



IN TOUCH WITH THE AFRICAN LANDSCAPE

SEATON THOMSON & ASSOCIATES



TOURISM DEVELOPMENT, CONSERVATION & ENVIRONMENTAL PLANNING

DRAFT BASIC ASSESSMENT REPORT

DEVELOPMENT OF A NEW PRIVATE HOSPITAL ON ERVEN 3215 AND 3217 – 3228 ESTCOURT, AS WELL AS THE CONSTRUCTION OF AN ACCESS ROAD AND BRIDGE ON PORTION 1 OF ERF 1109 AND PORTION 1 OF ERF 1096, AND A RESIDENTIAL PORTION ON ERVEN 3211 – 3214, IN ESTCOURT, UMTSHEZI LOCAL MUNICIPALITY, UTUKELA DISTRICT MUNICIPALITY, KWA-ZULU NATAL

KZN -EDTEA reference number: To be confirmed after receipt of application form – will be contained in Final BAR

Applicant:
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SECTION A: ACTIVITY INFORMATION

1. ACTIVITY DESCRIPTION

The project has a small residential component, a new private hospital and access road. The residential portion consists of 4 erven (Erven 3211 – 3214) and the hospital site, which is very much the main component of the development, consists of 13 erven, which are to be consolidated. The 13 erven are Erf 3215 and 3217 – 3228 Estcourt. Stuart Road, which is an existing road reserve (although not built), will be formally closed and consolidated into the hospital development. The small residential component will be accommodation for nurses, doctors and security personnel, but this will be commenced as a second phase, after the hospital is operational. The hospital is proposed to be 3 storeys high and have 128 beds.

The site is located south of Estcourt, and south of the stream parallel to Roland Hellet Avenue. There is currently no formal access to the site, and it is proposed that an access road from Roland Hellet Avenue be constructed over the stream, to the site. This access road will form an extension to Jannie De Waal Avenue, and this extension will be on an existing servitude that has been proclaimed many years ago as a future extension. This proposed access road and bridge is on Portion 1 of Erf 1109 and Portion 1 of Erf 1096 Estcourt, which as indicated, are proclaimed/ registered future roads. The hospital site is approximately 1.8 Hectares in size, and the access roads will cover 1 hectare in extent, with the residential portion 0.3 hectares.

The *current* access to the site is via a dirt road, which is an extension of Heritage Road, off Roland Hellet Avenue. This is an informal dirt road, and as such a formal and more direct route to the proposed hospital is planned.

Currently, the closest private hospitals are in Howick, Ladysmith and Hilton. The Ladysmith hospital is some distance from the N3 highway and from the central Drakensberg, and as such there is no private healthcare facility in the central Kwa-Zulu Natal area, and close to the central Drakensberg. Establishment of a facility such as this is critical in this area.

