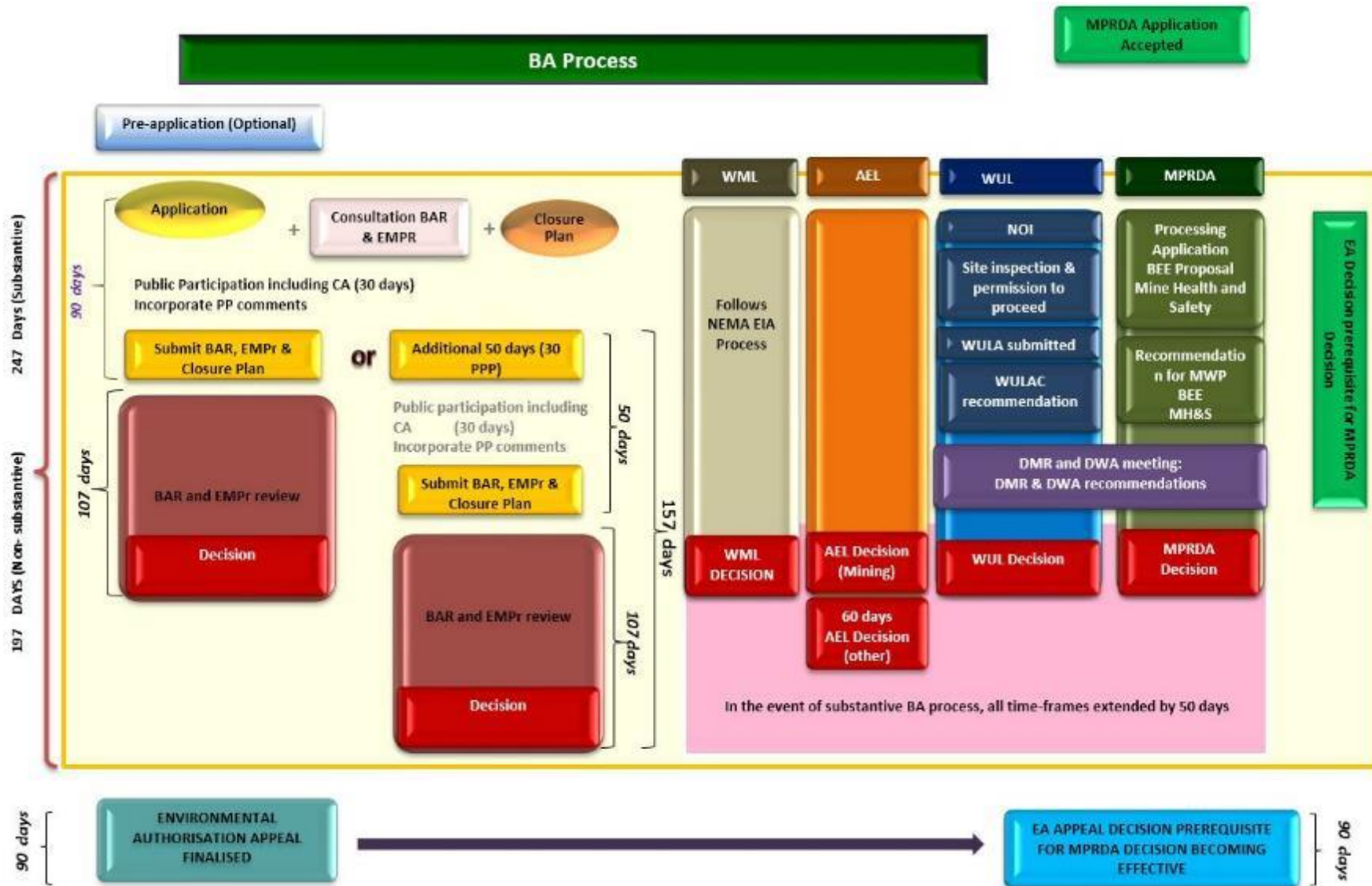


FIGURE 4: Basic Assessment EIA Process Organogram

4.2 DESCRIPTION OF THE ACTIVITY

4.2.1 Project Overview

Gwens Stream Estates propose on Portion 10 of the Farm Hilton No. 12304, the construction of an 81-unit residential estate with associated club house and infrastructure. The project is located in Hilton, uMngeni Local Municipality, KwaZulu-Natal. The proposed site is located within the extended grounds of the Hilton College Estate and is commonly known as the "Old Dairy Site".

The property on which the development is proposed is approximately 174.63 hectares in extent and the proposed development footprint is approximately 32.7 hectares and will cater for 81 residential stands, a club house located stands 16 & 17, and associated access and service infrastructure. Of this development footprint approximately 19.8 hectares has been cultivated since 01 April 1998 and approximately 12.9 hectares comprise indigenous vegetation that has not been cultivated within the preceding 10 years but has been utilised for grazing and hay bailing. The proposed entrance to the site will be off an existing farm access on the D494. Access along the D494 to the intersection of Hilton Avenue will be upgraded to black top, to a standard which meets Department of Transport requirements.

Co-ordinates of the proposed development site are as follows: 29°30'37.59" S; 30°18'52.29" E. The proposed watercourse crossing upgrade on the D494 is located at 29°30'46.7" S, 30°17'54.5" E. Please see The Dairy at Hilton Development Bulk and Internal Services Engineering Report attached in Appendix 8.

The entire site falls within 5km of the Hilton College Nature Reserve and James Wakelin Reserve, both Ezemvelo KZN Wildlife Stewardship Sites, and the southern tip of the property falls within 5km of the Queen Elizabeth Park Protected Area.

Existing Services:

- There are no existing bulk infrastructure services on site. However, water will be sourced from the supply dams on the Hilton Estate, purified and utilised for the proposed development.
- There are no existing bulk infrastructure services on site as the surrounding neighbourhood, including the current farm buildings, all function using on-site sanitation in the form of septic tanks and soakaways. The proposed development will, however, be linked into the existing waste water treatment facility located on the Hilton College Estate, the capacity of which is to be increased to manage this additional volume. The increase in capacity does not trigger listed activities in terms of the NEMA: EIA Regulations of 2014, as amended.
- There are no existing storm water systems in place, except for rudimentary drainage near the farm buildings running into the existing watercourse. A stormwater management plan has been provided to manage stormwater from the proposed development.
- There is an existing farm road on the eastern boundary of the property which joins on to the district road (D494). The farm road is situated within an informal unregistered right of way area between the two adjacent properties. This road is not fit for access for the development. Therefore, the proposed development will be accessed off the existing gravel District Road, D494 via the provincial road P139-1 (Hilton Avenue). The D494 and associated intersection with the P139 will be upgraded and black top surfaced from the intersection to the access of the proposed development. This will include upgrading and widening of the existing stream crossing on the D494.

The proposed project entails the establishment of the following:

- 81 freehold residential stands on a development footprint of 26.02 hectares;
- 2 stands for clubhouse facilities;

- Black topping and upgrading of the D494 from the site access to the intersection with the P139, including upgrading and widening of the existing D494 watercourse crossing located at 29° 30' 46.7" S, 30° 17' 54.5" E;
- Establishment of a conservation area on the remaining portions of the property which includes areas surrounding the watercourse and wetland areas, and the sliver of land on the opposite side of the D494 which also forms part of the property and provides an informal ecological corridor to the James Wakelin Stewardship Site; and
- Bulk services in the form of:

- **Bulk Road Network:**

Accessed off the existing gravel District Road, D494 via the provincial road P139-1. The D494 will be upgraded to black top from the entrance to the development to the intersection of the P139 -1, the watercourse crossing on the D494 in this areas will be widened and upgraded, and the intersection of the D494 and Hilton Avenue will be upgraded to a Type B2 intersection. All upgrade specifications will be in accordance with DoT requirements.

- **Internal Roads:**

All internal roads will be constructed to suit the anticipated traffic flow through the development, with additional parking provided near the Guardhouse for visitors. The pavement design will be a conventional municipal standard Category UC road for granular bases with an anticipated design bearing capacity ES1 0,3-1,0 x 106 within a wet region (Red Book Extract). This will assess in further stages of design, including the following criteria:

<i>Internal Roads</i>	<i>: 6.0m wide road with +-1m shoulders and drainage</i>
<i>Design Speed</i>	<i>: 30 km/hr</i>
<i>Min Vertical Length</i>	<i>: 80m</i>
<i>Min Horizontal Length</i>	<i>: 45m</i>
<i>Pavement Design</i>	<i>: 25mm Asphalt</i>
	<i>150m G2 Imported Crusher Run</i>
	<i>150mm G5 Imported Selected Layer</i>
	<i>150mm G7 Selected Subbase</i>
	<i>150mm G9 Insitu Layer</i>

- **Sewer:**

The development will connect into the existing waste water treatment works on the Hilton College Estate. The development will be provided with two sewer pump stations transferring effluent via a rising main into a gravity main flowing into the waste water treatment facility. Using the current FGG architectural layout which provides a total of 83 sites, this provides an effluent production of 83,0 m³ / day or 30,3 Ml/annum. This equates to an average flow of 0.96 l/sec with an instantaneous peak flow reaching 2.40 l/sec.

- *The internal reticulation will operate as a gravity main conveying raw effluent to a local low point. The standards for the internal sewer reticulation to be installed with the proposed development can be summarised as follows:*

<i>Pipe Material</i>	<i>: uPVC</i>
<i>Pipe class</i>	<i>: Class 34 (300 kPa)</i>
<i>Pipe diameters</i>	<i>: Main Gravity Main : 160mm</i>
	<i>: Individual House Connection : 110mm</i>
<i>Minimum Grade</i>	<i>: Main Gravity Main : 1:120</i>
	<i>: Individual House Connection : 1:60</i>
<i>Maximum Grade</i>	<i>: 1:10</i>
<i>Bedding</i>	<i>: Flexible (SABS1200LB)</i>
<i>Manholes</i>	<i>: 1.0m Dia. Precast Concrete Manholes</i>
<i>Manhole Spacing</i>	<i>: 80m (Maximum)</i>

<i>Minimum Cover</i>	: 600 mm (Servitudes)
	: 800 mm (Midblock)
	: 1000 mm (Road Reserve)
	: 1200 mm (Road Crossing)

The internal sewer reticulation will comprise of 160mm uPVC Class 34 sewer pipe with circular precast concrete manholes at placed at a maximum spacing of 80m or at a change in direction throughout the development. House connections will be provided for each for site either midblock or into the nearest manhole.

The detail design of the internal reticulation of the estate provides for two collection points requiring pumping; disposal methods of the effluent will be discussed within the bulk sewer section.

All internal services will be operated and maintained by The Dairy at Hilton Home Owners' Association responsible for the development.

- *Bulk Sewer: Sewer Pump Stations The development will be served with two sewer pump stations. At the lowest point in the development, pump station 1 will collect effluent from 23 sites and pump raw effluent along the registered omnibus at the lower boundary of the sites and feeds directly into the sump of Pump Station 2. Pump Station 2 will pump effluent from the entire development via a 420m long rising transferring into a 2530m gravity main in order to reach the Hilton College Waste Water Treatment Works.*

The preliminary design of the internal gravity main indicates two local low spots where two separate pump stations will be built, necessitated because of the topography. Aesthetically, the pump stations will align with the architect's requirements, but will be primarily underground for screening purposes and to minimise the visual impact.

Both pump stations have been sized according to the number of sites that gravitate into either conservancy tank for a time period of 24 hours. An additional pump sump of 10 minutes at the pump station's duty point will also be included in the design of the conservancy volume.

- *Rising mains: The development will have two separate sewer rising mains. Rising Main 1: is a 860m long rising main transferring effluent from Sewer Pump Station 1 into the sump of Sewer Pump Station 2. Rising Main 2: comprises the transfer of the development's effluent from sewer Pump Station 2 to the waste water treatment works. Two possible routes were investigated, and Route 2 (2950m) selected. This route is 270m longer than the alternative, but does not cross any wetlands, buffer zones or require pipe bridges. Once the effluent is pumped 420m to the highest point, it will gravitate into the waste water treatment works.*

- o **Internal Stormwater System**

The storm water management strategy will be to manage and collect all surface runoff in a conventional storm water system that will discharge into the natural drainage systems on site and gravitate towards the existing stream, dam and wetlands below the site.

The standards for the storm water infrastructure to be installed with the proposed development can be summarised as follows:

- *Flood recurrence interval* : 5 years and critical points 10 years
- *Attenuation structures* : 50 years

- *Pipe material* : Concrete
- *Pipe Class* : 100D in traffic areas, 75D in other
- *Pipe diameters* : 300mm Ø (minimum)
- *Bedding* : Class C
- *Inlets* : Splayed Catchpits/Steel Grid inlets
- *Outlets* : Headwalls and energy dissipaters
- *Junctions* : Points of deflection on pipelines

○ **Storm Water Management**

The traditional design for storm water drainage systems has been to collect and convey storm water runoff as rapidly as possible to a suitable location where it can be discharged accordingly.

The objective of a storm water management plan should be to manage the storm water resources of the collective watersheds to:

- *Prevent Flood Damage*
- *Preserve the natural and beneficial functions of the natural drainage system*
- *Preserve and enhance storm water quality*

Storm water from parking areas, internal roads and roofs will be collected and retained on site through the installation of storm water attenuation measures, which will be done as part of a separate Storm Water Management Plan (SWMP). Outlets and overflows must be constructed to prevent scouring and erosion and release runoff into the natural stream located at the lower end of the site.

Storm water harvesting is advised for all roofed areas as the harvested rainwater could be used for the irrigation of the gardens and landscaped areas. The SWMP will discuss the introduction of attenuation and retention ponds incorporated into the civil engineering design and landscaping plan to create focal points within the development, but also to manage the increase in runoff between the pre and post development flows.

○ **Refuse**

The Home Owners' Association will be responsible for the collection and disposal of refuse.

It is essential that the internal measures ensure that recyclable material is separated from general refuse and The Home Owners Association will be responsible to contract with a recycling company to collect the recyclable material or deliver it to the Wildlands depot in Hilton.

○ **Electricity**

The proposed development will connect to the existing infrastructure, subject to an application to Eskom for an increase in supply. Application for an increase in supply should be made after development approval. Further design and municipal approval, construction phases and service level agreements for provision of electricity will be handled by the electrical engineer, EG Africa (Pty) Ltd.

○ **Water Treatment Works (WTW) and Waste Water Treatment Works (WWTW)**

The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on the properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams are commonly known as the "Supply Dams" and have capacities of:

- *Top dam* 59 579m³

- Middle dam 39 654m³
 - Bottom dam 68 438m³
- 167 611m³

This is also an augmented supply of raw water from Midmar Dam via a private pipeline from the Umgeni Water tunnel near St Joseph's Scholasticate. This augmented supply rate is some 30m³h⁻¹ (720m³d⁻¹).

The WTW currently produces approximately 29m³h⁻¹ of potable water that is pumped through to two concrete storage reservoirs from where it is gravitates to the various reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h⁻¹ but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less effective and reduce performance.

The system is being upgraded to produce 70m³h⁻¹ and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).

Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, The Gates at Hilton development and The Dairy at Hilton development.

The final water balance for this supply will be included in the Integrated Water Use License Application (IWULA) currently being drafted. This will include the complete design and specifications of the upgraded WTW.

The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350 l per household.

The Hiltonian Society is registered as a Water Supply Service with the Department of Water and Sanitation, Registration Number 21030527.

WWTW

The process in this works is based upon the extended aeration activated sludge principle. The current capacity of the works is 180m³d⁻¹. The works is to be upgraded to a capacity of 500m³d⁻¹ by Bosch Stemele. The specifications of the works including upgrade will be included in the IWULA.

The IWULA will also include the disposal of final effluent/wastewater to land. This wastewater will meet all the requirements of the National Water Act and associated gazetted amendments thereof.

Wastewater produced by the two developments has been estimated at 1 000ld⁻¹ household – 1 and all reticulation, storage/collection and pumping specifications will accommodate such volumes.

Individual landowners purchasing into the development will be contractually bound to become members of a Home Owners' Association which will be established should the project receive a positive decision on Environmental Authorisation. Residential dwellings would need to be designed and constructed according to an architectural design code which will be established by the Applicant and enforced by the Home Owners' Association in accordance with the requirements of the Visual Impact Assessment which has been undertaken by FGG Architects. The overall development concept and all building plans for proposed residences within the estate will also need to be approved by the uMngeni Municipality's town planning department prior to any construction commencing on a residential dwelling.

Once the Applicant has completed the construction phase for the bulk services any Environmental Approvals/ Authorisations will need to be transferred into the name of the Home Owners' Association. This will ensure that individual landowners are legally bound take responsibility for the implementation, monitoring and enforcement of any conditions of Environmental Authorisation which may be issued by the Competent Authorities.

4.2.2 Project Background

The Hiltonian Society NPC is a Non Profit Company which owns Hilton College and whose main purpose is the provision of education. Hilton College ranks highly amongst South Africa's premier independent schools. Established in 1872, the College enjoys an excellent reputation, both nationally and internationally. This reputation has been earned through a history of holistic educational excellence in an all-boys, all-boarding environment, provided on a campus endowed with world-class facilities. The unique and defining feature of Hilton College is, however, its setting on the remarkable 1721ha Estate. The original property, 786.2ha of the Voortrekker farm, Ongegund, has over the years been augmented by a series of five subsequent acquisitions of adjoining property.

While the prime activity undertaken on the Estate has always been education, areas of the property have historically been utilised for agriculture. In addition, large areas have been used for what might be described as "recreation and conservation."

The school's location for most of its history has been "rural". More recently it has become increasingly "peri-urban". Due to the changing landscape, the Board of The Hiltonian Society is profoundly aware of the need to protect and manage the priceless asset of the Estate. A series of Strategic Plans have been produced by The Society since the turn of the century, acknowledging the Estate as both a priceless asset and a potential burden. Furthermore, the Strategic Plans identified two major areas of concern for The Hiltonian Society. The first is the need to build the endowment which stands behind the school and is the principal source of bursary funding. Secondly there is the need to generate funding to meet The Society's obligations to the members of the Estate community who enjoy Extension of Security of Tenure Act (ESTA) rights (a secure legal right to carry on living on and using that land) by providing them with freehold homes.

The Hiltonian Society aims to maintain its commitment to agriculture. In addition to the ongoing timber operation, 120 ha of moderately productive maize lands have been converted to pastures in the last five years to support the growing and successful beef operation.

In 2011, 477ha of the Hilton Estate was proclaimed a Nature Reserve under the Ezemvelo KwaZulu-Natal Wildlife Bio-diversity Stewardship programme.

In October 2008, an application was made to the National Dept. of Agriculture and Fisheries and to the KZN Department of Agriculture, Forestry and Fisheries, in terms of Act 70 of 1970. Permission was sought to:

1. Incorporate the Hilton College Estate into the Hilton Town Planning scheme controlled by the uMngeni Municipality, and
2. To release three portions, which were shown on an attached diagram, for development purposes, including sub-division. (These areas were subsequently surveyed and defined as The Gates No 18360, Portion 167 of 10 of the Farm Hilton 12304 (an approved but not registered subdivision on the proposed development site) and portion 175 of 2 of the Farm Hilton 12304; these proposed subdivisions all fit within the areas shown on the diagram submitted with the 70 of 1970 application).

Permission was accordingly received in a letter dated 23 April 2010, releasing these the aforementioned areas from the aforementioned provisions. Please see attached as Appendix 5.

In May 2010, an application for Environmental Authorisation of The Gates at Hilton development was submitted to the KZN Department of Agriculture, Environment Affairs and Rural Development. Authorisation was received on 25 July 2011.

In May 2010, an application was made to uMngeni Municipality for the *extension of the Hilton Town Planning Scheme over the Hilton College Estate for Conservation, Education, Agriculture and Urban Transition purposes, and the sub-division and rezoning of The Gates (The Gates No 18360), The Dairy (Portion 167 of 10 of the Farm Hilton) and the Oaks (175 of 2)*. These approvals, together with development approval for The Gates at Hilton, were subsequently received in October 2011 and March 2012.

The residential developments on the Hilton College Estate are being carried out by Gwens Stream Estates (Pty) Ltd, whose sole shareholder is the Hilton College Endowment Foundation. All funds generated from the developments are directed to the Foundation to be applied generally in support of Hilton College, and specifically towards bursaries to deserving students.

The development of The Gates at Hilton commenced with installation of the infrastructure for phase 1 (the first 50 sites) in mid-2012, which was completed in May 2013. Following the success of sales of the phase 1 properties, the second phase infrastructure development commenced in August 2015. The 31 sites were offered to the market from April 2016, and all sites have been sold, clearly highlighting the demand for this type of estate development in the area.

Cattle from the Hilton Estate farm regularly graze on the commonage area within The Gates. A similar arrangement will apply at the proposed Dairy site.

Therefore, the proposed project forms part of Hilton Colleges overall development plans for the schools' landholdings and this project has been initiated following the overwhelming success and demand stemming from the Gates at Hilton Phase 1 & 2, residential projects which have been previously undertaken by the Applicant.

As such Gwens Stream Estates (Pty) Ltd propose the establishment an additional 81 residential stands, a club house located on stands 16 & 17, and associated access and service infrastructure on "the Old Dairy site" which has in the past, as part of the school's strategic development planning initiatives, been identified for development purposes. In this regard the Applicant has already, as part the abovementioned planning process, obtained consent from the national department of Agriculture to release the land from the provisions of Act 70 of 1970 which pertain to the subdivision of agricultural land. Furthermore, the site has been included into the uMngeni Local Municipality's town planning scheme.

4.2.3 Project Objectives

The objective of the proposed project is to provide an upmarket and secure residential estate within a semi-rural setting which blends into the surrounding landscape. The ethos of the proposed estate will be conservation focused with the remainder of the property being set aside for conservation purposes as part of the development objectives.

Furthermore, the objectives of the proposed development are to promote local economic development by meeting the identified market demand for this type of estate development which has become clearly evident following the success of The Gates at Hilton residential estate. The income generated from the proposed development forms a critical part of the school's endowment which is the principal source of bursary funding and secondly is required to ensure that the Society's obligations to the members of the Estate community can be met through the provision of freehold homes.

5 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

Table 3 provides a list of all the applicable legislation, policies and/or guidelines of any sphere of government that are relevant to the application as contemplated in the EIA regulations.

TABLE 3: Applicable legislation, policies and/or guidelines.

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (Act 107 of 1998) – for its potential to cause degradation of the environment (Section 28).	Department of Environmental Affairs	1998
Environmental Conservation Act (Act 73) – for potential environmental degradation.	Department of Environmental Affairs	1989
National Water Act (Act 36 of 1998) – for potential to cause pollution of water resources defined under the Act (Section 19).	Department of Water Affairs and Forestry	1998
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) – for protection of agricultural resources and for control and removal of alien invasive plants.	National Department of Agriculture	1983
Subdivision of Agricultural Land Act, Act 70 of 1970 – for the subdivision of agricultural land.	National Department of Agriculture	1970
KwaZulu-Natal Provincial Roads Act, Act 4 of 2001 – Pertaining to Road Upgrade Requirements	Department of Transport	2001
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) – for protection of biodiversity.	Department of Agriculture and Environmental Affairs & Ezemvelo KZN Wildlife	2004
The National Heritage Resources Act (Act No 25 of 1999 as amended) – for the identification and preservation of items of heritage importance.	Department of Arts and Culture (Amafa KwaZulu-Natal)	1999
Guideline 4: Public Participation in support of the EIA Regulations (2005)	Department of Environmental Affairs and Tourism	2006
Public Participation Guideline in Terms of National Environmental Management Act, 1998 Environmental Impact Regulations	Department of Environmental Affairs	2017
Guideline 7: Detailed Guide to Implementation of the Environmental Impact Assessment Regulations (2006)	Department of Environmental Affairs and Tourism	2007
uMngeni Municipal By-Laws	Local Municipality	Updated accordingly

6 NEED

As is true of all independent educational institutions throughout the world, Hilton College is faced with the necessity to grow and maintain its endowment. With no access to state funding, schools like Hilton need to act responsibly in ensuring their continued existence and development, and a strong endowment, standing behind the institution, is a critical factor in that.

The impact of inflation on annual school fees is dramatic, and to ensure that the school does not become an enclave only for the sons of the very affluent, significant bursary funding is required to enable deserving boys from a cross section of backgrounds access to a Hilton education. The Board's Strategic Plans talk of 50% of the boys receiving significant assistance with their fees. In order to achieve that goal, and to sustain bursaries indefinitely, the funds of The Hilton College Endowment Foundation need to grow materially.

Allocating the agreed 100ha of the Hilton Estate for residential development ("The Gates", "Dairy" and "Oaks") is one clear way of building the endowment. With no material impact on the viability of the activities of the Hilton Estate farming operations, the developments will result in considerable income for the Hilton College Endowment Foundation.

Apart from the general and important goal of building the endowment, The Hiltonian Society is faced with the responsibility of providing freehold homes to families who have historically resided on the Estate, and who fall within the ambit of the ESTA rights. In a project which commenced in 2009, and which has to date evolved in three phases, 111 houses have been built and transferred to beneficiaries. A further 50 houses still need to be provided in a final phase. This project has been undertaken by the uMngeni Municipality, sourcing grant funds from the Dept. of Human Settlements, augmented significantly by The Hiltonian Society. The initial Society budget for the project was R12m. This has now grown, through the effects of inflation and time, to R15m. These funds have been sourced through a loan from the Hilton College Endowment Foundation which will be repaid from the proceeds of the Estate developments.

The project to help Estate residents relocate to freehold property has been hailed as an outstanding example of a private/public partnership in the provision of quality housing. The project was awarded provincial Govan Mbeki Awards for each of the three completed phases, and the third phase was a runner-up at the national Awards in 2016; separately, The Hiltonian Society was the recipient of a special MEC's Award for its part in the project.

With the dual intention of providing housing for ESTA residents and providing bursaries for the education of deserving children, from whatever backgrounds, the intention to proceed to develop The Dairy clearly illustrates The Society's intention to satisfy the NEMA principle to "*place people and their needs at the forefront of its concern*".

Furthermore, the development of the Dairy will provide significant employment opportunities for local residents. This is illustrated by the fact that as at June 2017, 790 contractors, workers and domestic staff have been registered and issued with ID access cards to work in The Gates at Hilton.

Finally, the popularity of The Gates at Hilton, and other similar secure residential estates in the surrounding area, clearly emphasises the demand for this kind of accommodation. It would have been that understanding which drove the introduction of the transitional residential nodes into the uMngeni Town Planning Scheme and Spatial Development Plan.

Therefore, it is important to emphasise the strategic importance to Hilton College of the planned limited residential development on selected areas of the Estate. Premier independent educational institutions throughout the world are dependent on the backing of strong endowments. These funds stand behind the institutions, and are, importantly, the source of bursary and scholarship funding which enables deserving students to attend the institutions. Hilton College is faced with a strategic imperative to build its endowment, so as to ensure a quality and relevant intake of students, and these limited property developments have considerable potential to help achieve that. The success of The Gates at Hilton bears testimony to that fact.

Equally important, therefore, is the need to point out that the application for permission to develop a residential estate on the Dairy site differs from almost all similar applications. This is not the "for gain" initiative of a standard property developer. The application is being made by Gwens Stream Estates (Pty) Ltd, a wholly owned subsidiary of The Hilton College Endowment Foundation, a long-standing trust which functions in support of Hilton College. The application, furthermore, is the result of responsible planning and consideration of the optimum and effective use of The Hiltonian Society's property.

In terms of social need for the development, there is currently a significant rate of unemployment in the region. The residents of the low income housing areas in and surrounding the Hilton area would be able to take advantage of the various construction and operational opportunities presented by this proposed development. Based on the Building Industries Federation of South Africa estimates, construction employment is estimated at approximately 27.6 jobs for every million rand spent. It is estimated that the proposed development will entail construction expenditure of approximately 500 million once completed. This equates to approximately 13800. This would include management personnel, domestic and construction workers and other general unskilled job opportunities associated with operation and maintenance on the proposed estate.

The proposed development is therefore deemed to be in line with the Local Economic Development Strategy and concomitantly, there would be a significant increase in the rates base for the Local Municipality.

The need for the proposed development is further illustrated by section 7 below, as the proposed development wishes to address aspects of the National Development Plan, the Integrated Development Plan and the Spatial Development Plan, as set out in the Integrated Development Plan for the Hilton Estate.

7 DESIRABILITY

7.1 National Development Plan

The intention of the National Development Plan (NDP 2030 Vision)¹ is to improve service delivery for citizens of South Africa, whilst integrating national, provincial and local policies and programs into a single, target orientated and long term based plan. In this plan a collective approach to improving the lives of the citizens is applied.²

Key development challenges listed in the NDP include:

- High rates of unemployment and low economic growth;
- High levels of poverty;
- Low levels of skills development and literacy;
- Limited access to basic household and community services;
- Increased incidents of HIV/AIDS and communicable diseases;
- Loss of Natural Capital;
- Unsustainable developmental practices;
- High levels of crime and risk;
- Ensuring adequate energy and water supply;
- Ensuring food security;
- Infrastructure degradation;
- Climate change;
- Ensuring financial sustainability;

Aspects of the NDP, which aims to address issues on a national level, are brought into and considered in the Integrated Development Plan for the Hilton Estate (the proposed development). The proposed development wishes to address, to some degree, aspects of the key development challenges as set out above.

7.2 Integrated Development Plan

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

An IDP's core components consist of the following:

- The Municipal Council's long term development and internal transformation needs;
- An assessment of the level of development and needs to determine community access to basic services;
- The Council's development of priorities and objectives for its term of office, including its Local Economic Development (LED) aims;

¹ National Development Plan 2030 Accessed: 02/08/2016 <http://www.gov.za/issues/national-development-plan-2030>

² Integrated Development Plan (IDP): 2016/2017 Financial Year: Accessed: 01/03/2017 <http://www.msunduzi.gov.za/site/idp>

- The Council's development and operational strategies accordingly aligned with national and/or provincial sector plans and legislated planning requirements;
- An identification of specific projects which will satisfy service delivery needs and general economic development;
- The Spatial Development Framework (SDF), which includes the provision of basic guidelines for a Land Use Management System (LUMS) for the Municipality;
- The applicable disaster management plans;
- A financial plan, including budget projections covering, at least, the next three years; and
- Key performance indicators and performance targets.

The Municipal Council must review and amend its IDP on an annual basis in accordance with an assessment of its performance measurements and in line with changing circumstances. In formulating and reviewing its IDP, the Municipal Council must also follow a pre-determined programme which must allow for community and stakeholder consultation and effective participation.

The IDP breaks down the need for the implementation of the NDP to a provincial / municipal level and this gets reviewed on a regular basis to best suit and meet the deliverables of the NDP.

Aspects of the IDP are again brought into and considered in the IDP for the Hilton Estate (the proposed development). The proposed development wishes to address, to some degree, aspects of the core components as set out above through addressing the need for the proposed development. Again feeding back to the need for the proposed development, as broken down in section 6 above.

7.3 Spatial Development Framework

This SDF is an integral component of the IDP; it both informs and translates the IDP spatially and guides how the implementation of the IDP should occur in space. The SDF therefore guides the desirable spatial distribution of land uses within a Municipality in order to give effect to the spatial vision, goals and objectives of the Municipality and prioritises areas for spatial interventions. This SDF is also aligned with provincial and municipal sector plans and strategies as a way of ensuring that the desired spatial form and outcomes of the Municipality are achieved both horizontally and vertically.³ This would therefore link to the proposed development as per the need for the proposed development, as set out in section 6 above and further broken down in the IDP for Hilton Estate, as set out below.

7.4 Integrated Development Plan for the Hilton Estate

In 2005, the Board of the Hiltonian Society commissioned the Estate Committee to undertake the preparation of an Integrated Development Plan (IDP) for the Hilton Estate. This set out to provide a strategic framework which addressed social, economic, environmental and infrastructural issues, for the management of resources, and to provide a roadmap to guide future decisions. The overarching intention of the IDP was to indicate optimal sustainable usage for the Estate.

In 2007 The Estate Committee of The Hiltonian Society produced a comprehensive Integrated Development Plan (IDP) for The Hilton Estate. The process involved, inter alia, the preparation of specialist reports covering conservation, agriculture, infrastructure and legal issues. Subsequent to its adoption by the Board of The Hiltonian Society, the IDP was submitted to uMngeni Municipality, which resulted in the spatial elements being adopted as part of the Municipal Spatial Development Framework (SDP), which formed a component of the 2010 Municipal EIDP Review.

Critical to the IDP for the Hilton Estate was its focus on optimum land usage within the Estate, resulting in the Land Use Framework Plan. Primarily, the IDP identified areas for long-term educational, agricultural and

³ Spatial Development Framework: Draft Review 2016-2017, Draft Report February 2016, Accessed: 01/03/2017
http://www.durban.gov.za/Resource_Centre/reports/Framework_Planning/Pages/default.aspx

conservation use, the latter resulting in the proclamation of The Hilton College Nature Reserve, in terms of the Ezemvelo KZN Wildlife Bio-diversity Stewardship Programme. The IDP also identified certain areas within the Estate which were of lesser agricultural value but which held significant potential in terms of residential development. Three areas, representing a total of 100ha, were successfully rezoned for Urban Transition 1 in 2011 and 2012. These portions are described as “The Gates No 18360”, “Portion 167 of the Farm Hilton No 12304” (subdivision of Portion 10 of the Farm Hilton No12304 on which the proposed application is located), and “Portion 175 (of 2) of the Farm Hilton No 12304.

The Hiltonian Society intends to maintain its level of commitment to agriculture. In addition to the ongoing timber operation, 120 ha of moderately productive maize lands have been converted to pastures in the last five years to support the growing and successful beef operation.

The production of the Integrated Development Plan for the Hilton College Estate, the Strategic Environmental Assessment, applications for the release of the Estate from the provisions of Act 70 of 1970, the incorporations of the Estate into the uMngeni Municipal Town Planning Scheme, the rezoning of the areas of the Estate designed for residential development, and the subsequent approval of the sub-division of the Estate, began in 2006.

The process included full consultation with the Estate community, neighbouring landowners, the uMngeni Municipality, various government departments, Ezemvelo KZN Wildlife, National Department of Agriculture and the Department of Agriculture and Environmental Affairs.

The IDP identified three areas of the Estate, the Gates, Oaks and Dairy Site, as Catalytic Opportunity Spaces.

The IDP, regularly updated since its initial approval in 2007, examined the Estate in detail, with specialist reports being commissioned on a wide range of issues. These reports focused particularly on the future use of the natural resources, with both agriculture and conservation resources examined in depth. The reports included a grasslands study, two area specific conservation reports and a fauna report. Agriculture reports looked at current agricultural practice and potential on the Hilton Estate farm.

The IDP also considered the 2005 uMngeni Municipality Integrated Development Plan, particularly the Spatial Development Plan. These reflected the southern and south-eastern edges of the Estate as falling within the urban edge of the primary node and reflected a substantial area (c. 175ha) of the southern part of the Estate as falling within a proposed “residential corridor”.

When the Municipal IDP was again reviewed in March 2010, the land use proposals in the Hilton Estate IDP were adopted, reflecting the Municipality’s support for The Society’s professional approach to the future management of the Estate.

Please see letter from Christine Platt (the Consulting Town Planner) attached in Appendix 6.

8 MOTIVATION FOR THE PREFERRED SITE, ACTIVITY AND TECHNOLOGY ALTERNATIVE

The proposed development triggers GNR 327, Listed Activities 24, 27 and 28, as well as. GNR 324, Listed Activity 4 of the NEMA: EIA Regulations of 2014 as amended.

As per GNR 326, Appendix 1(2)(b), alternatives for the proposed development are to be identified and considered. Chapter 1 of the EIA Regulations provides an interpretation of the word “alternatives”, which is to mean “*in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the -*

- a) *Property on which or location where the activity is proposed to be undertaken;*
- b) *Type of activity to be undertaken;*

- c) *Design or layout of the activity;*
 - d) *Technology to be in the activity; or*
 - e) *Operational aspects of the activity;*
- And includes the option of not implementing the activity.”*

In terms of site alternatives, the Applicant does not own any other land that could fulfil the purpose and need of the proposed development; hence, no investigation of property alternatives was considered in this report. The process of site selection was informed through the strategic planning process and IDP which the Applicant commenced in 2005 and which was approved by various organs of state and the Local Municipality in 2010.

Prior to this application being lodged, several specialists were appointed by the applicant to assist with the pre-application planning components of the proposed sub-divisions. This involved the services of Terratest (Pty) Ltd who initially reviewed the environmental constraints of the site. Based on the outcomes of these preliminary inputs the master plan put forward in this Basic Assessment Report was drafted, which in the opinion of the consultants presents the most suitable proposal for the development of the site when taking into account the objectives of the proposed development. Higher density alternatives have not been considered as the impact thereof on the surrounding sensitive biodiversity features is deemed to be too high and considered to be unreasonable in context of the surrounding land uses. Lower densities would not allow the Applicant and direct and indirect beneficiaries to realise the economic benefit of the proposed development, and would also have the potential to render the development proposal not economically viable. Alternatives which meet the applicants' purpose and need, put forward in this proposal, therefore comprise the Preferred Sub-Divisional Layout and the No-Go Alternative which would involve retaining the entire approximately 174.63-hectare site for agricultural land use.

That which could be considered as an alternative Layout for the proposed project, referred to in Figures 2 and 3, would the removal of sites 60, 61, 62, 83 and 73 from the Layout Plan proposed for the development, as requested by the Wetland and Biodiversity Specialist, and these sites replaced with sites are 111, 222, 333, 444, and 555. Figure 3 being the preferred layout.

8.1 PREFERRED SITE ALTERNATIVE

The proposed property for the development is the preferred location as the Applicant has ownership of the land and it has been identified through extensive strategic planning and IDP initiatives as one of the most suitable sites on the Hilton Estate for development opportunities.

Plates 1 - 7 provide an overview of the site proposed for construction activities. The corresponding locations of where the photographs were taken are noted in Figure 5.



FIGURE 5: Location of photographs

SITE PHOTOGRAPHS: Plates 1 - 7



PLATE 1: Facing north at the old dairy site.



PLATE 2: Facing north along the existing internal access road.



PLATE 3: Facing west, away from the development footprint.



PLATE 4: Facing west on development boundary.



PLATE 5: Facing south, viewing the development footprint.



PLATE 6: Facing east.



PLATE 7: Facing east.

8.2 PREFERRED TECHNOLOGY ALTERNATIVE

None.

8.3 NO-GO ALTERNATIVE

The No-Go Alternative would involve retaining the entire approximately 174.63 ha site for agricultural land use. As it has been clearly highlighted by the Applicant that they intend on limiting their commitment to Agriculture this would not be a preferable land use and the job creation and associated economic benefit to the broader society would not be realised.

Furthermore, the no-go alternative would not allow the Applicant to realise their need in the form of increasing the school's endowment fund which is key to the future success of the school, particularly as the principal source of bursary funding and is required to ensure that The Society's obligations to the members of the Estate community can be met through the provision of freehold homes.

9 PUBLIC PARTICIPATION

To fulfil the necessary public participation required as part of the BA Process, the following methods of stakeholder engagement were and are in the process of being conducted by the EAP, as outlined below.

9.1 NEWSPAPER ADVERTISEMENT

Newspaper advertisements were published at the outset of the project to inform the general public of the BA Process. An advertisement was published in English on 6 May 2016 and again in English and isiZulu on the 6 July 2017 in The Natal Witness and the Ilanga newspapers respectively.

Please see attached in Appendix 7.

9.2 SITE NOTICE BOARDS

Eight (8) site notice boards in total were placed around the site on 17 May 2016 and again on 10 July 2017, this comprised four English and four isiZulu Notices. Figure 6 provides an illustration of the location of the notice boards on site.

The purpose of the notice boards was to inform neighbours, community members and passers-by of the proposed BA Application. The details of the EAP were also provided should any member of the public require additional information or wish to register as an IAP in the Application. Photographs 8 – 11 provide proof that the notice boards were placed on site.

Please see attached in Appendix 7.



FIGURE 6: Location of Site Notices placed on site [Map Source: Google Earth, 2015].

SITE PHOTOGRAPHS: Plates 8 – 13 PUBLIC PARTICIPATION



PLATE 8: Site notice placed on an electricity pole in order to be seen from the road.



PLATE 9: Site notice placed on the poles of a sign board in order to be seen from the road.



PLATE 10: Site notice placed on a pole of a sign board in order to be seen from the road.



PLATE 11: Site notice placed on an electricity pole in order to be seen from the road.



PLATE 10: Site notice placed on an electricity pole in order to be seen from the road.



PLATE 10: Site notice placed on an electricity pole in order to be seen from the road.

9.3 WRITTEN NOTIFICATION TO AUTHORITIES AND NEIGHBOURS

9.3.1 Interested and Affected Parties (IAPs)

A register of IAPs was compiled as per Section 42 of the EIA Regulations, 2014 as amended. This included all relevant authorities, Government Departments, the Local Municipality, the District Municipality, relevant conservation bodies and non-governmental organisations (NGO's), as well as neighbouring landowners and the surrounding community. This register will be regularly updated to include those IAPs responding to the newspaper advertisements, site notice boards and Notification Letters. A copy of the IAP Register is included as Appendix 5 of this report.

9.3.2 Notification Letter

A Notification Letter was compiled and circulated to all identified IAPs by email and post. The purpose of the Notification Letter was to provide preliminary information regarding the project and its location. Furthermore, the Notification Letter invited preliminary comments from IAPs and requested those notified to provide details of other potential IAPs which they may be aware of. A copy of the Notification Letter is included as Appendix 7 of this report.

9.4 PUBLIC MEETING

A Public Meeting is not deemed necessary at this stage as no significant interest has been received by the community with respect to this project. Should members of the public show significant interest then focus group meetings can be arranged by the consultants during or shortly after the legislated 30-day public consultation process,

9.5 COMMENTS RECEIVED

Any comments received during the first public participation process, before the application was withdrawn have been included in the revised draft Basic Assessment Report which now includes the proposed upgrading of the watercourse crossing on the D494. Comments received on the revised draft Basic Assessment Report, during the public participation process will be incorporated into a comments and responses report for submission to the EDTEA with the final Basic Assessment Report.

DATE RECEIVED	IAP	COMMENT	RESPONSE
7 May 2016	Janine Player	<p>I live nearby the proposed 85-unit estate. We will be badly affected by the development.</p> <p>Please send the background information on this proposed estate.</p>	<p>Please could you complete the IAP registration form attached, so I can add you to our database.</p> <p>As a registered IAP you will be notified of the availability of all draft reports for review and comment.</p>
8 May 2016	John Conyngham	<p>Having seen in The Witness newspaper on 6 May 2016 the notice of the proposed residential development on the Old Dairy site on district road D494 in Hilton, as I live nearby I would like please to register as an interested and affected party.</p> <p>I can be contacted at this email address, or on telephone numbers 033-3832006 or 0834616010.</p> <p>Do let me know if you need any more information.</p>	<p>Please could you complete the form attached, so I can register you on our data base.</p> <p>As a registered IAP you will be notified of the availability of all draft reports for review and comment.</p>
9 May 2016	Janine Player	<p>Herewith registration form</p> <p>Interest:</p> <p>Do not want the proposed project to take place.</p> <p>Comments:</p> <ul style="list-style-type: none"> • Pressure On Current Hilton College Rd. • Water • Environment Issues. • Wildlife Issues <p>Additional Information:</p> <p>Yes. The plan of the proposed project.</p>	<p>Thank you sending the IAP form back to me, you have been registered and we will respond to your comments in due course.</p> <p>Responses:</p> <ul style="list-style-type: none"> • Pressure on Current Hilton College Road <p>There is an existing farm road on the eastern boundary of the road which joins onto the district road. The farm road is situated within an informal unregistered right of way area between the two adjacent properties. This road is not fit for reuse for access for the development.</p> <p>Therefore, the proposed development will be accessed off the existing gravel District Road, D494 via the provincial road P139-1. The intersection to the development will have to comply with the Kwa-Zulu Natal Department of Transport standards and regulations and is likely to be of a Type B1 gravel standard.</p> <p>Department of Transport has been identified as an interested and affected party and will be allowed the opportunity to comment on the proposed development.</p> <ul style="list-style-type: none"> • Water <p>The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on its properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams commonly known as the 'Supply Dams' and have capacities of:</p> <ul style="list-style-type: none"> • Top dam 59 519m³

DATE RECEIVED	IAP	COMMENT	RESPONSE
			<ul style="list-style-type: none"> • Middle dam 39 654m³ • Bottom dam 68 438m³ <p style="text-align: right;">167 611m³</p> <p>There is also an augmented supply of raw water from Midmar Dam via a private pipeline from the Umgeni Water tunnel entrance near St Joseph's Scholasticate. This augmented supply rate is some 30m³h⁻¹ (720m³d⁻¹).</p> <p>The WTW currently produces approximately 29m³h⁻¹ of potable water that is pumped through to two concrete storage reservoirs from where it gravitates to the various water reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h⁻¹ but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less efficient and reduced performance.</p> <p>The system is being upgraded to produce 70m³h⁻¹ and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).</p> <p>Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, Gates Development and the Dairy at Hilton Development.</p> <p>The final water balance for this supply will be included in the Integrated Water Use Licence Application (IWULA) currently being drafted by me. This will include the complete design and specifications of the upgraded WTW.</p> <p>The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350l per household.</p> <ul style="list-style-type: none"> • Environmental Issues This is currently being assessed through the Basic Assessment process. • Wildlife Issues This is currently being assessed through the Basic Assessment process.
9 May 2016	Mike Wolhunter	<p>Please find attached document as an interested and affected party.</p> <p>Interest: We are neighbours and use the current road, electrical and water "services" in the area</p> <p>Comments:</p>	<p>Responses:</p> <ul style="list-style-type: none"> • Water

DATE RECEIVED	IAP	COMMENT	RESPONSE
		<p>We would be interested to see your plans regarding water, electricity, sewerage and road upgrades</p> <p>Additional Information: None.</p>	<p>The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on its properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams commonly known as the 'Supply Dams' and have capacities of:</p> <ul style="list-style-type: none"> • Top dam 59 519m³ • Middle dam 39 654m³ • Bottom dam 68 438m³ <p style="text-align: right;">167 611m³</p> <p>There is also an augmented supply of raw water from Midmar Dam via a private pipeline from the Umgeni Water tunnel entrance near St Joseph's Scholasticate. This augmented supply rate is some 30m³h⁻¹ (720m³d⁻¹).</p> <p>The WTW currently produces approximately 29m³h⁻¹ of potable water that is pumped through to two concrete storage reservoirs from where it gravitates to the various water reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h⁻¹ but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less efficient and reduced performance.</p> <p>The system is being upgraded to produce 70m³h⁻¹ and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).</p> <p>Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, Gates Development and the Dairy at Hilton Development.</p> <p>The final water balance for this supply will be included in the Integrated Water Use Licence Application (IWULA) currently being drafted by me. This will include the complete design and specifications of the upgraded WTW.</p> <p>The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350l per household.</p> <ul style="list-style-type: none"> • Electricity <p>The proposed development will connect to the existing infrastructure, subject to an application to Eskom for an increase in supply. Application for an increase in supply should be made after development approval. Further design and municipal approval, construction phases and service level agreements for provision of electricity will be handled by the electrical engineer, EG Africa (Pty) Ltd.</p> <ul style="list-style-type: none"> • Sewerage

DATE RECEIVED	IAP	COMMENT	RESPONSE
			<p>The development will connect into the existing waste water treatment works on the Hilton College Estate. The development will be provided with two sewer pumpstations transferring effluent via a rising main into a gravity main flowing into the waste water treatment facility. Using the current FGG architectural layout which provides a total of 83 sites, this provides an effluent production of 83,0 m³ / day or 30,3 Ml/annum. This equates to an average flow of 0.96 l/sec with an instantaneous peak flow reaching 2.40 l/sec.</p> <p>- The internal reticulation will operate as a gravity main conveying raw effluent to a local low point. The standards for the internal sewer reticulation to be installed with the proposed development can be summarised as follows:</p> <p>Pipe Material : uPVC</p> <p>Pipe class : Class 34 (300 kPa)</p> <p>Pipe diameters : Main Gravity Main : 160mm : Individual House Connections : 110mm</p> <p>Minimum Grade : Main Gravity Main : 1:120 : Individual House Connection : 1:60</p> <p>Maximum Grade : 1:10</p> <p>Bedding : Flexible (SABS1200LB)</p> <p>Manholes : 1.0m Dia. Precast Concrete Manholes</p> <p>Manhole Spacing : 80m (Maximum)</p> <p>Minimum Cover : 600 mm (Servitudes : 800 mm (Midblock) : 1000 mm (Road Reserve) : 1200 mm (Road Crossing)</p> <p>The internal sewer reticulation will comprise of 160mm uPVC Class 34 sewer pipe with circular precast concrete manholes at placed at a maximum spacing of 80m or at a change in direction throughout the development. House connections will be provided for each for site either midblock or into the nearest manhole.</p>

DATE RECEIVED	IAP	COMMENT	RESPONSE
			<p>The detail design of the internal reticulation of the estate provides for two collection points requiring pumping.</p> <p>All internal services will be operated and maintained by the Home Owners Association responsible for the development.</p> <p>- Bulk Sewer: Sewer Pumpstations The development will be served with two sewer pumpstations. At the lowest point in the development, pump station 1 will collect effluent from 23 sites and pump raw effluent along the registered omnibus at the lower boundary of the sites and feeds directly into the sump of Pump Station 2. Pump Station 2 will pump effluent from the entire development via a 420m long rising transferring into a 2530m gravity main in order to reach the Hilton College Waste Water Treatment Works.</p> <p>The preliminary design of the internal gravity main indicates two local low spots where two separate pump stations will be built, necessitated because of the topography. Aesthetically, the pumpstation will align with the architect's requirements, but will be primarily underground for screening purposes and to minimise the visual impact.</p> <p>Both pump stations have been sized according to the number of sites that gravitate into either conservancy tank for a time period of 24 hours. An additional pump sump of 10 minutes at the pump station's duty point will also be included the design of the conservancy volume.</p> <p>- Rising mains: The development will have two separate sewer rising mains.</p> <p>Rising Main 1: is a 860m long rising main transferring effluent from Sewer Pumpstation 1 into the sump of Sewer Pumpstation 2.</p> <p>Rising Main 2: comprise the transfer of the developments effluent from sewer pumpstation 2 to the waste water treatment works. Two possible routes were investigated, being Route 2 (2950m) This route is 270m longer, but does not cross any wetlands, buffer zones or require pipe bridges. Once the effluent is pumped 420m to the highest point, it will gravitate into the waste water treatment works.</p> <p>• Road Upgrades</p> <p>There is an existing farm road on the eastern boundary of the road which joins onto the district road. The farm road is situated within an informal unregistered right of way area between the two adjacent properties. This road is not fit for reuse for access for the development. Therefore, the proposed development will be accessed off the existing gravel District Road, D494 via the provincial road P139-1. The intersection to the development will have to comply with the</p>

DATE RECEIVED	IAP	COMMENT	RESPONSE
			Kwa-Zulu Natal Department of Transport standards and regulations and is likely to be of a Type B1 gravel standard.
9 May 2016	Hayley Farrow	We reside at Brooklands Farm, No 6, D494 and are therefore interested parties in the proposed development at The Old Dairy Site - D494. Please add our details and send The Background Information Document to us.	Please could you complete the IAP form attached, so I can register you on our database.
11 May 2016	Hayley Farrow	Herewith attached please find the completed form as required.	Thank you very much for the completed form, you have been registered onto our database. As a registered IAP you will be notified of the availability of all draft reports for review and comment.
20 May 2016	Richard Lechmere-Oertel	Please register me as a I & AP for this development. My specific concerns are: <ol style="list-style-type: none"> 1. The development is a major change in landuse character in a rural area (basically tripling to quadrupling the population of the D494 community). People have chosen to live here because of the rural lifestyle and building a suburb in the middle of the area is not appropriate; especially 85 dwellings in 27 ha. 2. A major change of landuse within a conservancy and adjacent to two private nature reserves. 3. The current road network from the N3 to the site is not designed to cope with this population size. Already traffic is being a major problem at the N3 intersections and this development will add to this chaos. The HC road is too narrow for major traffic flow, and is unsafe for this traffic volume. 4. A significant loss of valuable arable and grazing agricultural land. 5. A significant loss of habitat that is occupied by critically rare species such as oribi, crowned and wattled cranes (all regularly sighted on the land being developed). 6. A significant loss of the endangered Midlands Mistbelt Grassland. 	Your comments submitted will be reviewed and taken into account within the Basic Assessment Report which will be circulated for public review in due course. Please note that we are currently working with relevant specialists in this regard and the findings of these specialist assessments will be incorporated into the draft Basic Assessment Report for your review. Please note that your query regarding Listing Notice 3 is acknowledged, however this specific Listed activity is not triggered for the following reasons: <ol style="list-style-type: none"> 1. iii. Biodiversity Stewardship Programme Biodiversity Agreement areas – The site does not fall within the boundary of a Biodiversity Stewardship Agreement Area, the listed activity is therefore not triggered. 2. iv. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA - The site does not fall within a critically endangered or endangered ecosystem listed in terms of Section 52 of NEMBA, we have already checked these databases against SANBI's official GIS coverage which is also available on their BGIS website should you wish to double check this. 3. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans – There are currently no CBA's or Systematic Biodiversity Plans which are currently adopted by the competent authority (Department of Economic Development, Tourism and Environmental Affairs (EDTEA) as this requires a formal adoption process which has not been undertaken. We have however reviewed the relevant conservation plans which are available from Ezemvelo KZN Wildlife, despite the fact that they are not adopted by the EDTEA. The process which will be followed based on the listed activities which are triggered under the NEMA: EIA Regulations of 2014 is a Basic Assessment Process.