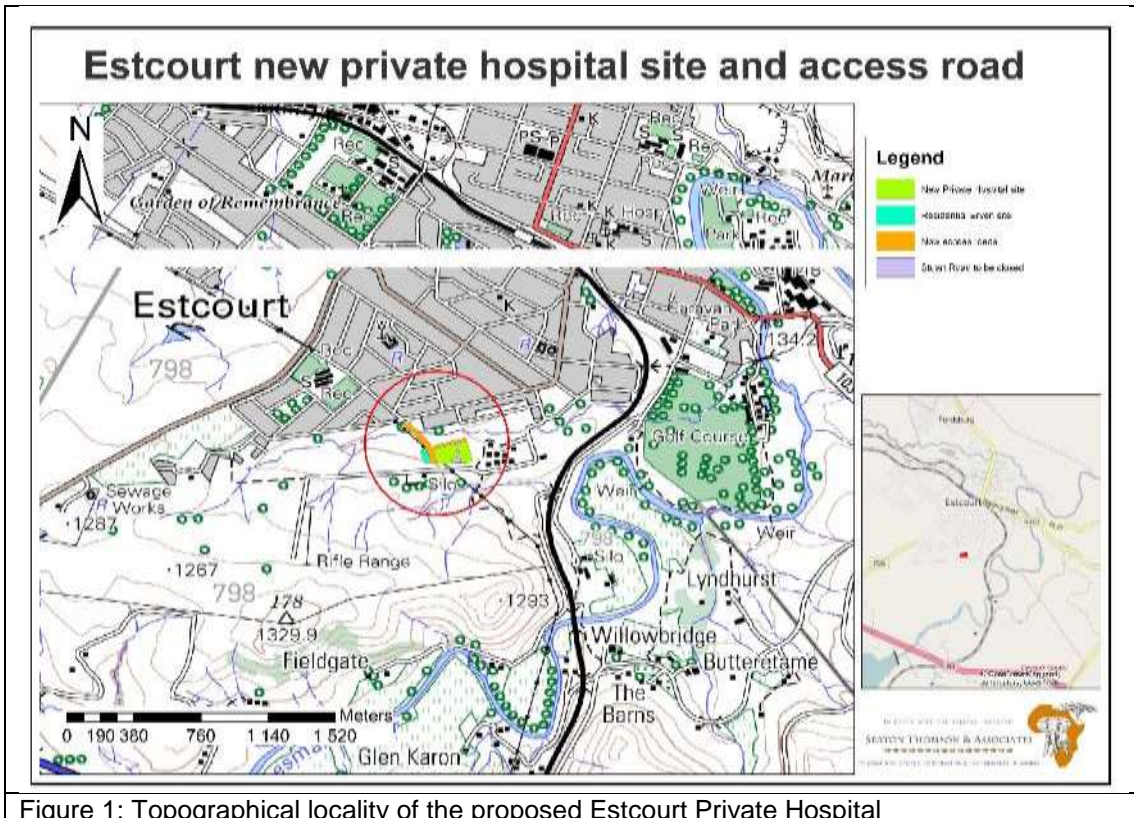


Figure 1: Topographical locality of the proposed Estcourt Private Hospital



Figure 2: Aerial image locality of the proposed hospital site and access road

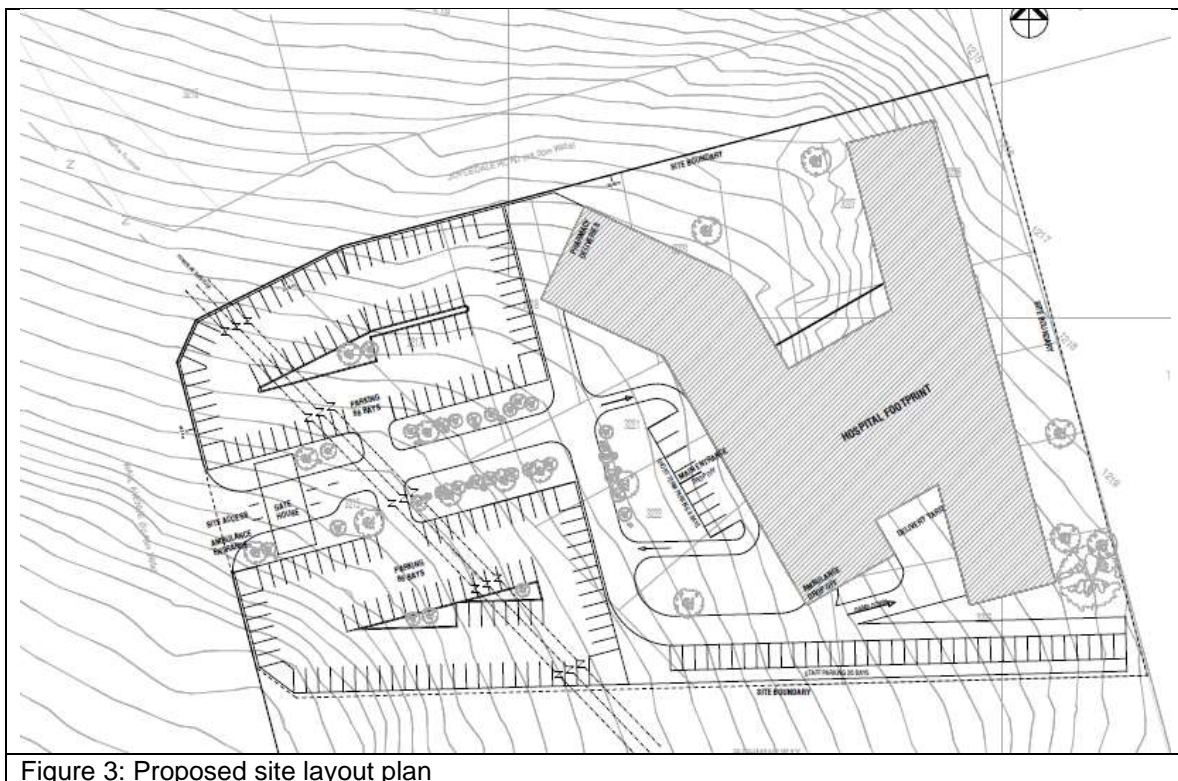


Figure 3: Proposed site layout plan

2. LISTED ACTIVITIES

The Applicant is applying for authorisation in term of the National Environmental Management Act 107 of 1998, **Environmental Impact Assessment Regulations 2014**.