DATE RECEIVED	IAP	COMMENT	RESPONSE
		<p>7. A significant loss of Critical Biodiversity Area (CBA) as designated by EKZNW C- Plan 2016.</p> <p>I also think you must check the EIA regs listed on yoursite notices as the following also comes into play: LISTING NOTICE 3: (BA – regs 19-20 – in specific areas)</p> <p>12. The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>iii. Biodiversity Stewardship Programme</p> <p>Biodiversity Agreement areas;</p> <p>iv. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p> <p>Please confirm whether this is a basic assessment or a full Scoping and EIR process.</p>	<p>I trust that this clarify your queries with respect to the Listed Activities and associated Impact Assessment process.</p> <p>Should you have any queries then please do not hesitate to contact Tarin or myself.</p>
23 May 2016	Richard Lechmere-Oertel	<p>Thanks for your response. Please could you send me the shp file of the boundary of the development.</p> <p>Also, I think you may need to put up stronger notices on the site as the paper ones have all collapsed and some have blown off.</p>	<p>Noted, we have already added Deren Coetzer to the IAP register whose details we got from the applicant. If you could provide us with the documentation / rules and regulations for the conservancy for us to review then this would be greatly appreciated.</p> <p><u>Stronger notices were placed on site.</u></p>

DATE RECEIVED	IAP	COMMENT	RESPONSE
23 May 2016	Richard Lechmere-Oertel	Please could also register the uMgenyane Conservancy as an I & AP with me as the contact person as I am on the committee. Please let me know if you need any documentation about the conservancy, which is formally registered.	Attached is the GIS shape file of the property boundary as requested.
23 May 2016	Richard Lechmere-Oertel	Thanks John. I will send conservancy paperwork next week as I am leaving for Zim 1st thing tomorrow and am in a rush now.	Thanks Richard.
23 May 2016	Graham Kippen	Please could you register me as an Interested and Affected Party to the development which is being advertised along the D494 above the Hilton College Dairy.	Please could you complete the form attached and send it back to me.
23 May 2016	Graham Kippen	Form returned. Interest: Neighbour	Form Received.
23 May 2016	Bruno Verbizier Noeline	My farm is bordering with Hilton college land, could you please inform me on the property development.	Please could you complete the attached form and forward it back to me. As a registered IAP you will be notified of the availability of all draft reports for review and comment.
26 May 2016	Bruno Verbizier Noeline	Please find completed form as requested Interest: My farm shares a common boundary with the proposed development. Comments: Please supply details on standard of the proposed houses Where is the water supply coming from? What about road maintenance (D494)? What are the proposed plans for sewerage? Security? Additional Information: Yes – more details	Responses: • Standard of proposed houses This will be a low density, medium to high income housing similar to the Gates at Hilton development. • Water Supply The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on its properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams commonly known as the 'Supply Dams' and have capacities of: • Top dam 59 519m ³ • Middle dam 39 654m ³ • Bottom dam 68 438m ³ 167 611m ³ There is also an augmented supply of raw water from Midmar Dam via a private

DATE RECEIVED	IAP	COMMENT	RESPONSE
			<p>The WTW currently produces approximately 29m³h⁻¹ of potable water that is pumped through to two concrete storage reservoirs from where it gravitates to the various water reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h⁻¹ but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less efficient and reduced performance.</p> <p>The system is being upgraded to produce 70m³h⁻¹ and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).</p> <p>Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, Gates Development and the Dairy at Hilton Development.</p> <p>The final water balance for this supply will be included in the Integrated Water Use Licence Application (IWULA) currently being drafted by me. This will include the complete design and specifications of the upgraded WTW.</p> <p>The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350l per household.</p> <ul style="list-style-type: none"> • Road Maintenance (D494) There is an existing farm road on the eastern boundary of the road which joins onto the district road. The farm road is situated within an informal unregistered right of way area between the two adjacent properties. This road is not fit for reuse for access for the development. Therefore, the proposed development will be accessed off the existing gravel District Road, D494 via the provincial road P139-1. The intersection to the development will have to comply with the Kwa-Zulu Natal Department of Transport standards and regulations and is likely to be of a Type B1 gravel standard. • Sewerage The development will connect into the existing waste water treatment works on the Hilton College Estate. The development will be provided with two sewer pumpstations transferring effluent via a rising main into a gravity main flowing into the waste water treatment facility. Using the current FGG architectural layout which provides a total of 83 sites, this provides an effluent production of 83,0 m³ / day or 30,3 Ml/annum. This equates to an average flow of 0.96 l/sec with an instantaneous peak flow reaching 2.40 l/sec.

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			<p>- The internal reticulation will operate as a gravity main conveying raw effluent to a local low point. The standards for the internal sewer reticulation to be installed with the proposed development can be summarised as follows:</p> <p>Pipe Material : uPVC</p> <p>Pipe class : Class 34 (300 kPa)</p> <p>Pipe diameters : Main Gravity Main : 160mm : Individual House Connections : 110mm</p> <p>Minimum Grade : Main Gravity Main : 1:120 : Individual House Connection : 1:60</p> <p>Maximum Grade : 1:10</p> <p>Bedding : Flexible (SABS1200LB)</p> <p>Manholes : 1.0m Dia. Precast Concrete Manholes</p> <p>Manhole Spacing : 80m (Maximum)</p> <p>Minimum Cover : 600 mm (Servitudes) : 800 mm (Midblock) : 1000 mm (Road Reserve) : 1200 mm (Road Crossing)</p> <p>The internal sewer reticulation will comprise of 160mm uPVC Class 34 sewer pipe with circular precast concrete manholes at placed at a maximum spacing of 80m or at a change in direction throughout the development. House connections will be provided for each for site either midblock or into the nearest manhole.</p> <p>The detail design of the internal reticulation of the estate provides for two collection points requiring pumping.</p> <p>All internal services will be operated and maintained by the Home Owners Association responsible for the development.</p> <p>- Bulk Sewer: Sewer Pumpstations The development will be served with two sewer pumpstations. At the lowest point in the development, pump station 1 will collect effluent from 23 sites and pump raw effluent along the registered</p>

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			<p>omnibus at the lower boundary of the sites and feeds directly into the sump of Pump Station 2. Pump Station 2 will pump effluent from the entire development via a 420m long rising transferring into a 2530m gravity main in order to reach the Hilton College Waste Water Treatment Works.</p> <p>The preliminary design of the internal gravity main indicates two local low spots where two separate pump stations will be built, necessitated because of the topography. Aesthetically, the pumpstation will align with the architect's requirements, but will be primarily underground for screening purposes and to minimise the visual impact.</p> <p>Both pump stations have been sized according to the number of sites that gravitate into either conservancy tank for a time period of 24 hours. An additional pump sump of 10 minutes at the pump station's duty point will also be included the design of the conservancy volume.</p> <p>- Rising mains: The development will have two separate sewer rising mains.</p> <p>Rising Main 1: is a 860m long rising main transferring effluent from Sewer Pumpstation 1 into the sump of Sewer Pumpstation 2.</p> <p>Rising Main 2: comprise the transfer of the developments effluent from sewer pumpstation 2 to the waste water treatment works. Two possible routes were investigated, being Route 2 (2950m) This route is 270m longer, but does not cross any wetlands, buffer zones or require pipe bridges. Once the effluent is pumped 420m to the highest point, it will gravitate into the waste water treatment works.</p> <ul style="list-style-type: none"> • Security The site will be fenced before construction commences, and no staff will be
29 May 2016	Ayden Shrives Ryan Shrives	This email serves to advise you that we at 13 Hilton College road boarding Hilton College are lodging with your as interested and affected parties.	Please could you complete the form attached and forward it back to me.
30 May 2016	Ayden Shrives Ryan Shrives	<p>As requested.</p> <p>Interest:</p> <p>Our Property borders the proposed site.</p> <p>Comments:</p> <p>Have concerns with regards to the following Light Pollution, Dirt road usage, and dust and amount of</p>	<p>Responses:</p> <ul style="list-style-type: none"> • Light Pollution The development will attempt to adopt a darksky approach, the EAP has recommended that no spotlights be permitted on the estate, and that all external

DATE RECEIVED	IAP	COMMENT	RESPONSE
		<p>grasslands. Water concerns and the effect on ground water as well as run off. Noise pollution and the affect of a development of this nature.</p> <p>The affects on the existing wildlife</p> <p>Additional Information: Please can we be supplied with more detail of the proposal, site plans and the extent And proposed timelines.</p>	<p>lighting is shielded and downward facing to minimise the impact of light pollution.</p> <ul style="list-style-type: none"> Road usage (Traffice) The district road will be utilised to gan access to the development, this road is a district road and will be maintained by the Department of Transport. Dust Pollution This has been identified as a possible impact of the development, and mitigation measures have been included under Traffic Management in the EMPr. Dust is to be controlled by means of dampening all un-surfaced roads. Effect on growth of grasslands This is clarified within the findings of a biodiversity and wetland survey undertaken at the site of the proposed development. 10 of the Basic Assessment report. As an offset for the loss of indigenous grassland areas by the proposed development all areas falling outside of the development footprint will be set aside and managed for conservation purposes. Water The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on its properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams commonly known as the 'Supply Dams' and have capacities of: <ul style="list-style-type: none"> Top dam 59 519m³ Middle dam 39 654m³ Bottom dam 68 438m³ 167 611m³ <p>There is also an augmented supply of raw water from Midmar Dam via a private pipeline from the Umgeni Water tunnel entrance near St .Iosenh's Scholasticate. This augmented supply rate is some 30m³h-1 (720m³d-1).</p> <p>The WTW currently produces approximately 29m³h-1 of potable water that is pumped through to two concrete storage reservoirs from where it gravitates to the various water reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h-1 but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less efficient and reduced performance.</p> <p>The system is being upgraded to produce 70m³h-1 and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).</p>

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			<p>Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, Gates Development and the Dairy at Hilton Development.</p> <p>The final water balance for this supply will be included in the Integrated Water Use Licence Application (IWULA) currently being drafted by me. This will include the complete design and specifications of the upgraded WTW.</p> <p>The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350l per household.</p> <ul style="list-style-type: none"> • Groundwater contamination There is no onsite sewage treatment and it is anticipated that the impact on groundwater during the construction phase can be adequately managed through the implementation of the EMPr. • Runoff Runoff has been assessed within the Stormwater management plan, included as Appendix 9 of the Basic Assessment report. The collection of surface runoff will be diverted into earth lined attenuation ponds releasing run-off to predevelopment flow rates. The attenuation areas will also be used in the landscaping plan as a focal point and feature for residents. Aesthetically pleasing bio-retention mechanisms such as reed beds and specialised vegetation may be included to ensure that the quality of the controlled release of run-off is not compromised. The design methodology of the development will have an emphasis on dispersing and controlling run-off within multiple smaller attenuation ponds where feasible throughout the development in order to avoid single large and unpractical areas of attenuation. • Noise pollution Noise has been identified as a potential impact and has been assessed within the basic assessment report, this has also been included in the EMPr. However, the major noise impact will be limited to the construction phase. • Effect of a development of this nature It is unclear exactly what impacts you are referring to, however, please note that the overall development and the associated impacts of the listed activities have been assessed in detail in the draft Basic Assessment report.
30 May 2016	Ayden Shrives Ryan Shrives	Do you mind amending the email address from ryan@urban-Africa.co.za to ryan@shrives.ca please	No problem

DATE RECEIVED	IAP	COMMENT	RESPONSE
30 May 2016	Doug Burden Duzi uMngeni Conservation Trust	Please could you include me on your list of I A P's for the abovementioned project - thanks and regards, Doug Burden - (in my capacity as both a neighbour to this development , as well as representing D U C T re potential water related issues affecting Albert Falls Dam)	Noted. You have been included as an interested and affected party on our database.
30 May 2016	Leandra Carcary	I would like to register as an IAP for myself as well as my mother who lives on the property next to me. Our property borders the dairy, Farm 12A and B D494	Please could you complete the attached form and forward it back to me.
31 May 2016	Leandra Carcary	As requested. Interest: My property borders the proposed development. I am a single mum with two teenage girls at home. Comments: I am opposed to the proposed development. I am very concerned about the security and all it would involve having the development go ahead in this area.	Responses: • Security The site will be fenced before construction commences, and no staff will be permitted to reside on the site. It is unclear exactly what impacts you are referring to, however, please note that the overall development and the associated impacts of the listed activities have been assessed in detail in the draft Basic Assessment Report.
31 May 2016	Myna Di Carlofelice	As requested. Interest: My property borders the proposed development. I am 75 years old and live on my own. Comments: I am opposed to the proposed development. I am very concerned about the security and all it would involve having the development go ahead in this	Responses: • Security The site will be fenced before construction commences, and no staff will be permitted to reside on the site. It is unclear exactly what impacts you are referring to, however, please note that the overall development and the associated impacts of the listed activities have been assessed in detail in the draft Basic Assessment Report.
1 June 2016	Marc Hattingh uMngeni Municipality	I refer to the above mentioned Notice in The Witness on 6th May 2016 calling for persons to register as an Interested and Affected party for the proposed residential development on Portion 167 (of 10) of the Farm Hilton No. 12304.	Further information will be forwarded to your department in the form of the draft Basic Assessment Report.

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		<p>Due to chronic ill health I have only just returned to work and was informed of this Notice.</p> <p>Please may I register the uMngeni Municipality as an Interested Affected Party as the proposed development is located within its jurisdiction with the application in terms of the Spatial Land Use Management Act, No. 16 of 2013 and the submission of building plans being considered by this Municipality in terms of the National Building Regulations and Building Standards Act, No. 103 of 1977, as amended.</p> <p>Sincere apologies for the late notification. I am the only Environmental Officer working for the uMngeni Municipality and due to ill health was unable to register the Municipality timeously.</p> <p>Please can the background Information Document be forwarded to me for comments to be provided.</p>	
6 June 2016	Craig Wing	Kindly register me as an interested and effected party	Please could you provide me with more detail as to which project you wish to register as an IAP for?
6 June 2016	Craig Wing	The project is the old Hilton College Dairy site as advertised in this morning's Witness.	Could you please complete the form attached so I can register you on our database.
6 June 2016	Craig Wing	<p>IAP registration attached.</p> <p>Interest:</p> <p>Property owner along the Hilton College road</p>	Noted.
6 June 2016	Susan Pane-James	Please can you register me as an Interested and Affected Party for the proposed development of 85 sites at the Old Dairy on the D494 in Hilton.	Please could you complete the attached IAP form and send it back to me so I can register you on our database.
6 June 2016	Susan Pane-James	<p>Attached please find the completed form.</p> <p>Interest:</p> <p>I live in the area.</p>	Thank you sending the IAP form back to me, you have been registered and we will respond to your comments in due course.

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		<p>Comments: I would like to see what the development involves and what is planned for sewerage removal and water supply Has the land use of this land already been changed from agricultural? Additional Information: Yes.</p>	<ul style="list-style-type: none"> <p>Sewerage The development will connect into the existing waste water treatment works on the Hilton College Estate. The development will be provided with two sewer pumpstations transferring effluent via a rising main into a gravity main flowing into the waste water treatment facility. Using the current FGG architectural layout which provides a total of 83 sites, this provides an effluent production of 83,0 m³ / day or 30,3 Ml/annum. This equates to an average flow of 0.96 l/sec with an instantaneous peak flow reaching 2.40 l/sec.</p> <p>- The internal reticulation will operate as a gravity main conveying raw effluent to a local low point. The standards for the internal sewer reticulation to be installed with the proposed development can be summarised as follows:</p> <p>Pipe Material : uPVC</p> <p>Pipe class : Class 34 (300 kPa)</p> <p>Pipe diameters : Main Gravity Main : 160mm : Individual House Connections : 110mm</p> <p>Minimum Grade : Main Gravity Main : 1:120 : Individual House Connection : 1:60</p> <p>Maximum Grade : 1:10</p> <p>Bedding : Flexible (SABS1200LB)</p> <p>Manholes : 1.0m Dia. Precast Concrete Manholes</p> <p>Manhole Spacing : 80m (Maximum)</p> <p>Minimum Cover : 600 mm (Servitudes) : 800 mm (Midblock) : 1000 mm (Road Reserve) : 1200 mm (Road Crossing)</p> <p>The internal sewer reticulation will comprise of 160mm uPVC Class 34 sewer pipe with circular precast concrete manholes at placed at a maximum spacing of 80m or at a change in direction throughout the development. House connections will be provided for each for site either midblock or into the nearest manhole.</p>
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			<p>The detail design of the internal reticulation of the estate provides for two collection points requiring pumping.</p> <p>All internal services will be operated and maintained by the Home Owners Association responsible for the development.</p> <p>- Bulk Sewer: Sewer Pumpstations The development will be served with two sewer pumpstations. At the lowest point in the development, pump station 1 will collect effluent from 23 sites and pump raw effluent along the registered omnibus at the lower boundary of the sites and feeds directly into the sump of Pump Station 2. Pump Station 2 will pump effluent from the entire development via a 420m long rising transferring into a 2530m gravity main in order to reach the Hilton College Waste Water Treatment Works.</p> <p>The preliminary design of the internal gravity main indicates two local low spots where two separate pump stations will be built, necessitated because of the topography. Aesthetically, the pumpstation will align with the architect's requirements, but will be primarily underground for screening purposes and to minimise the visual impact.</p> <p>Both pump stations have been sized according to the number of sites that gravitate into either conservancy tank for a time period of 24 hours. An additional pump sump of 10 minutes at the pump station's duty point will also be included the design of the conservancy volume.</p> <p>- Rising mains: The development will have two separate sewer rising mains</p> <p>Rising Main 1: is a 860m long rising main transferring effluent from Sewer Pumpstation 1 into the sump of Sewer Pumpstation 2.</p> <p>Rising Main 2: comprise the transfer of the developments effluent from sewer pumpstation 2 to the waste water treatment works. Two possible routes were investigated, being Route 2 (2950m) This route is 270m longer, but does not cross any wetlands, buffer zones or require pipe bridges. Once the effluent is pumped 420m to the highest point, it will gravitate into the waste water treatment works.</p> <p>• Water</p> <p>The Hiltonian Society has three earth dams from which it can abstract water for purification and supply to the various entities on its properties and those being developed by Gwens Stream Estates (Pty) Ltd. These dams commonly known as the 'Supply Dams' and have capacities of:</p> <ul style="list-style-type: none"> • Top dam 59 519m³ • Middle dam 39 654m³
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			<ul style="list-style-type: none"> • Bottom dam 68 438m³ 167 611m³ <p>There is also an augmented supply of raw water from Midmar Dam via a private pipeline from the Umgeni Water tunnel entrance near St Joseph's Scholasticate. This augmented supply rate is some 30m³h-1 (720m³d-1).</p> <p>The WTW currently produces approximately 29m³h-1 of potable water that is pumped through to two concrete storage reservoirs from where it gravitates to the various water reticulation systems. The system was originally designed to perform at a rate of purification of 35m³h-1 but over time the electric motors driving the pumps had to be rewound. This rewinding caused the motors to become less efficient and reduced performance.</p> <p>The system is being upgraded to produce 70m³h-1 and an additional storage reservoir will be constructed on the Dairy at Hilton site. This reservoir will have a storage capacity for at least 3 days (store 250m³ of potable water).</p> <p>Thus, the WTW will have sufficient capacity to satisfy the water requirements of the College, Staff Housing, Teapots Community, Gates Development and the Dairy at Hilton Development.</p> <p>The final water balance for this supply will be included in the Integrated Water Use Licence Application (IWULA) currently being drafted by me. This will include the complete design and specifications of the upgraded WTW.</p> <p>The potable water demand of the two housing developments has been determined utilising a daily demand of 1 350l per household.</p> <ul style="list-style-type: none"> • Land use <p>National Department of Agriculture has already released the entire property from the provisions of Act 70 of 70 which governs the subdivision of agricultural land.</p>
19 June 2016	Craig Gordon	I would like to oppose this development as it's going to destroy our wildlife and agricultural land.	<p>Responses:</p> <ul style="list-style-type: none"> • Wildlife Issues <p>This is currently being assessed through the Basic Assessment process.</p> <ul style="list-style-type: none"> • Land use <p>National Department of Agriculture has already released the entire property from the provisions of Act 70 of 70 which governs the subdivision and development of agricultural land.</p>

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8 February 2017	uMngeni Municipality: Marc Hatting	<p>I refer to your letter dated 4th January 2017 and accompanying Basic Assessment Report for the proposed 83 freehold residential stands on Portion 10 of the Farm Hilton No. 12304.</p> <p>This office has read through the comprehensive report and has inspected the property and has noted the following:</p> <ol style="list-style-type: none"> I. Portion 10 of the Farm Hilton No. 12304 is located outside the uMngeni Urban Planning Scheme; II. In terms of the uMngeni Municipality Integrated Development Plan and Spatial Development Framework Plan the property is located within the Primary Node and is designated as being Urban Transition; III. Access to the development will be from the D494 which is a gravel road; IV. The property is currently being used for intensive agricultural activities namely keeping of cattle, grazing and maize; V. There did not appear to be anything that would hinder the agricultural activities on the property; VI. There is an extensive wetland and watercourse that traverses the property and it was noticed during the site inspection that it supports a healthy ecosystem; VII. The dam at the bottom of the property appears to have been recently constructed; VIII. There are a number of buildings on the property which appear to be used for agricultural purposes and accommodation. It was not determined during 	Noted. The Applicant has noted that certain comments are incorrectly stated and will liaise with you directly.

		<p>the site inspection if there were any labour tenants residing in the buildings;</p> <p>The uMngeni Municipality has the following comments in respect of the Environmental Authorisation application:</p> <ol style="list-style-type: none"> 1. Additional information is needed to confirm the need and desirability of establishing eighty three (83) residential sites on a property that is currently being used for viable agricultural activities and has a vibrant ecosystem around and within the wetland and watercourse; 2. Comment from the KwaZulu-Natal Department of Agriculture is needed confirming that the property cannot continue to be used for agricultural activities and is best suited for a housing development; 3. Written confirmation being received that the dam located in close proximity to the Farm Hilton No. 12304 obtained the required authorisation from the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs and the Department of Water and Sanitation in terms of the National Environmental Management Act, No. 107 of 1998, as amended, and the National Water Act, No. 36 of 1998; 4. The proposed development of the property will require Consent from the National Department of Agriculture in terms of the Subdivision of Agricultural Land Act, No. 70 of 1970; 5. The proposed development will require an application in terms of the Spatial Land Use Management Act, No. 16 of 2013 for the extension of the uMngeni Urban Planning Scheme to include Portion 10 of the Farm Hilton No. 12304 and it being zoned to accommodate the proposed development and the subdivision of eighty three (83) residential sites; 	
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		<p>6. A Traffic Impact Assessment will be needed to address the impact the proposed development will have on the D494 and the type of entrance that is needed it being noted that the D494 is a gravel road. The Traffic Impact Assessment will need to confirm whether the intersection of the D494 and P139-1 must be upgraded to accommodate an additional estimate of one hundred and thirty (130) vehicles it being noted that the KwaZulu-Natal Department of Transport is the controlling authority for the D494 and P130-1;</p> <p>7. A copy of the Water Use Licence in terms of the National Water Act, No. 36 of 1998 must be submitted to this office for comment once it has been submitted to the Department of Water and Sanitation;</p> <p>8. Eskom is the Service Provider for electricity to the proposed development. Written confirmation is needed from them confirming that sufficient capacity exists for the proposed development. In this regard it is noted that in terms of Part XA: Energy Efficiency in Buildings, the appointed Architect must address what measures will be implemented for each dwelling house to reduce the need for electricity;</p> <p>9. In the Basic Assessment Report comment was given that the sewage disposal will be accommodated within the existing Waste Water Treatment Works (WWTW) at Hilton College and that it does not trigger any List Activities in terms of the National Environmental Management Act, No. 107 of 1998. Issues of concern that this office has are as follows:</p> <p>9.1 What is the size of the Sewer Rising Main to Hilton College WWTW, what route will it follow, what impact will it have on biodiversity along its route and will it be restricted to property owned by the Hiltonian Society;</p>	
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		<p>9.2 An average dwelling house with a family of four (4) discharges an estimate of 900 litres of waste per day. Will the proposed Sewer Rising Main and the existing Hilton College WWTW have the capacity to carry this load from the proposed development?;</p> <p>10. The generation of storm water from the development will need to be addressed in a Storm Water Management Plan which will need to be included in the application in terms of the Spatial Land Use Management Act, No. 16 of 2013 and the submission of the engineering plans for bulk earthworks and the submission of building plans with cognisance of the discharge of storm water from the common areas and hardened surfaces;</p> <p>11. The developer confirming what measures will be implemented to ensure that the proposed dwelling houses along the boundary of Portion 13 and 17 of the Farm Hilton No. 12304 do not interfere with the amenity of the adjoining properties with cognisance being given to artificial lighting overlooking the Hilton ridge/plateau north of Pietermaritzburg;</p> <p>12. The Environmental Management Programme (EMPr) must include the following information:</p> <p>12.1 What measures will be implemented during the construction phase of the development to address the discharge of storm water from the construction site into the wetland and water course, i.e. the erection of hoarding, attenuation ponds to prevent silt from polluting the healthy ecosystem;</p> <p>12.2 What measures will be implemented for the installation of the Sewer Rising Main to the Hilton College WWTW and the reinstatement and rehabilitation of the pipeline route;</p> <p>12.3 A plan for the control of alien vegetation with cognisance of those areas in close proximity to the wetland and water course.</p>	
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		<p>Please communicate with the Environmental Management Officer, Mr Marc Hattingh should you require any clarification of the above mentioned comments.</p> <p>Please provide this office with the Environmental Authorisation when it is issued by the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs.</p>	
13 February 2017	Department of Agriculture and Rural Development: Macro Planning	<p>COMMENTS REQUIRED IN TERMS OF SECTION 33 OF SPLUMA NO.16 OF 2013, AND SCHEDULE 1 OF THE KZN PDA No.06 OF 2008, AND WITH REFERENCE TO CONSERVATION OF AGRICULTURAL RESOURCES ACT (43 of 1983) REGULATIONS</p> <p>1. General and Purpose</p> <p>1.1. The Provincial Department of Agriculture and Rural Development: Agricultural Resource Management Directorate Acknowledges receipt of the Draft Basic Assessment Report on the proposed residential development.</p> <p>1.2. The submitted draft basic assessment report seeks to receive comments from the Department of Agriculture and Rural Development (DARD) on the proposed residential development on portion 167 (of 10) of the farm Hilton No. 12304, also referred to as the Old dairy Site.</p> <p>2. Background</p> <p>2.1. Portion 167 (of 10) of the farm Hilton No.12304 is 174.63 ha in size.</p> <p>2.2. The footprint of the proposed residential development is approximately 32.7ha in extent.</p> <p>2.3. This development will cater for 83 residential stands and associated access and service infrastructure.</p>	Noted. Please note that the property portion for which you have commented on, is the incorrect property portion. It should be Portion 10 of the Farm Hilton No. 12304.

		<p>2.4. The proposed residential stands are on average approximately 2150 square meters in extent.</p> <p>Proposed Residential Development on Old Dairy Site Hilton College 2017 01_4466</p> <p>2.5. 19.3 ha of the footprint have been cultivated in the past 10 years, while 12.9 ha comprises indigenous vegetation and have not been cultivated in the past 10 years.</p> <p>3. Site Observation</p> <p>3.1. The site is accessed by D494 and about 5km north of Hilton.</p> <p>3.2. The site is on an undulating landscape, with a series of three small dams within a wetland at the center of the site.</p> <p>3.3. The dams and wetland system drains into a stream just outside the western boundary of the property.</p> <p>3.4. The D494 cuts a strip of land that is about 200m wide from the western boundary and narrows to about 80m toward the eastern boundary site along the southern boundary.</p> <p>3.5. The current land use of the site is predominantly grazing. A cattle kraal is located to the north of the farm equipment storage facility near the access gate.</p> <p>3.6. Adjacent to the storage facility, is an old small farm house. 3.7. The site is divided into several small grazing camps.</p> <p>3.8. On the strip of land between D494 road and the southern boundary, is 6 Jojo tanks that appear to belong to the adjacent neighboring farm to the south, unused rugby field to near the eastern boundary, and grazing land towards the western boundary.</p> <p>3.9. The neighboring farm to the south of the site is highly diversified in terms of land use. It has cattle</p>	
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		<p>farming, horse rearing, free range chicken and some vineyards.</p> <p>4. Comments</p> <p>4.1. The site is on category A and B. The A starts from the western boundary and constitutes 20%, and rest is B.</p> <p>4.2. Records of public participation process indicate that some neighbors (three) opposed the proposed development on the basis of its impact on agriculture, amongst other issues.</p> <p>4.3. The response from the consultant indicated that the land has been released from the provisions of Act 70 of 1970.</p> <p>4.4. However, there is no consent letter from the National Department of Agriculture, Forestry, and Fisheries attached to support this statement.</p> <p>Proposed Residential Development on Old Dairy Site Hilton College 2017_01_4466</p> <p>4.5. There is also no mention of the provincial Department of Agriculture and Rural Development commenting on the Basic Information Document that would normally precedes the Basic Assessment Report.</p> <p>4.6. A search on the database of the provincial Department of Agriculture and Rural Development's Land Use Regulatory Unit showed no records of an application for a subdivision in terms of Act 70 of 1970 or a prior application on proposed residential development on Portion 167 (of 10) of the farm Hilton No.12304.</p> <p>4.7. A letter dated 16 January 2017 was sent to the applicant requesting a consent letter that exempt Portion 167 (of 10) of the farm Hilton No.12304.</p> <p>4.8. The applicant sent a letter dated 17 November 2009, supporting a proposed township development on</p>	
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		<p>Portion 2 and Remainder of the farm Ongegund No. 795, Portion 1 of the farm Broedershoek No.793, Portion 5 (of 2), Remainder of Sub 2, Portion 9 (of 2) and Portion 10 (of 3) of the farm Hilton College No.12304.</p> <p>4.9. There is no mention of Portion 167 (of 10) of the farm Hilton College No.12304 in the letter provided.</p> <p>4.10. Over and above, the letter provided does not have a consent number.</p> <p>Concluding Statement</p> <p>Please be advised that the Provincial Department of Agriculture and Rural Development: Land Use Regulatory Unit Objects the proposed development on portion 167 (of 10) of the farm Hilton 12304, as this property has not been released from the provisions of Subdivision of Agricultural Land Act 70 of 1970, and therefore remains an Agricultural Land</p>	
<p>14 February 2017</p>	<p>uMngeni Municipality: Marc Hatting</p>	<p>I refer to my electronic mail dated 8th February 2017.</p> <p>Please note that I made an error with the mapping information that I used.</p> <p>Please retract the uMngeni Municipality comment dated 8th February 2017 and replace them with the amended comment dated 13th March 2017 which confirms inter alia that Portion 10 of the Farm Hilton No. 12304 is located within the uMngeni Urban Planning Scheme and does not require an application in terms of 70 of 70.</p> <p>I refer to your letter dated 4th January 2017 and accompanying Basic Assessment Report for the proposed 83 freehold residential stands on Portion 10 of the Farm Hilton No. 12304.</p> <p>The purpose of this letter is twofold: to retract the municipality's comments of 8th February 2017 and replace them with these comments, and to state the municipality's views regarding the need for any</p>	<p>Noted.</p>

		<p>further approval in terms of the Subdivision of Agricultural Land Act (Act 70 of 1970)</p> <p>1. Act 70 of 1970 approval and inclusion into the Planning Scheme</p> <p>Following a detailed and inclusive planning process, the Hiltonian Society produced an Integrated Development Plan for its landholdings during 2009/10. The Plan identified areas suitable for conservation, agricultural and education purposes, as well as two relatively small areas of land that could be utilized for low-density housing estates, and the Plan formed the basis for an application to the national Department of Agriculture. The Department granted its approval, subject to incorporation into the uMngeni Planning Scheme. Acting on this consent, the municipality incorporated the entire Hilton College Estate into its Planning Scheme, and zoned the land in line with the designations recommended in the Society's Plan.</p> <p>Portion 10 of the Farm Hilton No. 12304 is included in the uMngeni Urban Planning Scheme and consists of two (2) zones, the first being Urban Transition which accommodates the proposed eighty-three (83) residential subdivisions, and the remainder of the property being Urban Agriculture 1.</p> <p>On the basis of the above, the municipality is of the opinion that no further consent is required in terms of Act 70 of 1970. In this regard, it must be noted that, following planning approval for the residential estate at the Gates, both the Surveyor-General and the Registrar of Deeds were comfortable to approve the registration and transfer of subdivisions on the strength of the national Department of Agriculture's original consent.</p> <p>2. Amended comments on the Basic Assessment Report</p>	<p>Town Planning requirements will be submitted once Environmental Authorisation has been granted.</p>
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		<p>During the on-site inspection on 9th January 2017, the following was noted:</p> <ul style="list-style-type: none"> I. Access to the proposed development is off the D494 which is under the control of the KwaZulu-Natal Department of Transport with a 15,24 metre road building line along the boundary; II. The D494 splits the property with some 20 hectares opposite the proposed development; III. The property is used for intensive agricultural use with pastures, evidence of crops having been planted in the past and a large herd of cattle grazing; IV. The wetland and water course sustains a healthy ecosystem and noticed a flourishing birdlife with other animals and insects being evident; V. There were a number of buildings on the property with no visible signs of labour tenants residing on the property. <p>The uMngeni Municipality has the following comments in respect of the Environmental Authorisation application:</p> <p>An application must be prepared and submitted to the uMngeni Municipality for the proposed subdivision of the eighty three (83) residential subdivisions within the Urban Transition zone in terms of the Spatial Planning and Land Use Management Act, No. 16 of 2013, read with the uMngeni Municipality Spatial and Land Use Management By-Laws;</p> <p>The submission of a site development plan will be required from a suitably qualified professional showing full particulars of the proposed development, which must comply with Section 4.2 (application, procedure, design and layout of</p>	<p>Town Planning requirements will be submitted once Environmental Authorisation has been granted.</p> <p>Town Planning requirements will be submitted once Environmental Authorisation has been granted.</p>
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		<p>medium density housing development) from the uMngeni Urban Planning Scheme;</p> <p>According to imagery from Google Earth, the third dam located in close proximity to the boundary of the Remainder of the Farm Hilton No. 12304 appears to have been constructed in the past few years. In this regard, written confirmation must be received that the dam has the required authorisation from the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs and the Department of Water and Sanitation has been obtained in terms of the National Environmental Management Act, No. 107 of 1998, as amended, and the National Water Act, No. 36 of 1998;</p> <p>Due to the nature of the proposed development of Portion 10 of the Farm Hilton No. 12304 it may require an application for a Water Use Licence in terms of the National Water Act, No. 36 of 1998. Please keep the uMngeni Municipality abreast of this application;</p> <p>The KwaZulu-Natal Department of Transport has approved the proposed access and egress to the development, with cognizance taken being of traffic sight lines along the D494, storm water management and the erection of an entrance which must include a collection point for the collection of household refuse by the uMngeni Municipality;</p> <p>Written confirmation being received from Eskom that electricity can be provided to the entire development;</p> <p>The submission of building plans in terms of Section 4 of the National Building Regulations and Building Standards must comply with Part XA: Energy Efficiency in Buildings with measures being implemented to address the need for reliance on electricity from Eskom and the use of green energy saving measures such as solar and heat pumps;</p>	<p>The dam referred to, does not fall within the scope of this application, however, Terratest has been informed by the applicant that the dam does have all required approvals in place.</p> <p>A WULA process is underway, however this is done through a separate process as it is to be submitted to the Department of Water Affairs for approval. Dr Roy Mottram is responsible for the WULA process and associated submissions.</p> <p>KZN Department of Transport has signed consent for the upgrades required for the D494, this is to be done in accordance to the design specifications that will meet the requirements of DoT.</p> <p>The application process is underway; documentation will be submitted once received.</p> <p>Energy efficiency will be investigated and the development will need to comply with the National Building regulation requirements.</p>
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		<p>In the Basic Assessment Report, comment was given that sewage disposal will be accommodated within the existing Waste Water Treatment Works (WWTW) at Hilton College, and that it does not trigger any Listed Activities in terms of the National Environmental Management Act, No. 107 of 1998. Issues of concern that this office has are as follows:</p> <p>What is the size of the Sewer Rising Main to Hilton College WWTW, what route will it follow, what impact will it have on biodiversity along its route;</p> <p>An average dwelling house with a family of four (4) discharges an estimate of 900 litres of waste per day. Will the proposed Sewer Rising Main and the existing Hilton College WWTW have the capacity to carry this load from the proposed development;</p> <p>The generation of storm water from the development will need to be addressed in a Storm Water Management Plan which will need to be included in the application in terms of the Spatial Land Use Management Act, No. 16 of 2013 and the submission of the engineering plans for bulk earthworks and the submission of building plans with cognisance of the discharge of storm water from the common areas and hardened surfaces;</p> <p>The developer confirming what measures will be implemented to ensure that the proposed dwelling houses along the boundary of Portion 13 and 17 of the Farm Hilton No. 12304 do not interfere with the amenity of the adjoining properties with cognisance</p>	<p>The Rising mains: The development will have two separate sewer rising mains. Rising Main 1: is a 860m long rising main transferring effluent from Sewer Pumpstation 1 into the sump of Sewer Pumpstation 2. Rising Main 2: comprise the transfer of the developments effluent from sewer pumpstation 2 to the waste water treatment works. Two possible routes were investigated, being Route 2 (2950m) This route is 270m longer, but does not cross any wetlands, buffer zones or require pipe bridges. Once the effluent is pumped 420m to the highest point, it will gravitate into the waste water treatment works. These will have a small diameter, the route has been chosen with the aim of avoiding wetlands and the majority of the pipeline is along the road. The impact of the rising main on the biodiversity is anticipated to be minimal, provided rehabilitation is in accordance to the EMPr</p> <p>The development will connect into the existing waste water treatment works on the Hilton College Estate. The development will be provided with two sewer pumpstations transferring effluent via a rising main into a gravity main flowing into the waste water treatment facility. Using the current FGG architectural layout which provides a total of 83 sites, this provides an effluent production of 83,0 m³ / day or 30,3 Ml/annum. This equates to an average flow of 0.96 l/sec with an instantaneous peak flow reaching 2.40 l/sec. The system has been designed by an engineer to accommodate these requirements.</p> <p>A stormwater Management Plan has been produced it has been included in the Basic Assessment report that will be circulated for public comment, and will be submitted along with the other town planning documentation, once EA has been granted.</p> <p>Downward facing lighting will be used for the proposed development, encouraging the dark sky effect. A Visual Impact Assessment has also been carried out, and has been included in the Basic Assessment Report which will be circulated for public comment.</p>
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15 February 2017	Exemvelo Wildlife KZN	<p>Thank you for forwarding the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment.</p> <p>Ezemvelo will not be providing comment on this application, but trust that all significant biodiversity related concerns have been clearly identified and made known in this assessment together with appropriate measures to safeguard the ecological integrity (viz. avoid, mitigate and thereafter ameliorate) of the developable area.</p> <p>Please be advised that the potential impacts upon biodiversity will be evaluated by the Competent Authority who may, upon receipt, refer the application this organization for evaluation and advice prior to making a decision. In such case, the environmental principles prescribed in the National Environmental Management Act 107 of 1998, the objectives of the National Environmental Management Biodiversity Act 10 of 2004 and best practice will be applied.</p> <p>Ezemvelo KZN Wildlife wishes you well with your assessment</p>	Noted.
18 February 2017	UMGENYANE CONSERVANCY	<p>UMGENYANE CONSERVANCY RESPONSE TO THE HILTON COLLEGE PROPOSED GATES 3 DEVELOPMENT OF THE OLD DAIRY SITE</p> <p>INTRODUCTION</p> <p>Although written by Richard Lechmere-Oertel and reviewed by Mike Wolhuter, Graham Kippen and Doug Burden (as representatives of the uMgenyane conservancy and D494 community), this document represents our communal response to the proposed Gates 3 development of 83 houses near the Old Dairy on the Hilton College estate along the D494 district road. These comments are our formal response to the draft Basic Assessment report released by Terratest (report 41597). This document emerges from discussions at an open community meeting (held on Wednesday 1st February 2017 at number 15, D494), which was attended by approximately 80% of the landowners in the community. The document has been circulated to everyone on the D494 and uMgenyane</p>	

	<p>email databases and people have had opportunity to give comment.</p> <p>CURRENT COMMUNITY DESCRIPTION</p> <p>The D494 community currently comprises approximately 27 properties with a total of approximately 44 family's resident in the area (map 1). The character of the D494 area is rural, with most cadastres being used for farming and rural residences. The area is within the uMgenyane conservancy which contains several proclaimed private nature reserves (map 2).</p> <p>GENERAL COMMENTS ON THE REPORT</p> <ul style="list-style-type: none"> · The report is highly repetitive, with many copy and paste sections duplicated two or three times. It makes for very cumbersome reading and navigation in the document. · Many members of the community were overwhelmed by the size and complexity of the document, both of which were unnecessary, and which make the report unavailable to a non-technical readership. <p>BIODIVERSITY, CONSERVATION STATUS AND PROTECTED AREAS</p> <ul style="list-style-type: none"> · The biodiversity issues are generally well covered by the specialists, although there is no way around the fact that the development will seriously compromise an Ezemvelo KZN Wildlife Critical Biodiversity Area in the Midlands Mistbelt Grassland, with a significant number of biodiversity features: <ul style="list-style-type: none"> • Known and current locality of Endangered oribi antelope. • Known and current breeding and foraging locality of Vulnerable blue and crowned cranes. • Almost entirely within an area identified by EKZNW as important for Protected Area expansion. · The reality is that these sensitive species and features will be compromised because of the 	<p>RESPONSE TO GENERAL COMMENTS</p> <p>Thank you for your feedback, the report has been amended as to avoid repetition as much as practically possible. The contents of the report is set out as per the NEMA regulations, should there be any further issues, please do not hesitate to contact the EAPS for assistance.</p> <p>RESPONSE TO BIODIVERSITY, CONSERVATION STATUS AND PROTECTED AREA COMMENTS</p> <p>These issues have been addressed in the Biodiversity and Wetland Survey and carried through into the Basic Assessment report. Please see concluding statement in the Biodiversity and Wetland Assessment, which states:</p> <p>“This status suggests that the proposed development might have a potential fatal flaw and authorisation could be refused. However, if the applicant wishes to pursue the project further then it will be necessary to demonstrate that appropriate and sustainable mitigatory measures can be put in place with the understanding that those measures will be binding in perpetuity. The mitigatory measures which have been proposed here are centred primarily on the preservation of a suitable area of intact Midlands Mistbelt Grassland but while the protection of the vegetation obviously also benefits the fauna, further recommendations for the Blue Cranes and the Oribi are also put forward. The area proposed for mitigation is 132 ha in extent and so is some ten times the area of intact grassland (12.9 ha) which would be lost. It is recognised that the mitigation area includes some existing agricultural areas which are recovering but, even if these are excluded, the ratio will still exceed 5:1 and so will be favourable. It is suggested that if this area is accorded conservation</p>
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		<p>development due to the level of disturbances associated with construction and increased density of residents.</p> <ul style="list-style-type: none"> · Section 4.2.1 gives detail on protected areas within 5km, but doesn't mention the existing of the uMgenyane Conservancy, which includes the site and surrounding area (see map 2). The uMgenyane is one of the oldest conservancies in the province. · It also doesn't mention the proclaimed private nature reserves and biodiversity agreement sites along the D494 or very well-known Umgeni Nature Reserve. <p>SENSE OF PLACE AND DENSITY OF DEVELOPMENT</p> <ul style="list-style-type: none"> · No mention at all is made in the BAR of the 'sense-of-place' issue. The sense of place of the conservancy and the D494 will forever be changed from a beautiful rural landscape characteristic of the KZN midlands to a suburb. · Most D494 and HC road residents have specifically chosen to live in this area because of its low-density rural environment. · Adding 83 houses will over triple the existing population. · The proposed development footprint is effectively a suburb with plot sizes similar to central Hilton. · This is not a trivial landuse change and there is no way to disguise it with planning or use of indigenous vegetation. · Section 4.2.3. of the report states that the "project objective is to provide an upmarket estate in a semi-rural setting, which blends into the surrounding landscape". · The problem is essentially one of scale – the development is too large and dense for the nature and character of the landscape. 	<p>status and if the required monitoring and management of the area are carried out, then there will be a nett improvement of the environment over the present condition. On that basis, the potential fatal flaw is negated and the development proposal is not opposed."</p> <p>The conservancy which you refer to is to the best of our knowledge not gazetted in terms of NEPAA and therefore would not reflect on our mapping. We are however aware of the James Wakelin stewardship site which is in close proximity to the site.</p> <p>The recommendation measures referred to have all been included into the Basic Assessment report as per the specialist. Should you require any further clarity on certain topics, please do not hesitate to contact the EAPS.</p> <p>Thank you for the information on the Conservancies, these will be addressed accordingly.</p> <p>RESPONSE TO SENSE OF PLACE AND DENSITY OF DEVELOPMENT</p> <p>The proposed development is deemed to be in line with the Economic Development Strategy of the Local Municipality. The process included full consultation with the Estate community, neighbouring landowners, the uMgeni Municipality, various government departments, Ezemvelo KZN Wildlife, National Department of Agriculture and the Department of Agriculture and Environmental Affairs.</p> <p>Although the property on which the development is proposed is approximately 174.63 hectares in extent and the proposed development footprint is approximately 32.7 hectares.</p> <p>Of this development footprint approximately 19.8 hectares has been cultivated since 01 April 1998 and approximately 12.9 hectares comprise indigenous vegetation that has not been cultivated within the preceding 10 years but has been utilised for grazing and hay bailing.</p> <p>As mitigation for the loss of indigenous grassland areas by the proposed development all areas falling outside of the development footprint will be set aside and managed for conservation purposes. This includes areas of important grassland and provides for a dedicated environmental corridor to the adjacent James Wakelin Stewardship site.</p> <p>A Visual Impact Assessment was undertaken with it concluding that" While any development within a landscape will, inevitably, have some impact on the surrounding environment, we submit that, managed correctly, the impact on the aesthetics can invariably be minimized. In the specific instance of The Dairy at Hilton, the visual impacts will be small. The combined effect of the surrounding topography</p>
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		<ul style="list-style-type: none"> · Likewise, the cumulative hydrological impacts of development in this catchment of the uMngeni River, immediately above Albert Falls is left unattended by the report. There are multiple issues regarding the hardening of surfaces, possible sewerage overflows and so on associated with the increasing development of the area that should be considered. <p>CONSTRUCTION, TRAFFIC, DUST</p> <ul style="list-style-type: none"> · The issues of traffic and roads are not at all considered in the BAR (especially in light of the point above) other than general comments on how to handle construction traffic. · Adding 83 families to a road network (both the D494 and the Hilton College Road) is not a minor issue and the overall traffic impacts have to be addressed · Specific deficiencies in the report include: <ul style="list-style-type: none"> • No effort is made to quantify the current and proposed traffic volumes or to interpret them in context of what the current roads and intersections are designed to service. • Both the affected roads currently suffer rapid pothole formation (despite the D494 having been re-surfaced in the past six months) and the HC road is regularly having to have its surface patched, indicating sub-surface failure at current traffic volumes. • The regular use of the HC Road and D494 by construction vehicles over the proposed multi-year construction period will cause a very rapid deterioration, especially during the wet season on the D494, which is already collapsing under the current traffic load. Both these roads would need to be upgraded PRIOR to development, or they will essentially collapse. • The intersection of the D494 onto the HC road is not designed to handle the proposed traffic volumes, and is a potentially dangerous intersection, especially during the regular misty periods. 	<p>RESPONSE TO CONSTRUCTION, TRAFFIC, DUST</p> <p>The proposed entrance to the site will be off the existing D494. The access along the D494 will be upgraded to black top from the entrance of the development to the intersection of the D494 and Hilton Avenue. The intersection of the D494 & Hilton Avenue will be upgraded to a Type B2 intersection, to a standard which meets Department of Transport design requirements</p> <p>The Department of Transport has been consulted and has provided Landowner consent for the upgrade of the road.</p> <p>RESPONSE TO CRIME</p> <p>The site will be fenced before construction commences, and no staff will be permitted to reside on the site.</p>
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		<ul style="list-style-type: none"> • The intersections along the Hilton College Road around Grace College, the Life Hospital and the N3 are very choked under current traffic loads, and this will only get worse if another 83 house development is approved prior to these intersections being upgraded. • The issue of dust along the D494 is not addressed in the BAR. This is currently a very real issue and the addition of many years of building vehicles and then 83 additional families (potentially adding 100-160 cars) is going make this a very real problem. <p>CRIME</p> <ul style="list-style-type: none"> • There is a very real risk that crime in the area will increase during the multi-year construction phase. • It is difficult to quantify this other than to state that there is a general association between construction and crime in an area, and this will impact the current residents. <p>PUBLIC INTEREST</p> <p>Section 8.4 states that there is no significant public interest in the development and thus no public meeting is necessary. This is simply not true, as most of the D494 and HC road residents are very interested in the proposed development as it will directly affect their lives. Surely the number of written responses signifies this interest.</p> <p>The attendance at the recent internal D494 meeting to discuss the development indicated that over 80% of landowners were present. The public participation process, which has almost entirely relied on adverts and posters, may not adequately soliciting the opinions of the community and this deficiency is reflected in the report.</p>	<p>RESPONSE TO PUBLIC INTEREST</p> <p>Comments are noted. A public meeting will be scheduled.</p>
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<p>5 April 2017</p>	<p>Department of Water Affairs</p>	<p>Reference is made to the above-mentioned report received by this Office on the 11 January 2017.</p> <p>This Department has the following comments with regard to the proposed development:</p> <p>(1) WATER USE AUTHORISATION/WETLANDS AND WATER COURSES</p> <p>(1.1) The above-mentioned Report shows that the proposed activity does lie within close proximity to a watercourse and a number of wetlands.</p> <p>(1.2) This Department notes that the wetlands in close proximity of the project were delineated according to the Department's guidelines: "A practical field procedure for identification and delineation of wetlands and riparian areas" and indicate the proposed activity location in relation to the riparian area, the 1:50 and 1:100 year floodlines on a map of appropriate scale. The Applicant will require an authorisation from this Department for any activity within the riparian habitat or 1:100 year floodline, whichever is the greatest distance from the watercourse.</p> <p>(1.3) Please note that the Applicant must apply for a Water Use Authorisation in terms of Section 21 (c) and (i) of NWA for all the activities occurring within 500m radius of a wetland prior to construction.</p> <p>(1.4) If the proposed project engages or proposes to engage in one or more water uses that require a water use licence in terms of the NWA, then by default all other water use activities taking place on that property, irrespective if they would be regulated by a General Authorisation, would require a Water Use Licence. This is part of the Integrated Water Use Licencing process.</p> <p>(1.5) It is imperative that all water uses in terms of Section 21 of the National Water Act, 1998 (Act No. 36 of 1998) associated with the proposed activity, as well as existing operations are identified so that the necessary and relevant</p>	<p>RESPONSE TO WATER USE AUTHORISATION/ WETLANDS AND WATER COURSES</p> <p>A Water Use License Application in accordance with Section 21 of the National Water Act of 1998, as amended is underway. This application is being completed by Dr Roy Mottram of Mottram and Associates.</p>
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		<p>Water Use Authorisation can be applied for. This Department advises that a Water Use Authorisation Pre-Application meeting be arranged with Ms Zamashenge Hadebe who can be contacted on 031 336 2767/00.</p> <p>(1.6) It is the responsibility of the Applicant to identify all Water Uses as per Section 21 of the NWA arising from the proposed project and to submit a complete Water Use Licence Application to this Department.</p> <p>(1.7) Adequate measures must be put in place to protect all water resources that flow adjacent to, as well as through, the proposed project area from being polluted and/or degraded. Visible markings showing/demarcating the buffers must be provided on site during the construction phase. If pollution of any surface or groundwater occurs, it must be immediately reported to this Department and the appropriate mitigation measures must be employed.</p> <p>2) SOLID WASTE MANAGEMENT AND SEWAGE PIPELINE INFRASTRUCTURE</p> <p>(2.1) Removal and disposal of solid waste to a licenced/permitted waste disposal site is required and this is the responsibility of the Applicant.</p> <p>(2.2) Contaminated materials are to be disposed of at a licenced/permitted hazardous landfill site.</p> <p>(2.3) All waste generated from the proposed project must be disposed of in a suitable manner so as not to cause any water pollution or health hazard.</p> <p>(2.4) The recycling of suitable material (i.e. glass, paper, plastic, etc.) is encouraged by this Department.</p> <p>(2.5) Adequate contingency measures will have to be built-in to ensure quick detection and repair of leaks and breakages along the length of the</p>	<p>RESPONSE TO SOLID WASTE MANAGEMENT AND SEWAGE PIPELINE INFRASTRUCTURE</p> <p>Noted points 2.1 to 2.4 have been included into BA Report and EMPr as recommended conditions of Environmental Authorisation. Points 2.5 to 2.9 have and will be incorporated into the detailed design of the sewer service infrastructure and will be adhered to by the applicant.</p> <p>The requirement for a spill contingency plan is a requirement of the WULA. Furthermore this requirement has been included in the EMPr for the project and will need to be in place prior to construction commencing.</p>
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		<p>sewage pipeline. Special attention would have to be paid to sections close to any watercourses.</p> <p>(2.6) Measures must be put in place to prevent the ingress of stormwater into the sewer line.</p> <p>(2.7) Sufficient measures must be put in place to ensure the efficient functioning of the pump stations. This must include the provision of a back-up generator to alleviate the problems associated with power failures, standby pump to accommodate pump failure as well as adequate sump capacity.</p> <p>(2.8) The pump stations must be put on a telemetry system.</p> <p>(2.9) The pump stations must be located out of the 1:100-year flood line of any watercourse.</p> <p>(2.10) A spill contingency/emergency response plan must be drawn up to handle possible sewer spillages, overflows, pump station failures, etc. as well as to document the procedures that need to be followed in the event of an emergency incident.</p> <p>(3) STORMWATER MANAGEMENT</p> <p>(3.1) This Department notes the Storm Water Management Strategy outlined on pages 16 and 17 and emphasises that stormwater must be properly managed along the proposed project route both during and after construction.</p> <p>(3.2) After construction, the area should be contoured to ensure free flow of runoff and to prevent ponding of water.</p> <p>(3.3) Drainage must be controlled to ensure that runoff from the project area will not culminate in off-site pollution or result in damage to properties downstream of any stormwater discharge.</p> <p>(4) SEWAGE AND WASTEWATER MANAGEMENT</p> <p>(4.1) This Department notes that the proposed development will connect into existing sewer</p>	<p>Noted, this will be complied with by the applicant through the implementation of the Stormwater management Plan requirements.</p> <p>Note that the development will connect into the existing Hilton College Sewage Treatment Works which is operated by the school. The capacities and required upgrades have been assessed and will be implemented as required. Please note that these aspects have been addressed within the WULA submitted to your department by Dr Roy Mottram.</p> <p>Points 4.2 and 4.3 have been addresses in the BA Report and EMPr.</p>
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		<p>reticulation system; permission must be obtained from the relevant municipality and the capacity of the works must be sufficient to treat additional volumes anticipated from the proposed development.</p> <p>(4.2) Chemical/temporal toilet facilities must be provided during the construction phase; and their use must not cause any pollution to any water resources as well as pose health hazard. In addition, these toilets must be situated out of the 1:100 year floodline of any watercourse.</p> <p>(4.3) It is this Department's experience that projects of this nature may result in the generation of small volumes of water containing waste. In this instance, the following is applicable:</p> <ul style="list-style-type: none"> · Water containing waste must not be discharged into the natural environment. · Measures to contain the water containing waste and safe disposal of it must be implemented. <p>(5) EROSION CONTROL</p> <p>(5.1) Soil erosion prevention measures must be implemented to minimise soil erosion during the construction phase.</p> <p>(5.2) Erosion control measures to be implemented in areas prone to erosion such as near water supply points, edges of slopes, etc. These measures could include the use of sand bags, hessian sheets, retention or replacement of vegetation.</p> <p>(6) GENERAL</p> <p>(6.1) The content and recommendations made in the Biodiversity and Wetland Survey undertaken at the site of the proposed Hilton Collage Dairy, dated December 2016 by Terratest Geotechnical, Environmental and Science Consultants is noted.</p> <p>(6.2) This Department notes the content (i.e. responsibilities and conditions) as outlined in</p>	<p>Points 5.1 and 5.2 have been addressed in the BA Report and EMPr.</p> <p>Points 6.1 to 6.3 is noted.</p>
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		<p>Environmental Management Programme (EMPr) for the Proposed Residential Development on the Old Dairy Site, Hilton, Umngeni Municipality, KwaZulu-Natal, dated December 2016. Compliance to the approved EMPr must be audited regularly by the designated Environmental Control Officer (ECO).</p> <p>(6.3) The content and recommendations made in The Geotechnical Investigation for the Proposed Housing Development on Hilton College Dairy, Portion 167 (of 10) of the Farm Hilton No. 12304, dated December 2016 by GeoZone GeoServices, is noted.</p> <p>(6.4) No form of secondary pollution should arise from the disposal of sewage and refuse. Any pollution problem arising from the above development is to be addressed immediately by the Applicant.</p> <p>(6.5) Storage of material, chemicals, fuels, etc. must not pose a risk to the surrounding environment and this includes surface and groundwater. Such storage areas must be located outside the 1:100 year floodline of any watercourse and must be fenced to prevent unauthorised access onto the area. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages.</p> <p>(6.6) Ecological sensitive areas and their appropriate buffers must be protected and should not be degraded by the activities arising from the proposed development.</p> <p>(6.7) A Spill Contingency or Emergency Response Plan must be drawn up and should include the following actions that need to be taken into account in the event of a spill:</p> <ul style="list-style-type: none"> · Stop the source of the spill; · Contain the spill; · All significant spills must be reported to this Department and other relevant authorities; 	<p>Points 6.4 to 6.7 have been addressed in the BA Report as well as in the EMPr.</p>
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		<ul style="list-style-type: none"> · Remove the spilled product for treatment or authorised disposal; · Determine if there is any soil, groundwater or other environmental impact; · If necessary, remedial action must be taken in consultation with this Department; and · Incident must be documented and reported to this Department and other relevant authorities. <p>Notwithstanding the above, the responsibility rests with the Applicant to identify any source or potential sources of pollution from his undertaking and to take appropriate measures to prevent any pollution of the environment. Failure to comply with the requirements of the National Water Act, 1998 (Act No. 36 of 1998) could lead to legal action being instituted against the Applicant.</p>	
<p>20 February 2017</p>	<p>Department of Agriculture and Rural Development: Macro Planning</p>	<p>Unfortunately, my network system, which is linked to my office phone was down, so i could not be reached. However, I requested a consent letter regarding this property and what i received did not talk to the particular property. There is no confusion, a development can only take place in a farm that has been released from the provisions of SALA 70 of 1970. What was submitted to me was not a consent letter and did not included this portion of land.</p>	<p>Portion 10 of the Farm Hilton No. 12304 is included in the uMngeni Urban Planning Scheme and consists of two (2) zones, the first being Urban Transition which accommodates the proposed eighty-three (83) subdivisions, and the remainder of the property being Urban Agriculture 1.</p>

9.6 CIRCULATION OF DRAFT BASIC ASSESSMENT REPORT FOR COMMENT

Copies of the Draft BA Report have been circulated to the following Key Stakeholders and IAPs for review and comment on 10 July 2017:

- Ezemvelo KZN Wildlife: Mr A. Blackmore;
- Department of Water and Sanitation: Ms N.Mdlalose;
- Department of Transport: Ms J. Reddy;
- UMngeni Municipality: Mr M. Hattingh;
- UMgungundlovu District Municipality: Ms M. Khomo;
- Amafa Heritage: SAHRIS;
- DAEA: Macro Planning Directorate: Mr Z. Dlamini;
- National Department of Agriculture: N. Mnyeni
- Eskom: Mr S. Hlongwane.