Government Notice R983, Listing Notice 1, Activity 12:

The development of-

- (i) canals exceeding 100 square metres in size;
- (ii) channels exceeding 100 square metres in size;
- (iii) bridges exceeding 100 square metres in size;
- (iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;
- (v) weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;
- (vi) bulk storm water outlet structures exceeding 100 square metres in size;
- (vii) marinas exceeding 100 square metres in size;
- (viii) jetties exceeding 100 square metres in size;
- (ix) slipways exceeding 100 square metres in size;
- (x) buildings exceeding 100 square metres in size;
- (xi) boardwalks exceeding 100 square metres in size; or
- (xii) infrastructure or structures with a physical footprint of 100 square metres or more;

where such development occurs-

- (a) within a watercourse;
- (b) in front of a development setback; or
- (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; -

excluding-

- (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;
- (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;
- (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;
- (dd) where such development occurs within an urban area; or
- (ee) where such development occurs within existing roads or road reserves.

Relevance to application: The access road to the development will be constructed over a stream, and thus a bridge will be built.

Government Notice R983, Listing Notice 1, Activity 19:

The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from-

- (i) a watercourse;
- (ii) the seashore; or
- (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater,

But excluding where such infilling, depositing, dredging, excavation, removal or moving-

- (a) will occur behind a development setback;
- (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
- (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.

Relevance to application: The access road to the development will be constructed over a stream, and thus a bridge will be built. The building of this bridge will involve the excavation of more than 5 cubic meters of soil or sand from the watercourse.

Government Notice R983, Listing Notice 1, Activity 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.

Relevance to application: The access road to the development will be constructed, thus this activity may be triggered.

Government Notice R983, Listing Notice 1, Activity 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.

Relevance to application: The hospital site and access road are approximately 3 hectares in total, and thus more than 1 hectare of indigenous vegetation will be removed.

Government Notice R983, Listing Notice 1, Activity 56:

The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre-

- (i) where the existing reserve is wider than 13,5 meters; or
- (ii) where no reserve exists, where the existing road is wider than 8 metres;

excluding where widening or lengthening occur inside urban areas.

Relevance to application: The access road to the development will be constructed by lengthening of an existing road, so this activity may be triggered.

Government Notice R985, Listing Notice 3, Activity 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:

In Kwa-Zulu Natal in Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

Relevance to application: The area is defined as a "Critical Biodiversity Area 2" in terms of the Kwa-Zulu Natal systematic conservation plan.

3. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act No. 107 of 1998 as amended.	National & Provincial	27 November 1998
Government Notice No. R982 of 2014 EIA Regulations	National & Provincial	2014
Government Notice No. R983 of 2010 - Listing Notice 1	National & Provincial	2014
Government Notice No. R985 of 2010 - Listing Notice 3	National & Provincial	2014
National Heritage Resources Act (Act No 25 of 1999)	South African Heritage Resources Agency. Gauteng	1999

	provincial Heritage Resources Agency	
National Water Act (Act 36 of 1998)	National & Provincial	1998

4. ALTERNATIVES

Definition of alternatives as per the EIA regulations:

“alternatives”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;*
- (b) the type of activity to be undertaken;*
- (c) the design or layout of the activity;*
- (d) the technology to be used in the activity;*
- (e) the operational aspects of the activity; and*
- (f) the option of not implementing the activity.*

Discussion on the consideration of Alternatives:

Motivation for considering alternatives:

In terms of the definition for “alternatives” given above. The following can be said with regards to this hospital development, in relation to each aspect of “alternatives”:

- a) **The property on which or location where it is proposed to undertake the activity:** The particular properties associated with this application are owned by the applicant. An alternative property cannot be assessed for this application, as there are no other properties in the direct area that the applicant is looking to develop for these purposes, and the development of a Hospital is contractually linked to a specific property. The Hospital License that was issued by the Department of Health is specific to one site and cannot be moved or changed to another property. This forces the developer to develop this specific site and leaves no site alternative. The property is close to the N3 highway, with easy access off the main Estcourt/ Wembezi Road, the land has been earmarked for development and roads and property boundaries have already been laid out on a masterplan and zoned by the municipality. The site is therefore ideally located for a wider target market. Due to the above, there is ONLY ONE property that is assessed in this application.
- b) **The type of activity to be undertaken:** The land is currently zoned as “special residential”. A piece of land south of Estcourt, and approximately 18 hectares in extent, was earmarked by the municipality for residential and associated services. This proposed hospital falls within this larger area, and as such it is in line with the proposed future development of this area. There is a huge need for a private hospital in the central Kwa-Zulu Natal area, and within close proximity of the N3 highway. This need makes the proposed activity desirable and very much in demand.
- c) **The design or layout of the activity:** The design and layout has to take into consideration the land available and the slope of the ground, the existing road infrastructure and intersections in Estcourt, and the masterplan layout of erven. The access to the site will be from Jannie De Waal Drive, crossing the small watercourse. Jannie De Waal is a major road with easy access to Estcourt/ Wembezi Road and the N3 highway. The design and layout has thus taken into account this access, and the hospital and small residential area to the west planned accordingly. There has however been a *bridge design* layout alternative that has been assessed in this report.
- d) **The technology to be used in the activity:** This is not applicable to this particular development. There is NO “Technology” alternative that can be considered for this type of development, as one would consider for a large industrial type development. A new private hospital will make use of the latest and state of the art technology in the design and construction.

- e) **The operational aspects of the activity:** The development will be operated as per a normal private hospital. The small residential area to the west will most likely be operated under the hospital management as staff housing. One cannot feasibly assess any “operational” alternatives for a development such as this, as one would for a large industrial type development.
- f) **The option of not implementing the activity:** If the proposed development of a private hospital is not undertaken, then the current status quo of the site and surrounds will remain. The site has remained like this for many years, and in terms on onsite impacts, nothing will change. All vegetation will remain, and it will remain a very valuable piece of unused land, right next to Estcourt, which has already been earmarked in a masterplan for future development. Currently, the site is not used to its full potential. There is a desperate need for a fully functional private hospital in central Kwa-Zulu Natal area and close to the central Drakensberg. If the no-go alternative is realized, then the pressure for prime developable land and health care services will only increase. As populations increase, the need to develop health care facilities and associates services is critical. The Municipality Integrated Development Plan (IDP) of 2015 identified areas such as Wembezi and Estcourt that are likely to attract most of the population growth in future years due to their strategic location, and as such services also need to be built to accommodate for this need. Therefore, the no-go alternative is not a preferred alternative at all.

5. DISCUSSION ON BRIDGE DESIGN ALTERNATIVES

Two alternatives have been considered for the access road bridge:

Alternative 1: Box culvert bridge (Preferred alternative)

Alternative 2: Low level bridge

After environmental and engineering assessment of the two options, it was determined that the box culvert bridge would be a better option from an environmental impact and ease of access perspective. A box culvert bridge is therefore proposed to be constructed for the following reasons:

- The installation of pre-cast concrete box culverts would be over the entire extent the watercourse and floodline, which would allow free flow of water beneath it and prevent concentration of flows. The box culverts would also provide uninterrupted access to the hospital during any flooding that may occur
- Installing a low-level bridge would mean that the road level would be below the floodline, and this would cut off access to the hospital, which is not a viable option.

The following images show the difference between a low-level bridge and box culvert bridge, and further reiterate why a box culvert bridge is a more suitable option.



Figure 4: Images above showing a typical box culvert designs



Figure 5: Images above showing a low-level bridge design, which would be inundated with water flow during rains

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT AND ONSITE ASSESSMENT

1. PHYSICAL ENVIRONMENT

The proposed development site is located within Quaternary Catchment V70E; falling under the Thukela Water Management Area (WMA). The proposed area sits within an unnamed tributary to the Boesmans River (NatureStamp, 2016).

Rainfall in the Estcourt region occurs in the summer months (mostly December to February), with a mean annual precipitation of 576 mm (observed from rainfall station 0268631 W). The reference potential evaporation (ET_o) is approximately 1770 mm (A-pan equivalent, after Schulze, 2011) and the mean annual evaporation is approximately 1200 mm, which exceeds the annual rainfall. This suggests a high evaporative demand and a water limited system. Summers are warm to hot and winters are cool. The mean annual temperature is approximately 21.0 °C in summer and 10.5 °C in the winter months. The underlying geology of the site is Beaufort mudstone in this particular area (NatureStamp, 2016).

The terrain, as identified through a desktop analysis had a slope of between 5-12° along the slope. The terrain was uneven due to erosion and drainage lines. Numerous soil profiles were identified throughout the site. All of the non-wetland soils consisted of an Orthic A-horizon underlain by either a yellow a-pedal B-horizon (unconsolidated), red a-pedal B-horizon, lithocutanic B-horizon or directly underlain ecca shale (NatureStamp, 2016).