All registered IAPs were notified of the availability of the Draft BA Report and the deadline for comments, being on, or before, 11 August 2017.

Further, one copy of the report has been placed in the Hilton Library and at Hilton College reception for public review on 10 July 2017.

10 DESCRIPTION OF THE BASELINE ENVIRONMENT

10.1 TOPOGRAPHY

According to Mucina and Rutherford (2006), the topography comprises, hilly and rolling landscapes mainly associated with a discontinuous east-facing scarp formed by dolerite intrusions (south of the Thukela River), at an altitude range of 760 –1 400m. The site generally slopes downwards from the eastern boundary towards the western boundary of the property.

10.2 VEGETATION

The indigenous vegetation in the area is Midlands Mistbelt Grassland (Type Gs9). This vegetation type is found in a hilly and rolling landscapes mainly associated with a discontinuous east-facing scarp formed by dolerite intrusions (south of the Thukela River). Dominated by forb-rich, tall, sour Themeda triandra grasslands transformed by the invasion of native 'Ngongoni grass (*Aristida junciformis subsp. junciiformis*). Only a few patches of the original species-rich grasslands remain. Its conservation status is listed as "Endangered" and so it is of very high conservation priority. Enclosed within its area are other vegetation types such as forests, and wetlands are common and may be of considerable size. Endemicity is high and the Mistbelt of KwaZulu-Natal is considered to be a centre of endemism.

The Ezemvelo KZN Wildlife Minset database classifies the area as Biodiversity Priority Area 1 which reflects the high conservation value of the vegetation type.

10.3 GEOLOGY

According to the 1:250 000 Geological Map Series, the site comprises Dolerite and Dark-blue grey shale; subordinate thin sandstone - (Karoo Super Group - ECCA Group - Volksrust Formation).

10.4 HYDROLOGY

The study area lies at the upper end of the valley of a small drainage line. Stream flow is from east to west and the stream which emerges from the area is a tributary of the Gwens Spruit which in turn flows down to the Umgeni

River. The elevation at the highest point is approximately 1160 m above sea level while the surface of the dam at the lower end of the site is at approximately 1100 m above sea level.

The drainage line which runs down the area has three dams on it and the wall of the uppermost of these is used as the lower boundary of the study area. Two of these dams have for many years served as the primary water supply for Hilton College with the water being pumped from the lower dam to a treatment works situated on the hill above them.

The study area is situated in Quaternary Catchment: U20E.

10.5 CLIMATE

According to the KZN Provincial and Growth and Development Strategy 2012 the average annual precipitation for the area is 827mm – 912mm.

The average summer temperature: Majority is between 23.3°C and 25.3 °C. The average minimum winter temperature ranges between 1.5 °C and 4.3 °C.

10.6 CULTURAL, HISTORICAL AND ARCHAEOLOGICAL RESOURCES

A Heritage Impact Assessment (HIA) was undertaken. The HIA Report is discussed in Section 11.4

Amafa KwaZulu-Natal (Amafa), the authority responsible for KwaZulu-Natal's heritage, has been contacted regarding the proposed development.

10.7 CURRENT LAND USE

The property comprises grassland, wetland and areas which have been previously cultivated for maize production in the past, but which are now used primarily as pastures for cattle. Bailing of hay also occurs in the northern portions of the site. There is an old dairy (now disused other than as a shed) at the south-western corner of the site and this, together with some farm workers' houses are the only buildings on the site.

11 SPECIALIST STUDIES

11.1 BIODIVERSITY AND WETLAND SURVEY

As per the findings of a Biodiversity and Wetland Survey undertaken at the site of the proposed Hilton College Dairy, attached as Appendix 10. The desktop survey consisted primarily of searching for any information which would reveal the presence of species or ecosystems of high conservation value in the study area. Reference was made to the Ezemvelo KZN Wildlife Minset and Transformation Databases and to the Provincial Wetland Database to see if any wetland-related features are recorded for the study area. In addition, the National Freshwater Ecosystem Priority Areas (NFEPA) database was also interrogated to search for palustrine⁴ wetlands in that area.

Google Earth was used to gain an initial impression of the study area and the images were closely examined for any wetland or watercourse features. A list of these was prepared, with their geographic coordinates, and was used as an initial guide in the field survey which followed.

Desktop analysis of Ezemvelo KZN Wildlife's (EKZNW) Wetland database (2014) and the National Freshwater Ecosystem Priority Areas (NFEPA) database (2011) indicate that a large wetland system is evident to the immediate west of the site. Further, several drainage lines were identified, as per the Surveyor General 2006 drainage line datasets.

⁴ "Palustrine": Palustrine wetlands include inland marshes and swamps as well as bogs, fens, tundra and floodplains. Palustrine systems include any inland wetland which lacks flowing water, contains ocean-derived salts in concentrations of less than 0.05%, and is non-tidal.

During the three site visits, the entire study area of the surrounds was walked over as shown on Figure 7. Care was taken to include those areas which were included in the 500m wetland buffers and which were most likely to have the greatest plant diversity. Using the list of sites from the desktop study as a guide, wetlands and watercourses were searched. Conditions at the time of the visit were good with spring rains having both softened the soil and brought on a flush of fresh plant growth.

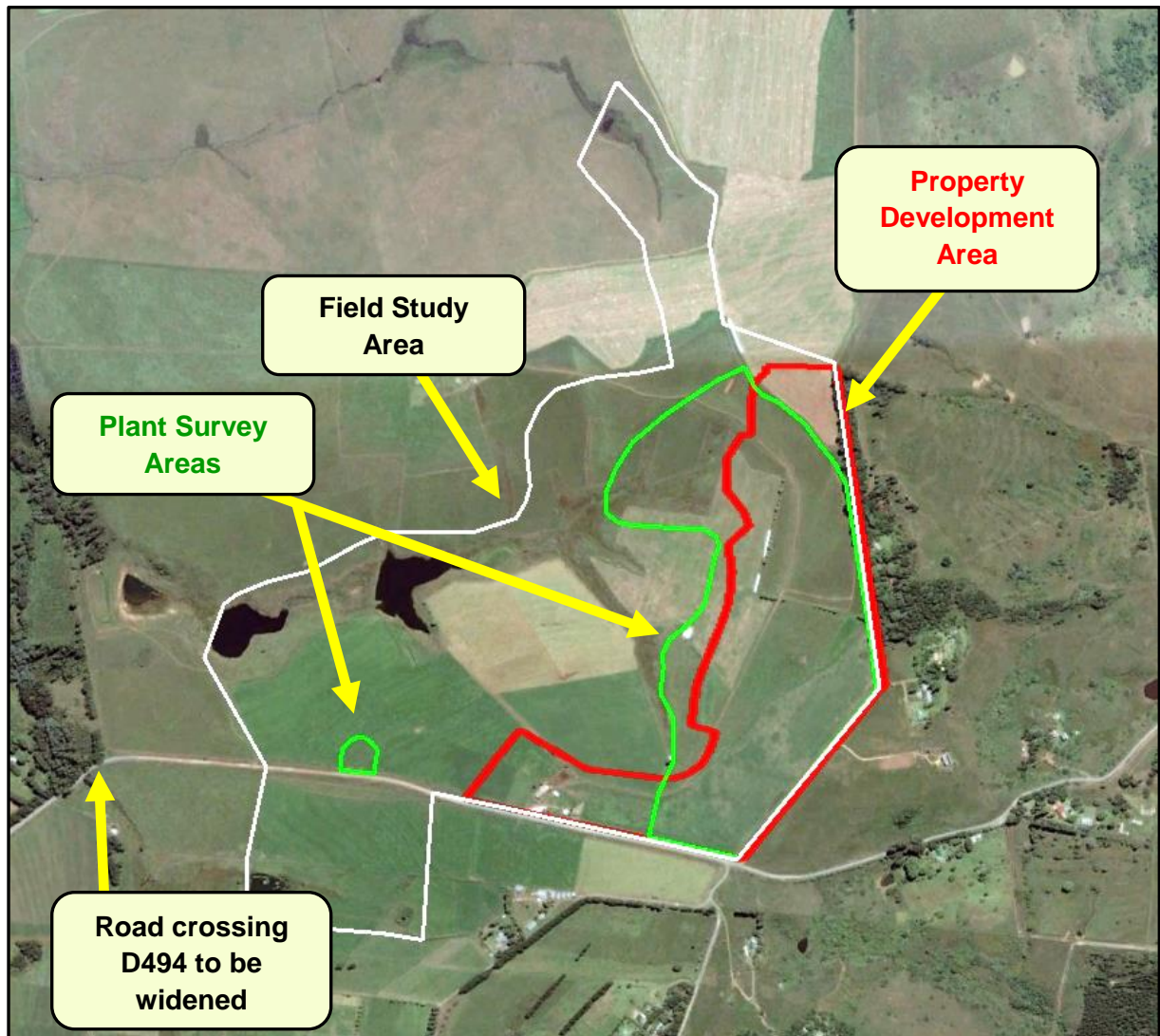


FIGURE 7: Project development footprint area and field study areas

It was found that some of the features seen on Google Earth were not wetland-related in any way, but other additional features which had not been seen in the desktop study were observed in the field.

At every observed feature, the following actions were undertaken:

- **Wetlands.** Where wetlands were encountered in the study area, they were delineated and note was made of their type. Use was made of a soil auger and the guidelines of the Department of Water Affairs and Forestry (DWAF, 2005) were followed. The indicators used include the following:
 - ✓ The Terrain Unit Indicator. This indicator helps identify those parts of the landscape where wetlands are likely to occur.
 - ✓ The Soil Form Indicator. This indicator consists of soil forms which are associated with prolonged and frequent water saturation. However, since the study area is so severely transformed, it was only possible to auger test holes in undisturbed soil at a few sites.
 - ✓ The Soil Wetness Indicator. This indicator is based on soil characteristics which develop as a result of prolonged and frequent water saturation.

- ✓ The Vegetation Indicator. This indicator is based on vegetation which consists either entirely or largely of plant species which are associated with frequently or permanently saturated soils. Such species and vegetation are described as being “hydrophilic”.
- **Watercourses.** Watercourses with either flowing water or conspicuous standing water were recorded. Key features, including the vegetation in the riparian zone were noted.
- **Dams.** Several dams were found. In each case the source of the water was investigated and the route of the outflow was noted.

The terrestrial survey was heavily biased toward the plants in the area, but certain faunal species were also looked for. In most instances, it was possible to do the identification of species in the field but, where there was any doubt, photographs were taken and, for some plants only, specimens were collected as well and were then identified at a later stage.

11.1.1 Desktop Study Findings

Biodiversity Issues

The indigenous vegetation in the area is Midlands Mistbelt Grassland (Type Gs9). This type is found in a hilly and rolling landscape mainly associated with a discontinuous east-facing scarp formed by dolerite intrusions (south of the Thukela River). Dominated by forb-rich, tall, sour *Themeda triandra* grasslands transformed by the invasion of native ‘Ngongoni grass (*Aristida junciformis* subsp. *junciformis*). Only a few patches of the original species-rich grasslands remain. Its conservation status is listed as “Endangered” and so it is of very high conservation priority. Enclosed within its area are other vegetation types such as forests, and wetlands are common and may be of considerable size. Endemicity is high and the Mistbelt of KwaZulu-Natal is considered to be a centre of endemism. Source: Mucina and Rutherford (2006).

The Ezemvelo KZN Wildlife Minset database classifies the general area as Biodiversity Priority Area 1 which reflects the high conservation value. A portion of the development also falls with an area classified as Critical Biodiversity Area (irreplaceable) (CBA), probably due to the occurrence of Mistbelt Grassland in this particular area. Furthermore, the site is classified as Species Ecological Support Area according to the EKZNW databases. The key species listed in Minset are detailed in Table 4.

Table 4. Ezemvelo KZN Wildlife Minset list of key species listed for the study area.

SCIENTIFIC NAME	COMMON NAME	CONSERVATION STATUS
<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable
<i>Geronticus calvus</i>	Bald Ibis	Vulnerable
<i>Kniphofia buchananii</i>	Small white poker	Least Concern
<i>Euonyma lymneaeformis</i>	Euonyma snail	Not listed
<i>Senecio exuberans</i>	Senecio	Least Concern
Sensitive Species (Restricted)	Not named	

The restricted species which is listed, but for which no details are given, is thought to be Oribi (*Ourebia ourebi*), but this could not be confirmed. The species is known to occur in the general area. Also listed in the database is the vegetation type for the area i.e. Midlands Mistbelt Grassland.

Site Transformation

Some 60% of the development area is indicated as being transformed from the natural state. Most of the untransformed area lies in the northern part of the site.

SANBI Threatened Ecosystems

The SANBI database of threatened ecosystems contains no features in the study area.

Important Bird Areas

The study is not listed as an Important Bird Area despite the fact that the Red Data listed (Near Threatened. Taylor *et al*, 2015) Blue Crane regularly breeds there.

Wetlands

Both the Ezemvelo KZN Wildlife wetlands database and the NFEPA database indicate that wetlands are present in close proximity to the development site. However, the two datasets have significant differences between them. Figure 8 shows the wetland coverages for the area around the study site. An examination of the outlines in Google Earth shows that the NFEPA data set is severely flawed while the Ezemvelo KZN Wildlife data set appears to be more accurate, although it does miss a number of candidate sites. It lists all the sites, including farm dams as “Alluvial Wetlands: Temperate Alluvial Vegetation”. The NFEPA dataset lists the dams as being “Artificial” while all other features are “Natural”.

Certain of the wetlands in the area were modelled with WET-Health (Macfarlane *et al*, 2008) in order to determine the PES and the ecosystem services were modelled by means of WET-EcoServices (Kotze *et al*, 2008).

11.1.2 Field Study Findings

The site was visited on three occasions during October 2015. On all occasions the weather was clear and suitable for undertaking field surveys. At the time of the first visit (7/10/2015) conditions were very dry but subsequent rainfalls resulted in substantial changes to the vegetation and wetlands.

Vegetation Survey

The entire study area was walked over but, since much of it has been transformed by past agricultural activities, most attention was focussed on those parts which remain largely natural. Most important in this regard were the northern portion of the proposed residential area and the slope opposite it.

Three of the indigenous species found are recorded in the SANBI list of threatened species. Two of these (*Boopbone disticha* and *Merwillia plumbea*) are overharvested by the medicinal/muti plant trade while the third (*Gunnera perpensa*) is a wetland obligate species and is threatened by the general degradation of wetlands in the province and elsewhere. None of the three species were found to be common and only *Merwillia plumbea* was represented by more than a single specimen.

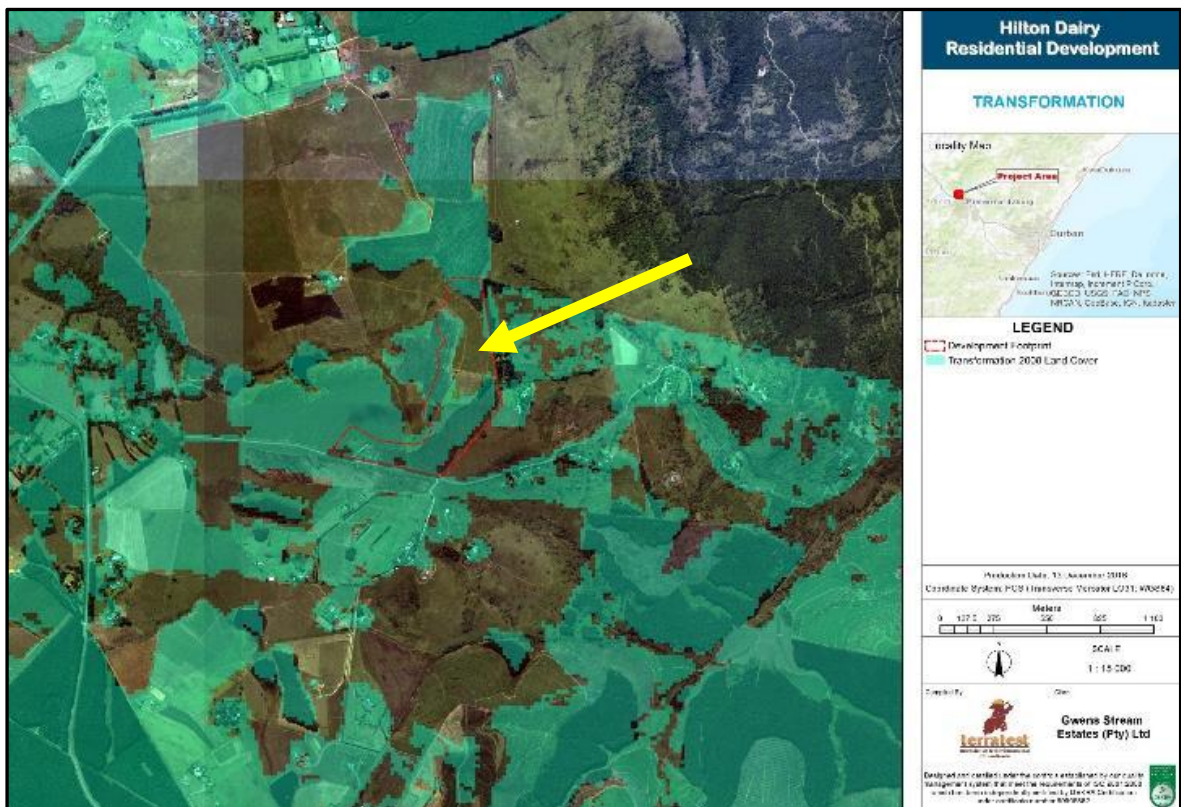


FIGURE 8: KZN Wildlife Transformation Coverage of the study area. The yellow arrow indicates a large block (12.9 ha) of untransformed vegetation within the development site

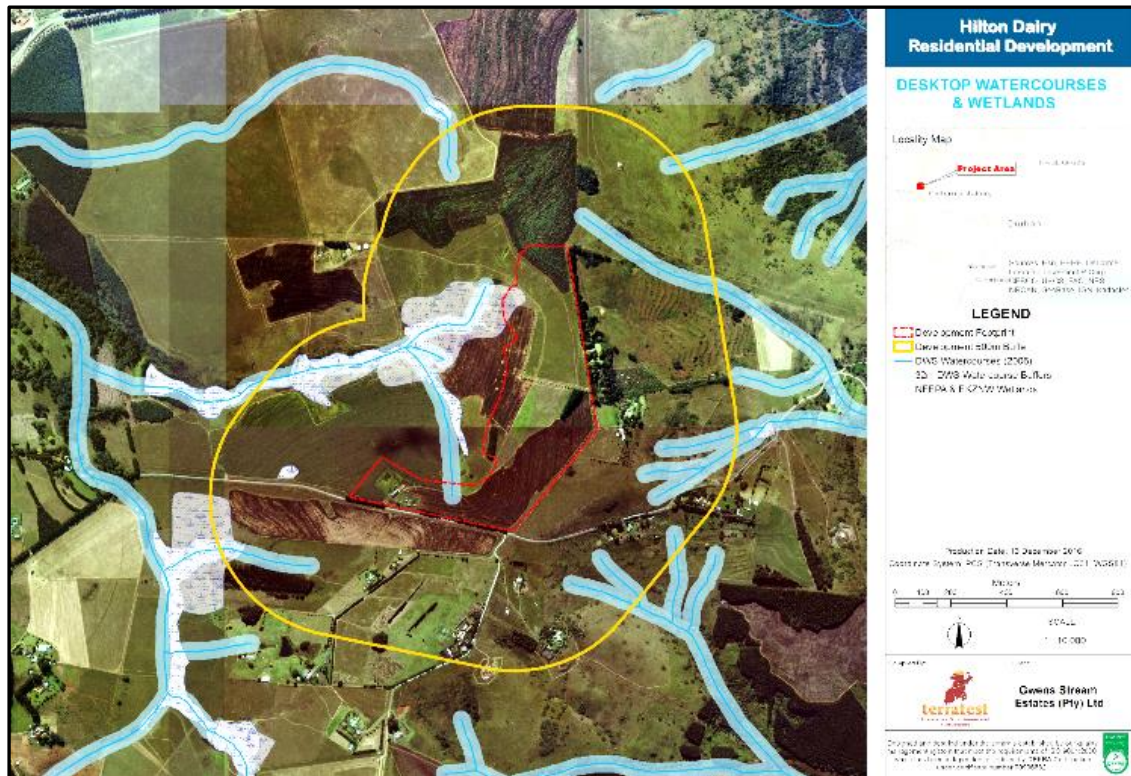


FIGURE 9: Ezemvelo KZN Wildlife and NFEPA wetlands and mapped watercourses around the residential development site.

Attention was given to searching for the Endangered Hilton Daisy (*Gerbera aurianticata*) which is rumoured to be present in the area. However, despite searching in sites of the preferred habitat type, only the common Pink Gerbera (*Gerbera ambigua*) was found. It is possible that the endangered species was not flowering at the time, but not even its characteristic leaves were seen.

It is noteworthy that many (27) of the species found were most common near the wetland areas. Since the wetlands will be well buffered, the plants will be protected as well.

Faunal Survey

As indicated in Section 3.2, the faunal survey was restricted to recording observations made during the botanical and wetland surveys. As was expected, Blue Crane (*Anthropoides paradiseus*) was observed at the time of every visit but no Bald Ibis (*Geronticus calvus*) were seen, and no record of the species at the site could be located. It is known that Oribi (*Ourebia ourebi*) used to be abundant and the author has seen them there on many separate occasions. However, none were seen during this study. Dogs from a neighbouring farm were seen in the area and may be contributing to the absence of the small antelope.

Fresh Aardvark (*Orycteropus afer*) burrows were seen at three localities. The species is currently listed as “Least Concern” but populations are shrinking and so the species may be raised to a higher level.

Not all of the species listed were actually seen but note was made of traces such as quills, feathers, sounds and droppings. None of the species are of conservation concern.

Wetland Survey

As required by the National Water Act, a search was made for any wetlands within 500 m of the boundary of the proposed development site. While most of the wetlands contained within this area lie in the same sub-catchment as the development, two further systems were found in adjacent sub-catchments. Figure 9 shows the distribution of the wetlands observed. Details of the sites are shown in Table 5.

Table 5. Details of the wetlands within 500 m of the development site.

SITE	LOCALITY (Centroid)		AREA (Ha)
1	29°30'3.68"S	30°18'38.87"E	0.89
2	29°30'30.72"S	30°18'32.67"E	5.64
3	29°30'53.96"S	30°18'13.45"E	0.91

It is to be noted that the water supply for the new housing will be provided from the existing Hilton College treatment works. Should the municipal source become available via the regional pipeline in the future then this will be considered by the applicant. Further, the waste water will not be disposed of onsite but will be sent to the existing treatment works which processes the waste water from Hilton College. Therefore, the hydrology of the wetlands will not be affected.



FIGURE 10: Observed wetlands within 500 m of the development site.

- **Wetland Site 1**

Wetland Site 1 lies to the north of the project development area and is separated from the latter by a ridge. Therefore, it is hydrologically separate from that area but is included as it lies within 500 m of the development site. The wetland consists of an unchannelled valley bottom system which had a dam built on it more than 50 years ago. However, the dam wall has breached and the system is now largely devoid of open water except at times of higher rainfall. Blue Cranes use the old dam as a breeding site although they are not present there every year.

The wetland is in fair to good condition although in recent times it has been increasingly impacted upon by cattle which graze and drink there. As a result, there is puddling of the substrate and open flow channels area becoming apparent. If this process continues then the system will deteriorate.



Plate 11. Wetland Site 1. Cattle path in the wetland. This path will, in time, become an open channel and contribute to draining of the system.

This wetland was not formally modelled since it lies well away from the development area and will not be affected by the project. However, its Present Ecological State (PES) is estimated to be in Class B. If the impact of the dam is taken into consideration, the PES might be considered to be in Class C. However, the presence of the old wall has actually led to creation of considerable habitat diversity which is attractive to a Red Data listed bird species and therefore, since the hydrology of the downstream system is either unaffected or is only very marginally affected, the Class B status is retained.

- **Wetland Site 2**

Wetland Site 2 is the wetland system within the same sub-catchment as the proposed development. In the study area the system is digitate in form with a primary northern drainage line and a tributary drainage line entering from the south. The northern channel in turn has a number of small influent tributaries. The southern arm is less complex but does have a channel in places. Below the confluence of the two arms the combined flows continue through an area which is channelled in places and then passes into a dam whose wall is taken to mark the downstream end of the system for modelling purposes, although the wetland area does extend a little further to second and third dams.

It was noted that the greater part of this wetland has been enclosed with a cattle fence and that, as a result, damage by trampling is minimal except at a few places where either the system extends out of the fenced area or else the fence is damaged. The vegetation throughout the system is strongly dominated by short sedges and rushes with a wide diversity of species being present. In place are small stands of reeds (*Phragmites australis*), bulrushes (*Typha capensis*), and larger sedges (*Cyperus* or *Scleria*). Scattered Tree ferns (*Cyathea dregei*) are present in some of the smaller side arms, but are restricted to places where they are largely protected from fire.



Plate 12. Wetland Site 2. Typical unchannelled valley bottom wetland. The protective fence is visible.

One side arm on the northern side extended a considerable distance and differed from the others in that it included an extensive system of soil pipes. Where these had collapsed they provided a particular micro-habitat and it was noted that several passerine bird species such as Cape Wagtail (*Motacilla capensis*) and African Stonechat (*Saxicola torquatus*) nest in them. These birds are not wetland obligate species but are simply using the habitat diversity provided by the wetland structure.

Up to eight Common Reedbuck (*Redunca fulva*) were seen to be resident in the system and a pair of Blue Cranes there had a quarter grown chick. At times these birds were joined by four or five others of the same species.



Plate 13. Wetland 2. A pair of Blue Cranes with a small chick (circled) are watched by two Common Reedbuck



Plate 14. Wetland Site 2. Water flowing from a soil pipe. Note steep banks created by collapse of sections of the pipe

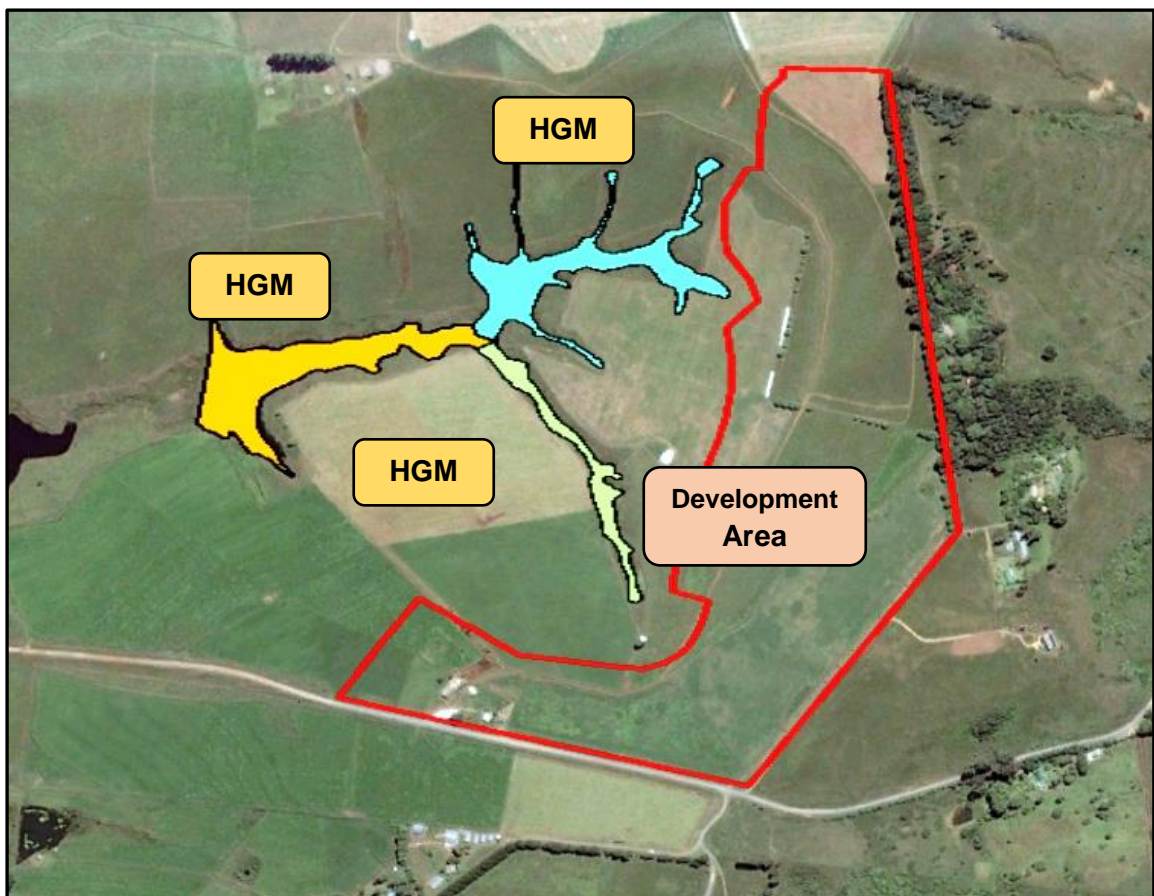


FIGURE 11: HGM Units within Wetland Site 2.

The scores indicate that the hydrology and geomorphology of the wetland are very largely natural but that the vegetation in HGM 3 is severely impacted upon. The reason for this is that the inundation by the dam in that unit has obviously inundated a large area and the vegetation is lost.

Also taken into account but scoring very low is a “delta” of deposited soil just upstream of the dam in HGM 3. This soil entered the system in the mid-1990s when an area of virgin veld in the catchment was ploughed and, by chance, a severe rain storm passed through a few days later. The mobilised soil was largely trapped by the wetland but is scarcely visible today. Careful searching revealed areas in the wetland which had atypical soil and which are very slightly elevated. However, the system appears to have recovered completely and to be functioning normally.

In the same general area just downstream of the confluence of the three HGMs is a very old dam which is now completely dysfunctional since the wall is completely ruptured. The break may have occurred at the time of the flood which brought the soil into the system, but this is speculation. However, upstream of the dam a series of deep ditches have been dug relatively recently. Their purpose would appear to be to more flow out of the system but there is little evidence that they have been successful. This is attributed to the robust condition of the natural vegetation in the area. Despite this there is evidence that the ditches have headcuts which will, in time, damage the wetland. It is strongly recommended that the ditches be filled and that measures be taken to stop the erosion.



Plate 15. Excavated drain in Wetland Site 2. Erosion in the ditch is active.



Plate 16. Active headcut erosion in a drainage ditch.

The results from the WET-Ecoservices model are shown in Figure 8. The whole wetland was treated as a single HGM unit and inputs were based on the conditions observed during the field surveys.

The greatest ecosystem service value is indicated as being Maintenance of Biodiversity. This score is driven by the presence of the Blue Cranes and the fact that the birds breed there. Nitrate Removal and Erosion Control are the next highest values. These are of significance in relation to the grazing of cattle around the system

The absence of utilisation of the site is reflected in zero values for Cultural Significance although some collection of materials was noted.

In general, the service scores are low, not because the system is incapable of delivering the services, but because it has been isolated and no use is being made of the services which could be available. The same isolation has also contributed to the high PES category.

- **Wetland Site 3**

Wetland Site 3 lies in a separate sub-catchment located to the south west of the development area and is separated from it by a low ridge. The area is extensively used for grazing of livestock and a part of the system has been converted to a kikuyu pasture, while a dam covers the lower part. The system will not be affected by the development and so has not been modelled.



Plate 17. Wetland Site 3. Much of the central part of the wetland has been converted to pasture.

Road D494 - Stream Crossing

The stream crossing on Road D494 is located at S 29° 30' 46.7", E; 30° 17' 54.5". The stream which is crossed by the road is that into which the flow from the residential area discharges and which flows on to the Gwens Spruit and Umgeni River. See Figure 8. At the site of the existing crossing the channel is moderately incised but with a high bank on the eastern side.

The vegetation at the crossing is heavily dominated by alien species with Gum Trees being predominant. The plant species present are shown in Table 6. All the indigenous species listed are common and widespread.

Table 6. Plant species present at the Road D494 stream crossing

Common Name	Scientific Name	Conservation Status		Invader Category
		Indigenous	Alien	
Bluebush	<i>Diospyros lycioides</i>	X		n/a
Sagewood	<i>Buddleja salviifolia</i>	X		n/a
Broadleaf Bristle Grass	<i>Setaria megaphylla</i>	X		n/a
Cattail Bristle Grass	<i>Setaria sphacelata</i>	X		n/a
Water Grass	<i>Paspalum scrobiculatum</i>	X		n/a
Knotweed	<i>Persicaria</i> sp.	X		n/a
Ferns	At least three species	X		n/a
Gum Trees	<i>Eucalyptus grandis</i>		X	2
Black Wattle	<i>Acacia mearnsii</i>		X	2
Bramble	<i>Rubus cuneifolius</i>		X	1b
Verbena	<i>Verbena bonariensis</i>		X	1b
Blackjack	<i>Bidens pilosa</i>		X	
Khakiweed	<i>Tagetes minuta</i>		X	
Loquat	<i>Eriobotrya japonica</i>		X	
Balloon Vine	<i>Cardiospermum</i> sp.		X	1b
Privet	<i>Ligustrum</i> sp.		X	1b
Poplar Tree	<i>Populus deltoides</i>		X	
Bugweed	<i>Solanum mauritianum</i>		X	1b
Cotoneaster	<i>Cotoneaster</i> sp.		X	1b

The present stream crossing is built over two concrete pipes of 0,9 m diameter. There is a high embankment above the pipes with some stabilisation being provided by stonework and some by means of gabion baskets. The inlets and outlets of the pipes are not protected by any form of wall or structure. Widening of the crossing will be done to Department of Transport specifications but it is anticipated that the final structure will be largely similar to the present one.

The Ezemvelo KZN Wildlife wetland database and the NFEPA wetland database both indicate wetlands within 500 m of the proposed upgraded stream crossing. See Figure 11. However, the wetlands which are shown on the same stream as the crossing are approximately 200 m upstream of the site on a neighbouring property and so will not be affected by the construction process. The others are approximately 400 m away and on a different drainage line and so will also not be affected. The nearest wetlands which are downstream of the crossing and on the same drainage line are approximately 1,6 km away. Since the upgrade to the crossing is so small, no impact on that system is anticipated.

In order to consider the potential for impact on the stream, use was made of the Department of Water and Sanitation Risk Assessment Matrix and the outcome is shown in Table 6.

The matrix indicates that environmental and social risks will be generally low and will occur mostly during the construction phase only. It is important to note that the upgrading of the road will have a significant positive social and environmental impact. This will arise from a reduction in the amount of sediment being washed into the stream after rainfall events. This change will improve the quality of the instream habitat for the aquatic fauna there and so should improve the Present Ecological State (PES) of the system. Furthermore, through its surfacing road safety in this area will be significantly improved.

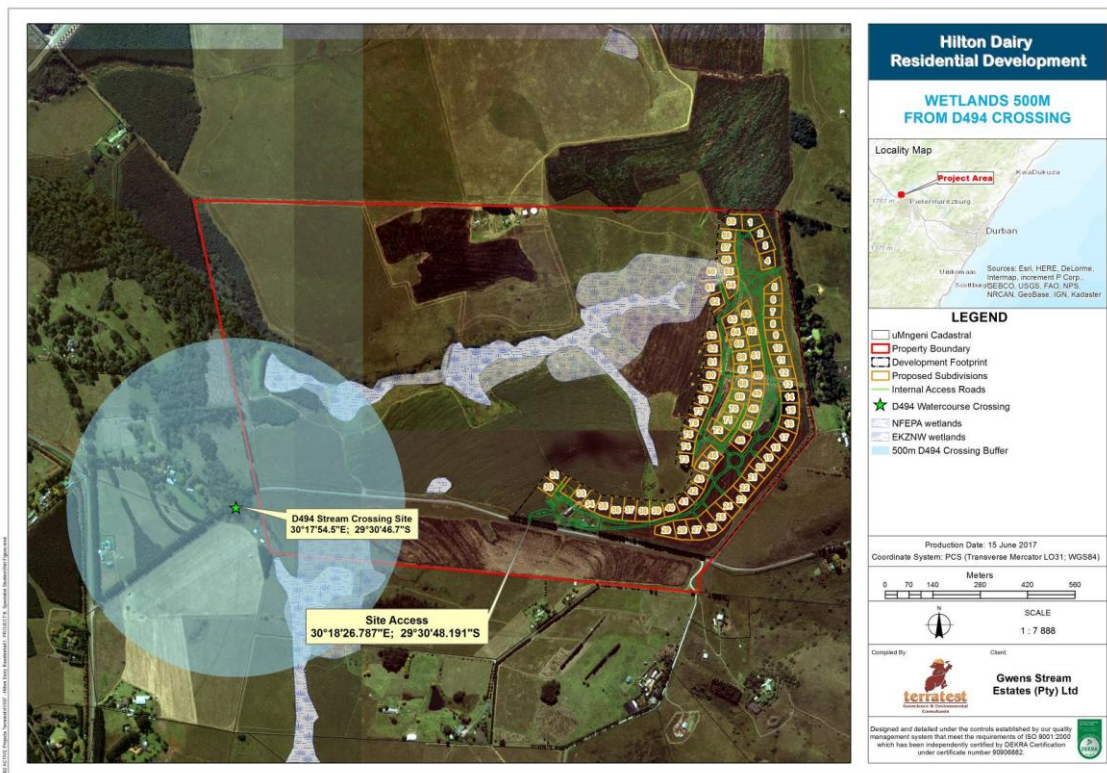


FIGURE 12: Ezemvelo KZN Wildlife and NFEPA wetlands within 500 m of the D494 stream crossing site



Plate 18. Road D494 stream crossing. Viewed from east to west. The arrow indicates the position of the pipes and the direction of water flow.



Plate 19. Road D494 stream crossing. Upstream end of the concrete pipes. The bank above them is stabilised by gabions.



Plate 20. Road D494 stream crossing. Downstream end of the concrete pipes



Plate 201. Road D494 stream crossing. Remains of a ram pump support upstream of the crossing

11.1.3 Consideration of Impacts

Impacts due to Loss of Vegetation

In those areas which are untransformed and where the natural grassland vegetation community is still relatively intact, the biodiversity value of the site is very high. However, the natural vegetation in some of the project area is already degraded and so it is anticipated that the project will create few new significant impacts in those areas. Two Red data listed terrestrial species (*Boophane disticha* and *Merwillia plumbea*) and one wetland species (*Gunnera perpensa*) are present. It is noted that the degree of transformation of vegetation around the patch of natural grassland is high and so the site is partially isolated from large areas of untransformed vegetation.

Impacts on Fauna

The fauna in the area is already reduced from that of the natural state but a number of species of high conservation concern are either present or are known to have been present in the recent past. Most important of these is the Blue Crane (Near Threatened) which is known to breed in the area and a pair of adult birds with well grown chick was seen in the development area during the course of the field survey. Also present is Aardvark which, although listed as “Least Concern”, is considered to be dwindling in numbers. No Oribi (Endangered) were seen during the course of the study but have been seen there within the past five years by the author. Reports of their continued presence are still received but have not been confirmed. Certainly there is suitable habitat for the species but domestic dogs from a nearby farm may be hunting them.

Other than for cattle herders and a few other farm workers, there are currently very few people passing through the area. The increased human presence and activity, perhaps together with predatory pets such as cats and dogs, will undoubtedly have the effect of driving some animals away from the area. The impact will be greatest

during the construction phase and the important species most likely to be driven away will be Blue Crane, Common Reedbuck, and, possibly, Oribi. The subdivisions which are closest to the wetland and unbuilt areas are numbers 30, 31, 32, 44, and 54. Since these have been planned to butt up against a 32 m wetland buffer it is apparent that they will pose a high degree of disturbance to the biota at the site. In the longer term people will want to walk through the undeveloped area and so will create a level of disturbance which is greater than at present.

It is also noted that the proposed development area is very close to the James Wakelin Grassland Reserve and that there are presently good linkages between the two spaces. Part of this linkage will be closed off by the housing and it will undoubtedly affect the movement of animals through the area. This would be a significant impact and it is essential that mitigation for it be considered.

Impacts on Wetlands

Of the three wetland systems within 500m of the development site, only one is at any real risk of being affected by the project. Much of the catchment area of Wetland Site 2 is either in, or very close to the development footprint. This provides some cause for concern since the wetland is largely in very good condition (Category A or A/B). Past impacts included the deposition of a large quantity of topsoil after a storm and present impacts are related to the excavated trenches in the centre part of the system, and trampling by cattle. However, the system has been able to absorb these influences and is still a particularly good example of the type of wetland which occurs in the vegetation type. As such it is therefore quite rare.

Probable impacts from the proposed development include the following:

- Inputs of sediments from roadways, paths, gardens and the like. Such impacts will be greatest during the construction phase but will persist into the long term future. The reduction of soil retaining vegetation in the built areas will allow sediment to move more rapidly toward the wetland.
- Chemical pollution of the water flowing from the residential area. It is anticipated that the waste water from the system is to be pumped to the existing treatment works at Hilton College without any preliminary treatment. Thus it is anticipated that there will be no discharge from the site which may enter local watercourses and wetlands. This situation is desirable but, since the distance over which the waste will be pumped is significant, the pumps must be robust and reliable. Backup systems, including the power supply will have to be on hand.

Less obvious sources of pollution include stormwater runoff from roads, roofs, and gardens. Such flows are likely to carry oils, detergents, and a variety of agrichemicals including nutrients, herbicides, and insecticides. While concentrations may be low, they will still be higher than the present inputs which are effectively zero for some substances.

It is noted that areas of wetland have been inundated by dams which were built more than 60 years ago, and so which are now a stable part of the local environment.

Impacts on Watercourses

The only watercourse, other than for minor sections of channel within the wetland areas and which are included as wetlands, which could be affected by the development is the stream which is crossed by Road D494. The impacts would occur when the road is widened and hardened. However, since the crossing already exists and site around it is already largely transformed, few construction impacts are anticipated. Impacts on the stream are likely to be reduced in the longer term since there will be less dust and other material washed in from the tarred road surface.

Alternatives to the proposed Development

The residential development has already been subject to scrutiny in a Strategic Environmental Assessment which was undertaken by Hilton College to consider development options on its property. The assessment was submitted to the provincial Department of Environmental Affairs and to the uMngeni Municipality and was approved by both. For this reason, the only remaining alternatives to the currently proposed option are either the no-go option, continued agriculture, or some change to the footprint of the development. Since the prime objective

of the development is to generate income for the school's educational foundation and trust funds, the no-go and agricultural alternatives are not viable.

It is possible that the housing area could be reduced to exclude the untransformed grassland but then the economic returns would be severely compromised. If this were to be done the housing area would have to be expanded to extend further down Road D494 since there is transformed space there. It is also possible that the development could cross the D494 as some of that area has been cultivated in the past although it is now recovering well. However, either of these changes would adversely impact the mitigatory measures which are proposed since the corridor linking the site with the James Wakelin Grassland Reserve would be confined and reduced and so would be less able to function as a conduit. Since the link is of considerable value to the ecology of the area its closure is not supported.

Section 11.1.5 presents mitigatory measures which are designed to offset the impacts which would arise from the project in the currently proposed form. These measures lead to the establishment of a permanent conservation area which is between five and ten the extent of the area of untransformed grassland which would be lost. In addition, it includes a permanent link through to the James Wakelin Grassland Reserve. Neither the no-go or agriculture options can offer such a guarantee while still providing the desired funds to assure the continued development of the educational facilities and opportunities for Hilton College. It is therefore suggested that the proposed layout be accepted as is proposed.

Cumulative Impacts

The proposed development would be in an area of open land but in a landscape which already contains a number of residences on small properties. Some of the latter lie directly adjacent to the development site. The new development would however, be a far greater density than anything else within 1,5 km with the Garlington Estate near the town of Hilton being the closest comparable feature. Thus the impacts from the development will be largely new to the immediate area. These impacts have been considered in some detail and while they cannot be dismissed, the mitigatory measures proposed do provide for a net improvement in terms of perpetual conservation space than is available at present.

11.1.4 Impact Assessment

Impacts on the Indigenous Vegetation

Midlands Mistbelt Grassland (Type Gs9) is listed as being "Endangered". In view of this the foreseeable potential impacts on terrestrial vegetation are as is indicated in Table 7.

Table 7. Assessment of impacts originating from loss of indigenous terrestrial vegetation.

Assessment Criterion	Rating	Reason(s)
Certainty of Assessment	High	The vegetation type in the project area is well studied and the <i>in situ</i> consequences of the development are obvious.
Probability of Occurrence	Definite	The loss of vegetation at the site is unavoidable if the development goes ahead.
Impact (Intensity)	High to Very High	The loss of vegetation will be near total.
Impact (Significance)	High to Very High	The vegetation type has already been subject to extensive losses as a result of human activities and so any further loss is of high significance.
Impact (Spatial Extent)	Provincial	The impact will be limited to the site and its close surrounds.
Impact (Duration)	Permanent	The impacts at the site will not be reversible in any conceivable human time frame.
Impact (Effect)	Negative	The impact on the environment would be Negative.

Need for Mitigation	Obligatory	Because of the high conservation value of the site and its surrounds, mitigatory action will have to be undertaken and inability to do so would constitute a fatal flaw to the project.
Locality of Mitigation	On Site	The mitigation measures are to be undertaken at a site no more than 2 km from the development site.

Impacts on the Indigenous Fauna

The indigenous fauna includes at least two red data listed species both of which will be impacted upon by the project. In view of this the foreseeable potential impacts on the indigenous fauna are as is indicated in Table 8.

Table 8. Assessment of impacts originating from loss of indigenous fauna.

Assessment Criterion	Rating	Reason(s)
Certainty of Assessment	High	The development will inevitable cause loss of habitat for some species and the disturbance will drive others away.
Probability of Occurrence	Definite	The impact on the fauna at the site is unavoidable if the development goes ahead.
Impact (Intensity)	High to Very High	The impact on the species concerned will be severe.
Impact (Significance)	High to Very High	Because there are species of high conservation significance the impact is rated as being very significant. The reduction of the corridor between the site and the James Wakelin Grassland Reserve would affect biodiversity in the general area.
Impact (Spatial Extent)	Local to National	The development will impact on a local migration corridor as well as on species which are of provincial and national conservation concern.
Impact (Duration)	Permanent	The impacts on the fauna will not be reversible in any conceivable human time frame.
Impact (Effect)	Negative	The impact on the environment would be Negative.
Need for Mitigation	Obligatory	Because of the high conservation value of the site and its surrounds, mitigatory action must be undertaken and inability to do so could constitute a fatal flaw to the project.
Locality of Mitigation	On Site	The mitigation measures are to be undertaken at a site no more than 2 km from the development site.

Impacts on Wetlands

The development is in the catchment area of a wetland system and butts up against wetland buffers in places. In view of this the foreseeable potential impacts on wetlands are as is indicated in Table 9.

Table 9. Assessment of impacts on wetlands.

Assessment Criterion	Rating	Reason(s)
Certainty of Assessment	High	The development will inevitably affect the nearby wetlands.
Probability of Occurrence	Definite	The impact on the wetlands is unavoidable if the development goes ahead.

Assessment Criterion	Rating	Reason(s)
Impact (Intensity)	Moderate	The impact on the wetlands will not result in their total loss but ecosystem function and ecosystem service delivery could be partially reduced.
Impact (Significance)	Moderate	Because the loss of wetland extent and function will not be total the impact is rated as being only moderate.
Impact (Spatial Extent)	Regional	The impacts on the wetlands may affect biodiversity and humans further downstream in the catchment. The presence of the existing dams will have some ameliorative effect.
Impact (Duration)	Permanent	The impacts on the wetlands will not be reversible in any conceivable human time frame.
Impact (Effect)	Negative	The impact on the environment would be Negative.
Need for Mitigation	Obligatory	Because of the high conservation value of wetlands generally, and in the Umgeni River Catchment in particular, mitigatory action will have to be undertaken and inability to do so would constitute a fatal flaw to the project.
Locality of Mitigation	On Site	The mitigation measures are to be undertaken at a site no more than 2 km from the development site.

Impacts on Watercourses

The stream which is crossed by Road D494 could be affected by the widening and tarring of the road. In view of this the foreseeable potential impacts on the watercourse are as is indicated in Table 10.

Table 10. Assessment of impacts on watercourses.

Assessment Criterion	Rating	Reason(s)
Certainty of Assessment	Moderate	The degree of impact on the watercourse although very probably minimal, is not clear.
Probability of Occurrence	Probable	The foreseen impacts on the watercourse are likely to happen but it is not definite that they will do so.
Impact (Intensity)	Low	The impact on the watercourse will be minimal since the road crossing already exists and the area around it is already transformed.
Impact (Significance)	Low	The crossing already exists and the post-construction changes will not be great.
Impact (Spatial Extent)	Local	Any negative impacts on the watercourse will not extend very far downstream.
Impact (Duration)	Construction Phase and Long Term	The impacts on the watercourse as a result of the construction process will be limited to the construction phase only. The impact of reduced sediment in the system will be of long term duration.
Impact (Effect)	Negative and Positive	The construction phase impacts on the environment would be negative but the reduction in sediment inputs will be positive.
Need for Mitigation	Moderate	The construction work must be done with care.
Locality of Mitigation	On Site	The mitigation measures are to be undertaken at the crossing site.

Conclusions

The proposed development which is the basis of this study would be situated within an area which is already partially transformed, although now recovering, and which also includes some 6.8 ha of largely untransformed Midlands Mistbelt Grassland. The latter vegetation type, which has both a high degree of endemism, and is classed as being “Endangered”, is of high conservation concern. Also present at the site are breeding Blue Cranes (*Anthropoides paradiseus*) and, probably, Oribi (*Ourebia ourebi*). These species are listed as “Near Threatened” and “Endangered” respectively. As a result of any of the above three features the site is classified as being a Biodiversity Priority Area 1 and so is regarded as being “Irreplaceable” in terms of the Provincial Conservation Plan. This status suggests that the proposed development might have a potential fatal flaw and authorisation could be refused. However, if the applicant wishes to pursue the project further then it will be necessary to demonstrate that appropriate and sustainable mitigatory measures can be put in place with the understanding that those measures will be binding in perpetuity. The mitigatory measures which have been proposed here are centred primarily on the preservation of a suitable area of intact Midlands Mistbelt Grassland but while the protection of the vegetation obviously also benefits the fauna, further recommendations for the Blue Cranes and the Oribi are also put forward. The area proposed for mitigation is 132 ha in extent and so is some ten times the area of intact grassland (12.9 ha) which would be lost. It is recognised that the mitigation area includes some existing agricultural areas which are recovering but, even if these are excluded, the ratio will still exceed 5:1 and so will be favourable. It is suggested that if this area is accorded conservation status and if the required monitoring and management of the area are carried out, then there will be a nett improvement of the environment over the present condition. On that basis, the potential fatal flaw is negated and the development proposal is not opposed

11.2 GEOTECHNICAL ASSESSMENT

11.2.1 Evaluation of Founding Conditions

As per the Geotechnical Investigation attached as Appendix 11: The site geology is characterised by clayey colluvial and residual material which extend to depths greater than 3.0 m. These are found to depths greater than the anticipated seasonal fluctuations of soil moisture content. The heave potential of the clays is low based on the laboratory test results and experience of other sites in the vicinity. However, the combination with their thickness and heave characteristics produces a cumulative heave in the order of 14 mm. The chosen foundation solution will need to manage this heave component.

The DCP results show firm to stiff conditions at depths ranging from 0.8 to greater than 3.0 m below existing ground level, with an ‘average’ depth a suitable founding horizon in the order of 1.7 m. It would not be prudent to apply an average depth due to the presence of softer spots which would then not be catered for by the adopted foundation solution, and in this light consideration needs to be given to either zoning the site based on the results of the tests and then applying a specific solution to that zone, or alternatively to adopt a founding solution that can be applied to all of the sites. In addition, in spite of the stiff conditions in most instances, the high liquid limits, tending towards or in excess of 50 percent, are a concern and indicate a propensity of the soils to settle when loaded. In view of the above, a foundation solution able to manage both settlement and heave and which will also sidestep any issues of soft zones would be the better approach.

11.3 WATER USE LICENCE APPLICATION

A Water Use Licence Application (WULA) will also need to be applied for as the proposed construction does lie within close proximity to a watercourse and a number of wetlands, additionally the upgrading of the D494 stream crossing will also trigger activities for works within the watercourse. In this regard, the National Water Act (1998 (Act No. 36 of 1998) notes that any water use, as defined in the Act, requires a Water Use Licence. Section 21 of the Act identifies the following two water uses which will require a WULA to be made to the Department of Water and Sanitation (DWS), specific to the proposed development:

- Section 21(c): Impeding or diverting the flow of water in a watercourse; and
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse.

Furthermore, any such activity that triggers the above-mentioned, which occurs within 32m of a watercourse, or within the 1:100 year floodline, or within 500m of a wetland, also necessitates the need for a WULA.

The WULA is being made under a separate submission by Dr Roy Mottram to the DWS.

11.4 VISUAL IMPACT ASSESSMENT

As per the Visual Impact Assessment attached as Appendix 12. Several IAPs have sought assurance that the development will not have a profound impact on the visual impacts and the sense of space. Valid as those concerns are, there is a sense of inevitability around future development in the areas surrounding Hilton College Rd. Garlington, Wedgewood, Mount Verde, The Gates at Hilton, and most recently Castleview, are all indicators of the likely intrusion of residential development into the area. The growth of Hilton, reflected, for instance, in the new hospital, emphasizes the need for residential expansion into a restricted environment. It is in acknowledgement of these factors that the uMngeni Spatial Development Plan anticipates low-density residential development.

It should also be acknowledged that The Hiltonian Society has a proven record in respect of conservation. The Estate includes an area which is a proclaimed Nature Reserve. Conservation has been a hallmark also of The Gates at Hilton, and it can be expected that similar concerns will accompany the development of The Dairy at Hilton. The developer has provided assurance of its commitment to delivering the mitigating recommendations. A Summary of the outputs of the Visual Impact Assessment are provided in Table 11.4.1, this includes evaluation of the views with proposed mitigation. Overall the impacts associated with visual impacts as a result of the proposed development are considered to be low when mitigation is applied.

11.4.1 Summary of Visual Impacts

Viewpoint (VP)	Location and viewing direction	Plate no.	Description of the visual exposure	Households visible	Description of the current view	Overall Visual Impact
1	This viewpoint is situated on the D494, a little west of the existing dairy entrance. It looks north east.	View 1	VP 1 looks up in a north easterly direction. The area at the top of the hill shows most visible (orange), but this is completely obscured by the tree line. Less visible (green) are 28 sites on the hillside. Again this view is already mitigated by the road cutting and vegetation growing on it.	28	The current view is of the hillside, with a heavy row of trees along the eastern boundary.	Although some of the proposed houses may be seen from VP 1, the effect of the intended screening along the road indicates that the visible area will be largely eliminated.
2.1	This viewpoint is from a little further east on the D494, at the existing dairy gate.	View 2	VP 2 looks north east from the D494. It illustrates that, without a screen of vegetation, almost the entire development would be visible. It needs to be remembered, however, that the existing cutting and vegetation already obscures much.	81	The current view is largely broken by existing cutting and vegetation, but where there's a view it is of the hillside towards the ridge.	A screen of vegetation is proposed to remove the impact.
2.2	This viewpoint is the same as 2.1, but with the introduction of a vegetation screen within the development and along the D494	View 2	Again VP 2 looks north east from the D494. It shows that the introduction of vegetation in the form of a 6m screen reduces the visibility to zero.	0	Broken by existing cutting and vegetation, but where there's a view it is of the hillside towards the ridge.	The viewshed illustrates that the introduction of a 6m vegetation screen will completely reduce the visibility.
3	This viewpoint is at the front of Bordeaux cottage, looking north.	View 3	VP 3 is the northerly view from the homestead in the valley south of the D494. There is no exposure to the proposed development from this point.	0	The current view will be unaffected by the development. It looks across the small valley, to the road which, together with the cutting, eliminates any view of the hillside.	The viewshed shows that the development will have zero impact on the view from this point and surrounding areas. The developer's intention to plant an indigenous shield along the D494 will also further protect the view.

4.1	This viewpoint is at the Lechmere-Oertel home, looking west.	View 4	VP 4 is the view west from across the ridge. It shows that, without mitigation, there will be low visibility relating to 11 properties beyond the ridge. (See View 4.2 for mitigation provided by the tree line.)	9	The current view shows a skyline dotted with trees and shrubs recently planted along the boundary.	The viewshed shows a band of properties along the ridge which will be partially exposed, without mitigation. The following viewshed, which introduces vegetation, inside the boundary, reduces the impact to zero.
4.2	This is the same viewpoint as 4.1, but with the introduction of a 6m tree line along the boundary. This to be an indigenous screen.	View 4	Again VP 4 is the view west from across the ridge. It shows that the introduction of the vegetation in the form of a screen reduces the visibility to zero.	0	The current view shows a skyline dotted with trees and shrubs recently planted along the boundary.	The viewshed shows that, with the further development of the already commenced screen along the ridge, there will be zero visual impact from this point.
5.1	This is a viewpoint a little further north from point 4, again looking west. It is higher than point 4, hence the greater visibility shown,	View 5	The viewshed west from point 5 shows 16 properties at high visibility (orange) and 5 at low (green). This without mitigation. (See 5.2 for mitigation provided by the vegetation.)	21	The current view is of this section of the hillside partially obscured by the vegetation recently introduced along the boundary of the proposed development.	The viewshed shows a band of 21 properties which would be seen, to varying extents from this point. The following viewshed, 5.2, which introduces the tree line, completely eliminates this.
5.2	The same point as 5.1. From a high point near the Heidelberg boundary, looking west.	View 5	Again VP 5 is the view west from the high point of the ridge. It shows that the vegetation screen, at 6m, will eliminate all visibility.	0	The current view is of this section of the hillside partially obscured by the vegetation recently introduced along the boundary of the proposed development.	The viewshed shows that, with the further development of the already commenced screen along the ridge, there will be zero visual impact from this point.

11.5 HERITAGE IMPACT ASSESSMENT

According to the KwaZulu-Natal Heritage Act (Act No. 4 of 2008), should the development footprint be greater than 5 000m² (0.5 hectares) a Heritage Impact Assessment (HIA) is to be undertaken and submitted to Amafa aKwaZulu-Natali for review and approval prior to any construction commencing. Should heritage artefacts, including buildings / structures older than 60 years, be identified during the assessment, then additional permit applications for demolition or alteration may be required.

Mr Frans Prins of Active Heritage cc undertook a Heritage Impact Assessment (HIA) utilising the following methodology, in compliance with the KwaZulu-Natal Heritage Act (Act No. 4 of 2008) and National Heritage Resources Act (No. 25 of 1999):

- A desktop study was undertaken of the archaeological databases housed in the KwaZulu-Natal Museum, and the SAHRA inventory of heritage sites in the near vicinity of the study area;
- Available heritage literature covering the greater Pietermaritzburg area was consulted;
- Historical aerial photographs of the area were surveyed; and
- A site visit was undertaken on 06 October 2015, and a ground survey, following standard and accepted archaeological procedures, was conducted during the visit.

Based on the above, a HIA Report has been compiled (attached as Appendix 13) which notes that no heritage or archaeological sites were identified on the site. Based on this outcome, the HIA identified no fatal flaws to the proposed development.

11.6 AGRICULTURAL POTENTIAL ASSESSMENT

As per the Agricultural Potential Assessment attached as Appendix 14. A detailed soil survey was conducted for the Hilton Dairy Development site on the 23rd of February 2017. The proposed development area was dominated by freely draining red soils (Hutton and Clovelly). These soil types were prevalent where the slopes were not too steep. Glenrosa soils dominated the steeper slopes Katspruit soils were found along the drainage line, as expected of soils with wetness indicators.

The climate capability for the Hilton area was determined to be Slight to Moderate Limitation rating: Slightly restricted growing season due to low temperatures and severe frost. Good yield potential for a moderate range of adapted crops (Smith, 2006).

The steeper and shallower soils were classified as having light cultivation and land capability as moderate grazing, the soils are limited by the number of boulders in the profile. The drainage zones were classified as Wetland. The land capability is moderate cultivation, with portions of good deep soils, soils were deep well drained soils on flat slopes.

The land capability is classified as potential land with minor limitations. The land capability was determined to have a good potential, whilst the land capability was determined to be a restricted potential.

The major concern regarding the loss of agricultural land and / or the loss of agricultural potential is centred around the compaction and the erosion of the soil resource. As well as the development on high potential land.

The combine significance of the impact without mitigation is Medium with the potential impact as considerable / substantial. Failure to mitigate with the objective of reducing the impact to acceptable levels could render the entire project option or entire project proposal unacceptable. Mitigation is therefore essential.

With mitigation the rating is Low - The impact is unimportant / inconsequential / indiscernible – no mitigation required, or it may be rendered acceptable in light of proposed mitigation.

It is the opinion of the Agricultural Specialist that there is no reason why the proposed development should not proceed, this is based on the following reasons:

- if the developer adheres to the mitigation measures which reduces the possible impacts to a low status; and
- The developer adheres to the recommendations provided above.

Although an Agricultural Potential Assessment was carried out, an application was made to the National Dept. of Agriculture and Fisheries and to the KZN Department of Agriculture, Forestry and Fisheries, in October 2008, in terms of Act 70 of 1970. Permission was sought to:

1. Incorporate the Hilton College Estate into the Hilton Town Planning scheme controlled by the uMngeni Municipality, and
2. To release three portions, which were shown on an attached diagram, for development purposes, including sub-division. (These areas were subsequently surveyed and defined as The Gates No 18360, Portion 167 of 10 of the Farm Hilton 12304 and portion 175 of 2 of the Farm Hilton 12304; these proposed sub-divisions all fit within the areas shown on the diagram submitted with the 70 of '70 application)

Permission was accordingly received in a letter dated 23 April 2010. It is also important to note that site selection in terms of the proposed development was based on extensive strategic planning evaluation of the Hilton Estate which took into consideration the agricultural resources over the entire Estate. The outcome of these strategic assessments culminated in an Intergraded Development Plan for the Estate which highlighted that the proposed site presents the best opportunity for development when evaluating the estate holistically. The finding of these studies resulted in the Local Municipality incorporating the proposed site into their municipal IDP in March 2010, with the National Department of Agriculture releasing the land from the provision of Act 70 of 1970 in April 2010.

12 IMPACT ASSESSMENT AND MITIGATION MEASURES

12.1 IMPACT ASSESSMENT METHODOLOGY

The EIA Regulations, 2014, prescribes requirements to be adhered to and objectives to be reached when undertaking Impact Assessments. These are noted in the following sections contained within the EIA Regulations (2014):

- Regulation 982, Appendix 1, Section 2 and Section 3 – Basic Assessment Impact Requirements; and
- Regulation 982, Appendix 2 and Appendix 3 – Environmental Impact Assessment Requirements.

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

- A description and assessment of the significance of any environmental impact including:
 - Cumulative impacts that may occur as a result of the undertaking of the activity during the project life cycle;
 - Nature of the impact;
 - Extent and duration of the impact;
 - The probability of the impact occurring;
 - The degree to which the impact can be reversed;
 - The degree to which the impact may cause irreplaceable loss of resources; and
 - The degree to which the impact can be mitigated.

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

The interpretation of the overall significance of impacts is presented in Table 6.

TABLE 11: Interpretation of the significance scoring of a negative impact / effect¹.

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

The significance rating of each identified impact / effect was further reviewed by the Environmental Assessment Practitioner (EAP) by applying professional judgement.

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

NATURE OF IMPACT

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

SPATIAL EXTENT

This addresses the physical and spatial scale of the impact. A series of standard terms and ratings used in this assessment relating to the spatial extent of an impact / effect are outlined in Table 7.

TABLE 12: Rating scale for the assessment of the spatial extent of a predicted effect / impact¹.

RATING	SPATIAL DESCRIPTOR
7	International - The impacted area extends beyond national boundaries.
6	National - The impacted area extends beyond provincial boundaries.
5	Ecosystem - The impact could affect areas essentially linked to the site in terms of significantly impacting ecosystem functioning.

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

SEVERITY / INTENSITY / MAGNITUDE

This provides a qualitative assessment of the severity of a predicted impact / effect. A series of standard terms and ratings used in this assessment which relate to the magnitude of an impact / effect are outlined in Table 8.

TABLE 13: Rating scale for the assessment of the severity / magnitude of a predicted effect / impact¹.

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

DURATION

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

TABLE 14: Rating scale for the assessment of the temporal scale of a predicted effect / impact¹.

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

IRREPLACEABLE LOSS OF RESOURCES

Environmental resources cannot always be replaced; once destroyed, some may be lost forever. It may be possible to replace, compensate for or reconstruct a lost resource in some cases, but substitutions are rarely ideal. The loss of a resource may become more serious later, and the assessment must take this into account. A series of standard terms and ratings used in this assessment are included in Table 10.

TABLE 1015: Rating scale for the assessment of loss of resources due to a predicted effect / impact¹.

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

REVERSIBILITY / POTENTIAL FOR REHABILITATION

The distinction between reversible and irreversible impacts is a very important one and the irreversible impacts not susceptible to mitigation can constitute significant impacts in an EIA (Glasson et al, 1999). The potential for rehabilitation is the major determinant factor when considering the temporal scale of most predicted impacts. A series of standard terms and ratings used in this assessment are included in Table 11.

TABLE 16: Rating scale for the assessment of reversibility of a predicted effect / impact¹.

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

PROBABILITY

The assessment of the probability / likelihood of an impact / effect has been undertaken in accordance with ratings and descriptors provided in Table 12.

TABLE 17: Rating scale for the assessment of the probability of a predicted effect / impact¹.

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

12.2 MITIGATION

In terms of the assessment process the potential to mitigate the negative impacts is determined and rated for each identified impact and mitigation objectives that would result in a measurable reduction or enhancement of the impact are taken into account. The significance of environmental impacts has therefore been assessed taking into account any proposed mitigation measures. The significance of the impact “without mitigation” is therefore the prime determinant of the nature and degree of mitigation required.

13 IMPACTS IDENTIFIED

The impacts identified for the proposed construction of the housing development and the associated mitigation measures are provided in Table 13.

TABLE 18: Impacts identified and associated mitigation measures

Impact	Description	Mitigation
Soil	<ul style="list-style-type: none"> • Potential disturbances include compaction, physical removal and potential pollution; • The exposed soil surfaces have the potential to erode easily if left uncovered which could lead to the loss of vegetation. • Potential loss of stockpiled topsoil and other materials if not protected properly; • Insufficient stormwater control measures may result in localised high levels of soil erosion, possibly creating dongas or gullies, which may lead to decreased water quality in surrounding watercourses; • Increased erosion could result in increased sedimentation which could impact on ecological processes; • The additional hardened surfaces created during construction will increase the amount of stormwater runoff, which has the potential to cause erosion; • Physical disturbance of the soil and plant removal may result in soil erosion/loss; and • Erosion and potential soil loss from cut and fill activities. 	<ul style="list-style-type: none"> • Soil erosion prevention measures should be implemented such as gabions, sand bags etc. whilst energy dissipaters should be constructed at any surface water outflow points. The sites should be monitored weekly for any signs of off-site siltation. All areas impacted by earth-moving activities should be re-shaped post-construction to ensure natural flow of runoff and to prevent ponding. All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil; and • Any exposed earth should be rehabilitated promptly with suitable vegetation to protect the soil. Vigorous grasses planted with fertiliser are very effective at covering exposed soil. It is important to note, that the use of fertilisers, must be undertaken with caution and must not be allowed, in any circumstances, to run into drainage lines / wetlands, to avoid any possible eutrophication impacts.
Agricultural Resources	<ul style="list-style-type: none"> • Loss of agricultural land. The land is not currently used for agricultural purposes other than the grazing of cattle and hay bailing. The size of the land also provides limited opportunities in terms of agricultural production. 	<ul style="list-style-type: none"> • Mitigation measures are not proposed. The land has already been released by the National Department of Agriculture from the provisions of Act 70 of 1970 (subdivision of agricultural resources) as they are satisfied that loss of this agricultural land for development purposes will not have any significant impact on agricultural production in the local economy. • To keep the infrastructure portions as close to the existing road network (where possible) to avoid the construction of new roads that might segregate the good potential agricultural zones; • To locate the infrastructure (where possible) on the restricted potential land potential zones; • The aim is to minimise or eliminate the development of the high potential /good potential areas (where possible).
Vegetation and fauna	<ul style="list-style-type: none"> • Disturbance of the site may lead to encroachment of alien plant species on-site and to the surrounding areas; • Increase in alien invasive species, therefore a possible loss in biodiversity; 	<ul style="list-style-type: none"> • Identify sensitive fauna and flora prior to construction works; • Site personnel must undergo Environmental Training and be educated on keeping any vegetation and faunal disturbance to a minimum; • Poaching or harvesting of indigenous flora / fauna is strictly forbidden;

Impact	Description	Mitigation
	<ul style="list-style-type: none"> • Potential off-site pollution as a result of accidental spillages of petrochemicals or bituminous substances; and • Increase in road strikes of birds and wildlife, especially slow-moving organisms such as frogs. • It was found that the Blue Cranes (Vulnerable) which are breeding in the immediate area are also using the adjacent grassland for foraging purposes and, at times, small flocks of these birds are present. Oribi (Endangered) are known to have been relatively common at the site in the recent (5 years) past and may still be present although in reduced numbers. • Loss of a +-12ha portion of Endangered Mistbelt Grassland as a result of the proposed development. 	<ul style="list-style-type: none"> • Alien plant encroachment must be monitored and prevented as outlined in the EMPr; • All exposed earth should be rehabilitated promptly with suitable vegetation to protect the soil. Vigorous grasses planted with fertiliser are very effective at covering exposed soil. Necessary rehabilitation measures (e.g. burning, seeding, removing alien plants etc.) should be introduced to ensure species composition reverts to a more natural state (with regards to affected areas). Indigenous vegetation with deep set root systems is advisable to limit soil loss on site. Alternatively, water dissipating mechanisms such as gabions or reno-mattresses may be implemented on-site to help stabilize the surrounding soil and provide a platform for the growth of vegetation. • No hunting is permitted on-site or the surrounding areas; • No animals required for hunting e.g. dogs, under the supervision of construction workers, should be allowed into the area. All construction personnel on the property should be informed of this ruling; and • Any construction personnel found to be poaching in the area should be subjected to a disciplinary hearing. • A nearby piece of similar land and vegetation will have to be designated for permanent conservation purposes. It is suggested by the specialist that the remainder of the property not designated for development be set aside for conservation purposes as this will not only ensure conservation of the vegetation type, but also ensure that ecological corridors are maintained. It should be noted that the conservation area need not be a total exclusion area but that it may be used for grazing of livestock although at a low level of intensity. • All of the catchment of the wetlands downstream of the development site would be in a conservation area. • A population of <i>Kniphofia buchananii</i> which species does not occur in the development site is present in the area. • Since Oribi territories in the KZN Midlands are generally between 20 ha to 60 ha in area (Rowe-Rowe, 1994) there is space for at least two pairs of Oribi to sustainably survive providing that other threats, such as dogs, are controlled. • The James Wakelin Grassland Reserve (60.98 ha) would be linked to an even larger grassland conservation area to the benefit of both.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • The area includes a known Blue Crane breeding site and is close to two others. Birds from the latter forage within the proposed conservation area. • The area is directly alongside a further area of natural grassland which is almost equal in size and which includes Wetland Area 1. It is to be noted however that this grassland is under the ownership of two parties and, although it could be included, its future status cannot be defined with any certainty here. • The area between the development and the wetland must be allowed to rehabilitate itself back toward a more natural condition. It must be kept free of alien weeds and a proper conservation-directed veld burning programme must be designed and be set in place. • The property owners should be encouraged to use indigenous plants in their gardens since alien ornamental plants may have the potential to “escape” and become weeds. • Soil erosion must be monitored and any scars must be repaired. • The area should be kept free of trees other than for a few copses of indigenous trees species such as <i>Acacia sieberiana</i>. • Although an operational impact It is a recommendation of the EAP that during the operational phase that landowners are not permitted to have domestic cats on the property. Dogs could be permitted however the number of animals per site should be limited to two animals and sites where landowners have dogs must be securely fenced. No dogs off of leads should be permitted in common areas. • Buffer Area. A model which may be used to objectively and rationally determine buffers for wetlands is under development (Macfarlane, et al, 2015) and will soon be released as a finished product. Until then, a Beta version of the model recommends buffers of 43 m for protection of the hydrology of the wetland and 85 m for habitat for the Blue Cranes. However, these figures must be regarded as being provisional since the final version of the model may lead to their being changed. • Abandonment of certain subdivisions. It is strongly recommended that subdivisions 30, 31, 32, 42, and 54 should be abandoned and that, if possible, other sites should be found elsewhere in the development area to replace them. • Wetland repair. The drains in the centre portion of the system must be filled in and repaired and measures must be taken to ensure that the headcuts which have developed are stopped.

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • Veld management. A fire management programme must be prepared and be adhered to. No part of any wetland should be burned more frequently than once in three years. • Fences. The fences around the system must be repaired and be extended to include those areas which are currently unprotected. Very important in this regard is the area around the soil pipes. • Construction of adequate fencing to protect the site throughout its length in the conservation area. • Repair of any erosion scars which have developed. • Protection of the area from fire at times when the cranes are breeding there.
Air quality and noise pollution	<ul style="list-style-type: none"> • Potential dust generation from soil stripping, vehicle traffic on the access roads and motor vehicle fumes will have an impact on air quality; • Potential increase in noise from the operation of machinery and equipment, as well as the construction vehicle traffic; and • Dust and noise will be created during the Construction Phase, which may impact on the local community. 	<ul style="list-style-type: none"> • All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum, as per the requirements of the EMP; and • Road dampening must be undertaken to prevent excess dust during construction.
Traffic	<ul style="list-style-type: none"> • Increase in construction vehicles in the area; • Possible lane closures, traffic delays and congestion during the construction phase; • Slow-moving construction vehicles on the surrounding roads may cause accidents; and • If not properly maintained, increased road use to existing surrounding road infrastructure, for access purposes by construction personnel, may cause damage to the existing infrastructure. 	<ul style="list-style-type: none"> • Appropriate temporary traffic control and warning signage must be erected and implemented on all affected roads in the vicinity; • Construction worker's / construction vehicles must take heed of normal road safety regulations, thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; and • Any damage to surrounding roads must be repaired as soon as possible to prevent further deterioration to the road network.
Waste	<ul style="list-style-type: none"> • There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil / bitumen spills, litter from personnel on-site, sewage from ablutions etc.); and • Waste generation could be created by the following: <ul style="list-style-type: none"> - Solid waste - plastics, metal, wood, concrete, stone, asphalt; - Chemical waste- petrochemicals, resins and paints; and - Sewage as may be generated by employees. 	<ul style="list-style-type: none"> • All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials is supported; • All solid wastes should be disposed of at a registered landfill site and records maintained to confirm safe disposal; • Adequate scavenger-proof refuse disposal containers must be supplied to control solid waste on-site;

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • It should be ensured that existing waste disposal facilities in the area are able to accommodate the increased waste generated from the proposed construction; • Chemical waste must be stored in appropriate containers and disposed of at a licensed disposal facility; • Portable sanitation facilities should be erected for construction personnel. Use of these facilities should be enforced (these facilities should be kept clean so that they are a desired alternative to the surrounding vegetation). These facilities should also be monitored and serviced regularly so as to prevent contamination of the water resources. • The construction site should be inspected for litter on a daily basis. Extra care should be taken on windy days. • Soil that is contaminated with, e.g. cement, petrochemicals or paint, must be disposed of at a registered waste disposal site. • It must be ensured that all hazardous contaminants are stored in designated areas that are sign-posted, lined with an appropriate barrier and bunded to 110% of the volumes of liquid being stored to prevent the bio-physical contamination of the environment (ground and surface water and soil contamination). Hazardous substance storage must not take place within 100m of a wetland or within the 1:100 year floodline; and • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / Municipality etc.) and must be remediated as per the EMPr.
Socio-Economic	<ul style="list-style-type: none"> • Creation of job opportunities for skilled personnel (e.g. engineers, specialists etc.) and non-skilled personnel (e.g. labourers); • Skills development of the local community through employment opportunities; • Social anxiety may arise should the surrounding community not be adequately notified of the proposed activity; and • Possible economic benefits to local suppliers of building materials as goods and services may be purchased from these entities during the construction phase. 	<ul style="list-style-type: none"> • Inform the surrounding communities and general public of the proposed activity as soon as possible. This will serve to ease potential social anxiety. Such notification can be conducted through the Public Participation Process; • Local people should be employed where possible; and • A Community Liaison Officer could assist in raising any concerns / complaints noted by the affected community to the Construction Team.
Safety and security	<ul style="list-style-type: none"> • There is potential for construction labour to trespass onto neighbouring properties; and • Construction personnel / construction vehicles – movement of construction personnel and vehicles may pose a potential health and safety risk to road users and local residents. 	<ul style="list-style-type: none"> • Any construction personnel found to be trespassing must be subjected to a disciplinary hearing; • Construction workers' / construction vehicles should take heed of normal road safety regulations, thus all personnel must obey and respect the law

Impact	Description	Mitigation
		<p>of the road. A courteous and respectful driving manner should be enforced and maintained so as not to cause harm to any individual; and</p> <ul style="list-style-type: none"> • A designated speed limit should be set by the developer to limit possible road strikes.
Noise	<ul style="list-style-type: none"> • Disruption to residents through increased activity and noise in the area. 	<ul style="list-style-type: none"> • All construction machinery and equipment must be regularly serviced and maintained to keep noise, dust and possible leaks to a minimum, as per the requirements of the EMPr; • Operational Hours: No works shall be executed between sunset and sunrise and on the non-working and special non-working days as stated in the Contract Data unless otherwise agreed between the Engineer and Contractor; and • Construction personnel must be made aware of the need to prevent unnecessary noise such as hooting and shouting.
Water Resources	<ul style="list-style-type: none"> • Contamination of ground and surface water and soil; • Accidental spillages of petrochemicals from vehicles and equipment, or concrete; • The additional hardened surfaces created during construction will increase the amount of stormwater runoff, which has the potential to cause erosion and create turbidity; • Possible damage to the riparian surrounds; and • Risk of initiating erosion gullies 	<ul style="list-style-type: none"> • Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development; • An appropriate number of toilets (1 toilet for every 20 workers) must be provided for labourers during the Construction Phase. These must be maintained in a satisfactory condition and a minimum of 100m away from any water resources and outside of the 1:100 year floodline, • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or water-proof drums, and must not be allowed to enter into the natural drainage systems; • The Construction Camp must be positioned on previously disturbed areas (if possible) and outside of the 1:100 yr floodline or 100m away from the wetland areas, whichever is the greatest; • Soil erosion prevention measures must be implemented such as gabions, sand bags etc. whilst energy dissipaters must be constructed at any surface water outflow points. The site should be monitored by the Contractor weekly for any signs of off-site siltation. All areas impacted by earth-moving activities must be re-shaped post-construction to ensure natural flow of runoff and to prevent ponding; • Appropriate silt control mechanisms must be installed around all soil excavations to prevent silt from entering the surrounding watercourses;

Impact	Description	Mitigation
		<ul style="list-style-type: none"> • Should any excavations require dewatering, this is to occur through an adequately designed silt trap prior to discharge. All silt traps are to be regularly monitored and maintained to ensure efficient and effective use; • At the end of the construction phase, the site must be fully revegetated to match the pre-construction condition. • The widening of the road should be done in a downstream direction since the surrounds there are more severely degraded than on the upstream side of the crossing. • During the construction process, care must be taken to prevent soil or any other form of sediment from entering the aquatic environment. • If cement or concrete are to be used then no uncured product, which is toxic to some forms of aquatic life, may be allowed to come into contact with the water. • Once the road construction process is completed the channel banks must be stabilised and be left in a condition which will remain stable. Slopes must be low enough to be stable, or else gabions or other structures must be used. • All soil areas must be planted with a grass seed mix which will include <i>Eragrostis curvula</i>, <i>Setaria Sphacelata</i>, and <i>Setaria megaphylla</i>. The latter is good in shaded conditions. • Kikuyu grass may not be used as it is an invader of natural veld.
Heritage	<ul style="list-style-type: none"> • Uncovering of heritage artefacts. 	<ul style="list-style-type: none"> • the KwaZulu-Natal Heritage Act requires that all operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities.
Geotechnical	<ul style="list-style-type: none"> • Possible damage to foundations 	<ul style="list-style-type: none"> • One of the more important factors in the promotion of a stable site is the control and removal of surface water from the property. It is important that the design of the stormwater management system allows for the drainage of accumulated surface water from the hard stand areas, roads and platforms into specially constructed drains and from there downslope of the site. • It is recommended that the structures be founded on stiffened rafts which immediately address both the heave and settlement problem associated with the thick clays on the site. • The clays which underlie the site are ostensibly acceptable for use as subgrade and selected layer material, and for use in general fills. However, where they do not meet the G10 criteria, they will need to be undercut to a depth of 200 mm and replaced with G8 material compacted

Impact	Description	Mitigation
		<p>to 93 percent modified AASHTO dry density to provide a suitable subgrade for road and pavement construction. It is strongly recommended that additional testing be undertaken to confirm the findings of the initial investigation.</p> <ul style="list-style-type: none"> • No water ponds against or within the first metre from the external perimeter of the structure. • Gardens, located against the external perimeter of the structure, are not recommended. • Leaks in plumbing and associated drainage are attended to without delay. • No large shrubs and or trees are planted closer than 0.75 x the mature height of the tree.
Visual Impact	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • A vegetation screen should be planted along the D494, starting some 100m before the proposed development property. This might be a double row of trees, or an impermeable mixed vegetation screen. This will ensure that the development is not visible from the road. • The existing planting along the ridge between D494 and Heidelberg needs work. It should be thickened with the planting of additional plants, and the existing vegetation will need watering and fertilising. This will produce a screen which will also frame the development, ensure that the roofs of houses do not break the skyline, and minimise views from outside the development. • An architectural code, similar to that of The Gates at Hilton, should be introduced. Specifically, the roofs should be dark, non-reflective and the walls earthy colours. White should be outlawed. • Outside lighting should be minimized, and focused downwards and inwards. Street lighting should be limited to low bollards with downward-focused taller lights at intersections • Vegetation, including trees, to be encouraged within the development, both between properties and within individual sites. This will break the visual impact considerably. Similarly, hedges should be encouraged between properties. • Litter and dust management measures should be in place at all times. It is noted that the developer has negotiated permission to tar the D494 to the entrance to the development. All roads within the development will be tarred. • The entire site should be kept tidy at all times, including during the infrastructure phase.

14 IMPACT ASSESSMENT

Table 14 presents the impact assessment findings in relation to the proposed construction activities.

TABLE 19: Assessment of impacts

	Nature of project impact	Spatial extent		Severity / intensity / magnitude		Duration		Resource loss	Reversibility		Probability		Significance without mitigation	Significance with mitigation
		Without	With	Without	With	Without	With		Without	With	Without	With		
CONSTRUCTION IMPACTS	Soil impacts	3	2	2	2	7	3	1	1	1	0.7	0.3	9.8	3
	Agricultural Resources	1	1	3	3	7	7	7	7	7	0.9	0.9	22.5	22.5
	Flora and fauna impacts	3	2	5	3	7	1	7	3	1	0.4	0.3	10	3
	Air quality and noise pollution impacts	2	1	3	2	3	1	3	3	1	0.5	0.3	7	2
	Traffic impacts	2	1	3	2	3	1	3	3	1	0.5	0.3	7	2
	Waste impacts	2	1	3	2	3	1	3	3	3	0.6	0.3	8.4	2
	Socio-economic impacts	2	1	4	2	3	1	3	3	1	0.4	0.3	6	2
	Existing infrastructure disturbance	2	1	2	1	1	1	3	3	1	0.3	0.1	3.3	2
	Safety and security impacts	2	1	3	1	1	1	1	1	1	0.4	0.2	3.2	2
	Noise impacts	2	1	3	2	3	1	1	3	2	0.3	0.2	3.6	2
	Water impacts	2	1	4	2	1	1	3	1	1	0.2	0.1	2.2	2
	Visual impacts	2	1	3	2	3	1	3	3	3	0.6	0.3	8.4	2
Overall impact significance													MEDIUM	LOW

14.1 SIGNIFICANCE

Based on the outcome of the significance scoring noted in Table 14, the overall significance impact without mitigation, is considered to be MEDIUM, with mitigation, the overall significance impact is considered to be LOW.

The greatest impact of significance is considered to be the potential for agricultural impacts and impacts on fauna and flora, while soil, waste and visual impacts are rated as the second highest possible impact. However, with the correct mitigation measures employed as noted in Table 13 and as per the EMPr (Appendix 15), these impacts can be significantly reduced. As such, it is the recommendation of the EAP that the Preferred Site Alternative and the Preferred Technology Alternative should be adopted.

15 ENVIRONMENTAL IMPACT STATEMENT

Assuming all phases of the project adhere to the conditions stated in the EMPr (Appendix 15) it is believed that the impacts associated with the proposed construction will have limited to no significant, adverse, long term environmental impact on the surrounding environment.

Positive impacts associated with construction include:

- Local Economic growth and development;
- Employment opportunities and skills development.
- Provision of freehold housing to labour tenant residents of the estate;
- Alignment with various strategies of the uMngeni Local Municipality;
- Continued ability to subsidise fees for school attendees;
- Provision of housing to meet current demands; and
- Blacktop Surfacing and associated safety improvements to a section of D494 where the road narrows at the watercourse crossing.

It is perceived that these impacts will be long term and have sustainable benefits.

It must be ensured that the construction phase, in no way, hampers the health of any of the ecological systems or items of heritage significance identified on site, and that post-construction rehabilitation leaves the surrounding environments in an as good, if not better, state.

After the construction phase of the project, the contractors must ensure that all hazardous materials are removed from the site and that rehabilitation of land is undertaken according to the requirements of the EMPr.

Any alien plant management programmes that are implemented during the construction phase must be maintained during the construction defects liability period. It is also critically important that drainage lines are kept free of alien plant infestation.

Better management of "conservation areas" must be encouraged through the input of levies and it must be ensured that the remainder of the property is set aside for conservation to ensure protection of the vegetation type and maintenance of the ecological corridor on the site as per the specialist's recommendations.

16 RECOMMENDATIONS OF THE SPECIALISTS

16.1 BIODIVERSITY AND WETLAND SURVEY

Terrestrial Vegetation

Because the terrestrial vegetation within the project footprint is of high conservation concern and will be almost totally destroyed, mitigatory measures must be undertaken. The present extent of untransformed grassland in the area is approximately 12.9 ha with a further 19.8 ha been degraded to varying degrees as a result of past agricultural activities including crop fields and pastures. It is therefore recommended that a nearby area of grassland be set aside permanently as the mitigatory measure. This area must be at least 12.9 ha in extent but it should ideally be larger as the vegetation type is of such importance. It is suggested that the land should be as close as possible to the James Wakelin Grassland Nature Reserve and should, if possible be linked to it. To this end it is proposed that the approximately 19.9 ha strip of land which is on the opposite side of Road D494, and which is owned by the developer, be set aside as shown in Figure 13. If this is done, the conservation value of both the reserve and the mitigation area will be considerably enhanced. In addition, it adjoins other land which is untransformed and which is also owned by the developer.

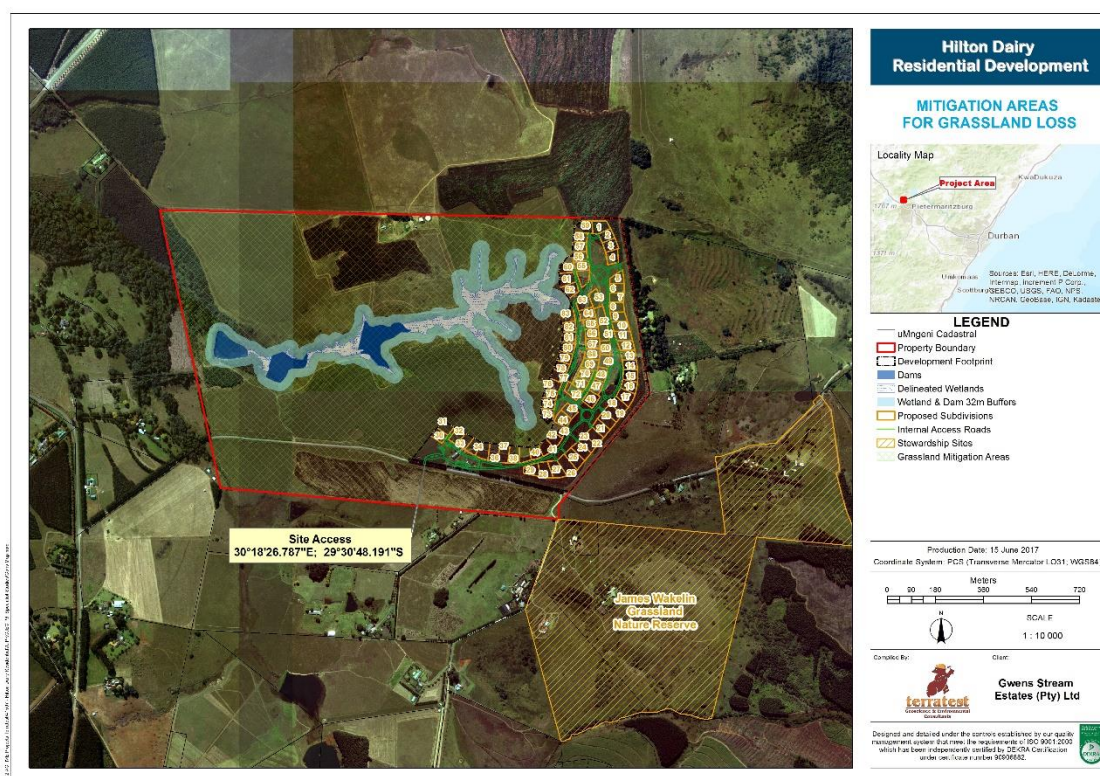


FIGURE 13.: Area proposed for mitigation in relation to the loss of grassland in the development footprint.

The balance of the property on which the development is situated, including the area of the wetlands and dams, is approximately 112 ha in extent. Approximately 40 % of this has been transformed by past agricultural activities but is now no longer used and is rehabilitating itself. If all of this were to be set aside as a permanent conservation area, the end result would be that a total of almost 132 ha would be set aside in perpetuity against the loss. Noteworthy components of this action would be as follows:

- All of the catchment of the wetlands downstream of the development site would be in a conservation area.

- A population of *Kniphofia buchananii* which species does not occur in the development site is present in the area.
- Since Oribi territories in the KZN Midlands are generally between 20 ha to 60 ha in area (Rowe-Rowe, 1994) there is space for at least two pairs of Oribi to sustainably survive providing that other threats, such as dogs, are controlled.
- The James Wakelin Grassland Reserve (60.98 ha) would be linked to an even larger grassland conservation area to the benefit of both.
- The area includes a known Blue Crane breeding site and is close to two others. Birds from the latter forage within the proposed conservation area.
- The area is directly alongside a further area of natural grassland which is almost equal in size and which includes Wetland Area 1. It is to be noted however that this grassland is under the ownership of two parties and, although it could be included, its future status cannot be defined with any certainty here.

Because of the above benefits it is recommended that all of the available land be considered and that a comprehensive grassland mitigation plan be set in place. This plan will include not only conservation management objectives and procedures but will also document means of possibly broadening the site in the future. Further items of especial importance will include the following:

- The area between the housing development and the wetlands must be allowed to rehabilitate itself back toward a more natural condition. It must be kept free of alien weeds and a proper conservation-directed veld burning programme must be designed and be set in place.
- The property owners should be encouraged to use indigenous plants in their gardens since alien ornamental plants may have the potential to “escape” and become weeds. If a total ban on alien plant species cannot be enforced, then it is recommended that no species which are listed as being invasive may be allowed (RSA, 2014).
- Soil erosion must be monitored and any scars must be repaired.
- The area should be kept free of trees other than for a few copses of indigenous trees species such as *Acacia sieberiana*.
- A veld burning programme must be drawn up and be implemented. It is recommended that an ecologist divide the area into four compartments and that two of these be burned on a biennial rotational basis.

It should be noted that the conservation area need not be a total exclusion area but that it may be used for grazing of livestock although at a low level of intensity.

Terrestrial Fauna

The impacts on the terrestrial fauna within the development site are unavoidable and cannot be readily mitigated for. However, as partial mitigation, it will be necessary that human presence in the area which is below the development should be kept to a minimum so as to avoid disturbing the Blue Cranes and other wildlife there. If people are allowed in at all it must be on the condition that they adhere to demarcated trails which may go no further than 100 m from the edge of the residential area and that the area must be totally off bounds if the cranes are present prior to the breeding season which runs from August to April with a peak in November and December. Thus the presence of the birds in July should be regarded as being as the trigger to closing down the area until at least October or November. If no sign of breeding activity is seen, then the trails and other facilities may be opened up again. If the birds do breed, then the area must remain closed until such time as the juveniles are able to fly.

Oribi (Endangered) are known to have been relatively common at the site in the recent (5 years) past and may still be present although in reduced numbers. The presence of dogs running uncontrolled in the area is of particular concern in relation to this species since they are very vulnerable to canine

chasing and predation. To improve the possibility of the species persisting in the area it is imperative that no dogs be allowed outside of the residential area.

Habitat for terrestrial birds and other smaller animals, including invertebrates, will be provided if the recommendations in regard to the vegetation are adhered to.

Wetland Biodiversity

If the development is to be authorised, it is recommended that the following mitigatory measures must be set in place for the wetland.

- **Buffer Area.** A model which may be used to objectively and rationally determine buffers for wetlands is under development (Macfarlane, *et al*, 2015) and will soon be released as a finished product. Until then, a Beta version of the model recommends buffers of 43 m for protection of the hydrology of the wetland and 85 m for habitat for the Blue Cranes. However, these figures must be regarded as being provisional since the final version of the model may lead to their being changed.
- **Abandonment of certain subdivisions.** It is strongly recommended that subdivisions 60, 61, 62, 83, and 73 should be abandoned and that, if possible, other sites should be found elsewhere in the development area to replace them.
- **Wetland repair.** The drains in the centre portion of the system must be filled in and repaired and measures must be taken to ensure that the headcuts which have developed are stopped.
- **Veld management.** A fire management programme must be prepared and be adhered to. No part of any wetland should be burned more frequently than once in three years.
- **Fences.** The fences around the system must be repaired and be extended to include those areas which are currently unprotected. Very important in this regard is the area around the soil pipes.

The above work must be done under supervision by an appropriately qualified wetland ecologist.

While the development footprint does not include Wetland Site 1, it must be recognised that the site is both important as Blue Cranes nest there, and under threat as it is not adequately fenced and is being damaged by cattle. If its surrounds are contemplated for use in mitigating loss of important terrestrial biodiversity, then it is recommended that the wetland is given some protection as well. The following actions would be required:

- Construction of adequate fencing to protect the site throughout its length in the conservation area.
- Repair of any erosion scars which have developed.
- Protection of the area from fire at times when the cranes are breeding there.

It is recognised that the above recommendation is dependent on ownership and management of the land concerned. However, it is understood that the matter is under discussion and so there is some possibility that the actions may become feasible.

Wetland Site 3 is not considered to be linked to the proposed development in any way since it is under different ownership and is already very extensively transformed. Therefore, no recommendations relating to it are put forward.

As per the recommendation of the Wetland and Biodiversity specialist, subdivisions 60, 61, 62, 83, and 73 have been abandoned and additional sites allocated, again with the input of the Wetland and Biodiversity specialist. The replacements sites are 111, 222, 333, 444, and 555 as indicated in Figure 3.

Watercourses

Only one watercourse, which is the Road D494 crossing, is likely to be affected in any way by the development. However, the anticipated impacts are of low concern and only the following actions are recommended:

- The widening of the road should be done in a downstream direction since the surrounds there are more severely degraded than on the upstream side of the crossing.
- During the construction process, care must be taken to prevent soil or any other form of sediment from entering the aquatic environment.
- If cement or concrete are to be used then no uncured product, which is toxic to some forms of aquatic life, may be allowed to come into contact with the water.
- Once the road construction process is completed the channel banks must be stabilised and be left in a condition which will remain stable. Slopes must be low enough to be stable, or else gabions or other structures must be used.
- All soil areas must be planted with a grass seed mix which will include *Eragrostis curvula*, *Setaria Sphacelata*, and *Setaria megaphylla*. The latter is good in shaded conditions.
- Kikuyu grass may not be used as it is an invader of natural veld.

Monitoring

Should the development be implemented, then it will be obligatory that the affected area be monitored so as to check on its integrity and to trigger management interventions if necessary. At least the actions listed in Table 11 will be necessary.

Table 20. List of Obligatory Monitoring Actions.

Relevant Environment	Required Monitoring	Monitoring Interval and Period and Follow-up Actions
Terrestrial Vegetation	Alien Weeds. Search for infestations.	General monitoring at two year intervals. Infestations are to be documented. Eradication is to be done as soon as is feasible and by approved methods. Treated areas should be checked in the following growing season for further treatment if necessary.
	Grassland development.	Monitoring plots of 10 m by 10m are to be established and be marked by steel pegs. They are to be checked for species diversity at three to five year intervals.
Terrestrial Fauna	Blue Cranes. The presence and activities of the birds are to be noted.	General observations done monthly and documented. Presence prior to the breeding season must trigger the shut-down of any recreational usage of the area around the wetlands and dams.
	Oribi. The presence and activities of the animals are to be noted.	General observations done monthly and documented. Any observed threats to the animals are to be addressed as is appropriate.
	Reedbuck and other mammals.	Unusual sightings are to be documented. Counts are to be done annually. Bird lists are to be compiled.
Wetlands	The wetlands are to be checked for any signs of erosion.	The survey is to be done annually and any necessary repairs are to be done no later than in the following dry season.
Watercourses	The watercourse on the D494 is to be monitored for signs of bank collapse.	The monitoring is to be done annually for the first 3 years after construction has ceased. Any signs of erosion or instability are to be addressed immediately.

Relevant Environment	Required Monitoring	Monitoring Interval and Period and Follow-up Actions
General	Waste water pipeline	The waste water pipeline from the housing area pump station to the treatment works must be inspected weekly. Any detected leaks or other problems are to be addressed immediately.

16.2 GEOTECHNICAL ASSESSMENT

It is recommended that the structures be founded on stiffened rafts which address both the heave and settlement issues. Based on the CBR values returned by the DCP tests, a modulus of subgrade reaction ranging from 108 to 193, with an average of 145 has been calculated for the upper metre of soil. It must be borne in mind that these figures are indicative only and should be treated with caution and more rigorous testing in the form of plate bearing tests would provide a more definitive result.

16.2.1 Additional Considerations

In all instances it is important that the in situ moisture content of the founding horizons below the structures be maintained, and in this regard the following precautions should be implemented to reduce the threat of soil heave or settlement:

- No water ponds against or within the first metre from the external perimeter of the structure.
- Gardens, located against the external perimeter of the structure, are not recommended.
- Leaks in plumbing and associated drainage are attended to without delay.
- No large shrubs and or trees are planted closer than 0.75 x the mature height of the tree.

It is not however cost effective to construct foundations which remove completely the chance of damage due to soil heave and settlement and in this light, some Category 1 damage to the structures may be expected, i.e., fine internal cracks of widths less than 1 mm. To a much lesser extent some Category 2 damage may occasionally occur, with the formation of cracks of less than 5 mm aperture. It is recommended that GeoZone GeoServices inspect and approve all foundation excavations to confirm depth of founding and bearing capacity of the underlying founding horizons.

16.2.2 Roads and Paved Areas

Table 12 below, derived from the Technical Recommendations for Highways (TRH14) summarises the material requirements for various pavement layers.

TABLE 21: TRH14 Material Code Requirements for Various Pavement

Layer	Material Code
Subbase	G5 and G6
Selected Layer	G6, G7, G8, G9
Subgrade	G8, G9, G10

The materials encountered on site range from less than G10 to G7 quality. The shales encountered in TP3 prove to be the worst material, (G10) on site and may only be used in general fills. The remainder of the material may be used in fills, subgrade and ostensibly as a selected layer based on the results, but we would recommend caution with regard to using the upper topsoil/colluvial horizons for subgrade

and selected layers use, as organic component and clay content may vary across a site. It is anticipated that the majority of the upper colluvial horizons will be grubbed down and stripped in any event, below which the underlying substrate should prove to be a satisfactory subgrade, except in the localised shale areas. It must also be borne in mind that the above comments are based on the limited laboratory testing.

The subgrade should be ripped to a depth of 200 mm and re-compacted to 93 percent modified AASHTO dry density. In areas of less than G10 quality material, they will need to be undercut to a depth of 200 mm and replaced with material of at least G8 quality, compacted to 93 percent modified AASHTO dry density.

16.3 VISUAL IMPACT ASSESSMENT

The role of mitigation is critical in reaching an acceptable way of addressing visual impacts. Affordable, appropriate and visually acceptable mitigation measures are recommended, and these should form part of an Environmental Management Plan to be implemented together with the development.

The following mitigating measures are recommended for the development:

- A vegetation screen should be planted along the D494, starting some 100m before the proposed development property. This might be a double row of trees, or an impermeable mixed vegetation screen. This will ensure that the development is not visible from the road.
- The existing planting along the ridge between D494 and Heidelberg needs work. It should be thickened with the planting of additional plants, and the existing vegetation will need watering and fertilising. This will produce a screen which will also frame the development, ensure that the roofs of houses do not break the skyline, and minimise views from outside the development.
- An architectural code, similar to that of The Gates at Hilton, should be introduced. Specifically, the roofs should be dark, non-reflective and the walls earthy colours. White should be outlawed.
- Outside lighting should be minimized, and focused downwards and inwards. Street lighting should be limited to low bollards with downward-focused taller lights at intersections
- Vegetation, including trees, to be encouraged within the development, both between properties and within individual sites. This will break the visual impact considerably. Similarly, hedges should be encouraged between properties.
- Litter and dust management measures should be in place at all times. It is noted that the developer has negotiated permission to tar the D494 to the entrance to the development. All roads within the development will be tarred.
- The entire site should be kept tidy at all times, including during the infrastructure phase.

While any development within a landscape will, inevitably, have some impact on the surrounding environment, we submit that, managed correctly, the impact on the aesthetics can invariably be minimized. In the specific instance of The Dairy at Hilton, the visual impacts will be small. The combined effect of the surrounding topography together with the proposed mitigating measures, particularly along the property boundaries, will achieve this.

16.4 AGRICULTURAL POTENTIAL ASSESSMENT

The recommendations for this project would be:

- To keep the infrastructure portions as close to the existing road network (where possible) to avoid the construction of new roads that might segregate the good potential agricultural zones;
- To locate the infrastructure (where possible) on the restricted potential land potential zones;
- The aim is to minimise or eliminate the development of the high potential /good potential areas (where possible);

17 RECOMMENDATIONS OF THE EAP

The proposed development will have an impact due to the loss of agricultural land. The land has already been released by the National Department of Agriculture from the provisions of Act 70 of 1970 (subdivision of agricultural resources) as they are satisfied that loss of this agricultural land for development purposes will not have any significant impact on agricultural production in the local economy. Furthermore, it has been established through strategic planning and impact assessment initiatives, and subsequent approval of the Estates Integrated Development Plan by the Department of Agriculture and Local Municipality, that when considering the Estate as a whole, the proposed site is the most suitable for the type of proposed development. In terms of conservation and biodiversity provided that the recommendations of the specialist to set aside the remainder of the property are implemented then impacts on the surrounding environment are deemed to be acceptable when considering the positive impacts of the project.

An EMPr has been compiled and is attached to this report (see Appendix 15). It is recommended that external monthly EMPr monitoring takes place by an independent Environmental Control Officer (ECO) to ensure that the requirements of the EMPr are being correctly implemented, thus ensuring the protection of the surrounding environs during construction.

Further, in terms of Environmental Monitoring, the following is recommended:

- An ECO must audit the construction site on a monthly basis during the Construction Phase;
- The Project Manager is responsible to ensure that a monthly Environmental Audit Report is submitted to the EDTEA: Compliance and Monitoring for the duration of the construction period.

All of the above recommendations have been incorporated into the EMPr (Appendix 15).

Based on the above, it is the opinion of the EAP that the Application should be granted a positive decision on Environmental Authorisation.

18 CONSTRUCTION TIMEFRAMES

Construction timeframes have not been estimated as yet, however, it is assumed that the installation of bulk services will take approximately 12 months to complete, houses will be constructed on individual erven as and when landowners purchase into the development. As such it is requested that the Environmental Authorisation, if issued by the Competent Authority, be valid for a period of 10 years from the date of signature.

19 ASSUMPTIONS AND UNCERTAINTIES

19.1 VISUAL IMPACT ASSESSMENT

The following assumptions and limitations apply:

- The layout, drawings and height regulations etc. were supplied by the consultants and are assumed to be accurate;
- The VIA aims to assist in limiting negative visual impacts on the viewers living or travelling in the area;
- The contour interval was 5m and the maps used were sourced from the Chief Directorate and from aerial survey;
- The viewsheds produced illustrate the areas from which the proposed development is most likely to be visible. It is accepted that it does not include man-made structures, or minor undulations in the topography.

19.2 EAP

Terratest (Pty) Ltd. is of the assumption that the information provided to us and used in the detailing of this report is correct.

It is assumed that databases and maps utilised are accurate. Ground truthing was undertaken in the context of vegetation and fauna where reasonable.

20 SUBMISSION AND CONSIDERATION OF DOCUMENTATION BY THE COMPETENT AUTHORITY

It is to be noted that in terms of the EIA Regulations (2014), GNR 982 43(2), all State Departments that administer a law relating to a matter affecting the environment, specific to the Application, must submit comments within 30 days to the EAP. **Should no comment be received within the 30-day commenting period, it will be assumed that the relevant State Department has no comment to provide.**

All comments received in response to the BA Report will be attached to, summarised and responded to in a final version of the BA Report, which will be submitted to the Competent Authority, (i.e. EDTEA) for consideration in terms of issuing Environmental Authorisation.

21 UNDERTAKING

Terratest (Pty) Ltd hereby confirms that the information provided in this report is correct at the time of compilation.

Terratest (Pty) Ltd further confirms that all comments received from Stakeholders and IAPs will be included in the final report submitted to the EDTEA. Further, a record has to-date and will continue to be kept of all comments, which will be consolidated and incorporated into all subsequent reports, either submitted for comment to IAPs, or to the EDTEA for consideration and decision-making. Furthermore, Terratest (Pty) Ltd confirms that the findings and recommendations of specialists have been included.

For Terratest (Pty) Ltd:

Tarin Strydom
Environmental Consultant

22 REFERENCES

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Scott-Shaw, C.R and Escott, B.J. (Eds) (2011) KwaZulu-Natal Provincial Pre-Transformation Vegetation Type Map – 2011. Unpublished GIS Coverage [kznveg05v2_1_11_wll.zip], Biodiversity Conservation Planning Division, Ezemvelo KZN Wildlife, P. O. Box 13053, Cascades, Pietermaritzburg, 3202.

APPENDIX 1: CVs

APPENDIX 2: Environmental Authorisation Application and Letter of Acceptance

APPENDIX 3: Locality Maps

APPENDIX 4: Service Drawings

APPENDIX 16: 70 of 70 Application

APPENDIX 17: Christine Platt Letter

APPENDIX 7: PPP (Advert, Posters, Notifications, IAP Register and Correspondence)

APPENDIX 8: Engineering Report

APPENDIX 9: Stormwater Management Plan

APPENDIX 10: Biodiversity and Wetland Report

APPENDIX 11: Geotechnical Investigation

APPENDIX 12: Visual Impact Assessment

APPENDIX 13: Heritage Impact Assessment

APPENDIX 1418: Agricultural Potential Assessment

APPENDIX 15: Environmental Management Programme