This site is found within the KwaZulu-Natal Highland Thornveld vegetation type (GS 6, Mucina and Rutherford, 2006). The desktop analysis revealed that the area is least threatened but is hardly protected (NatureStamp, 2016).

2. SOCIO-ECONOMIC ENVIRONMENT AROUND ESTCOURT

uMtshezi Local Municipality is located within the midlands in the South-Western quadrant of uThukela District Municipality and bordered in the north by Indaka and Emnambithi Local Municipalities, in the west by Okhahlamba and Imbabazane local municipalities, and in the south by Mpofana Local Municipality. (IDP, 2015)

Umtshezi Municipality population is estimated at 83154 individuals. This marks an increase from the situation in 2001. The majority of the population is African constituting 83.7% of the total population. The minority racial groups constitute 16.28% of the total. Population growth is expected to continue to grow albeit at a much slower rate compared to the last census decade. Areas such as Wembezi and Estcourt are likely to attract most of the population growth due to their strategic location. (IDP, 2015)

A review of the socio-economic profile as presented in the IDP indicates the following as key characteristics of the Umtshezi population:

- The majority of the population can be considered functionally illiterate as 70.5% of the population has a primary education and 18.8% have not been to school;
- Of the 13 961 households, 3 777 representing 27% of households have no income. This correlates with the high levels of unemployment that stands at 33%.
- Very few individuals have an income above R3 500 to enable them to provide their own shelter. Clearly, the majority of the municipal population will depend on state support for shelter and other basic services. Statistics reveal that 27% of the households are surviving on less than R12 a day;
- Approximately 10% of the total working force in the Municipality is skilled. Only 18.3% of the workforce is professional. Trade and craft constitute 10% of the workforce. Wholesale and retail trade employs 1 857 (4.9%) while electricity, gas and water supply employ 4.2% of the population. While agriculture is considered a key economic sector, Statistics reveal that the sector employs 2.4% of the economically active population; and

- Using household income, employment profile and employment by sector, it is strikingly clear that Umtshezi Municipality has a relatively high rate of unemployment, is dominated by low income households and the majority of those who are employed are involved in elementary sectors. Agriculture, which is essentially a dominant land use accounts for a small number of existing jobs. It follows that the majority of the unemployed are in areas with high population concentration. (IDP, 2015)

3. CULTURAL/HISTORICAL FEATURES

A walk through of the site found that there were no cultural or historical features recorded on the site. The site was very recently burnt by a fire which would have exposed any packed rocks that could be graves or old kraals. None of these were noted on the site. The greater Estcourt and Kwa-Zulu Natal area is however know for various historical battels of the Anglo-Zulu war and Anglo-Boer war.

4. VEGETATION PATTERNS ON THE SITE

Hoare, 2016 noted that the site consists primarily of wooded grassland. There is a stream at the northern side in which riparian woodland occurs, but this consists entirely of alien trees and would probably have been sedges, rushes and hygrophilous grassland with some woody plants along the margins in the absence of the alien plants. There are areas on site in which there are outcroppings of small dolerite stones and other parts where the surface is free of stones. The bottomlands adjacent to the stream, as well as random patches on site, are dominated by tall grasses. There are therefore three main natural ecological units on site, wooded grasslands, tall (floodplain) grassland and riparian habitat

The site is within one regional vegetation type, a grassland vegetation type called KwaZulu-Natal Highland Thornveld. There is a second vegetation type nearby called Thukela Thornveld and the site has species that suggest that it is in a transition zone between these two vegetation types. The species composition of the vegetation on site supports the observation that this is a transition zone. The vegetation types are both classified as Least Threatened, and neither is listed in the National List of Ecosystems that are Threatened and need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004) (Hoare, 2016).

According to the KwaZulu-Natal Systematic Conservation Plan (KZNSCP), all of the vegetation on site falls within a Critical Biodiversity Area (CBA) 1 area and is therefore considered according to the KZNSCP to be of critical importance in meeting regional conservation objectives. On this basis, the entire site has been designated as having HIGH sensitivity. However, the accuracy of this conservation assessment and mapping must be questioned, on the basis that the entire urban area of Estcourt, including all transformed, disturbed and degraded areas associated with the town, also fall within the CBA1 area. (Hoare, 2016)

The comprehensive vegetation assessment for the site is contained in Appendix E01 to this report.

Figure 6 below indicates the habitats that were identified on the site by Hoare, 2016.

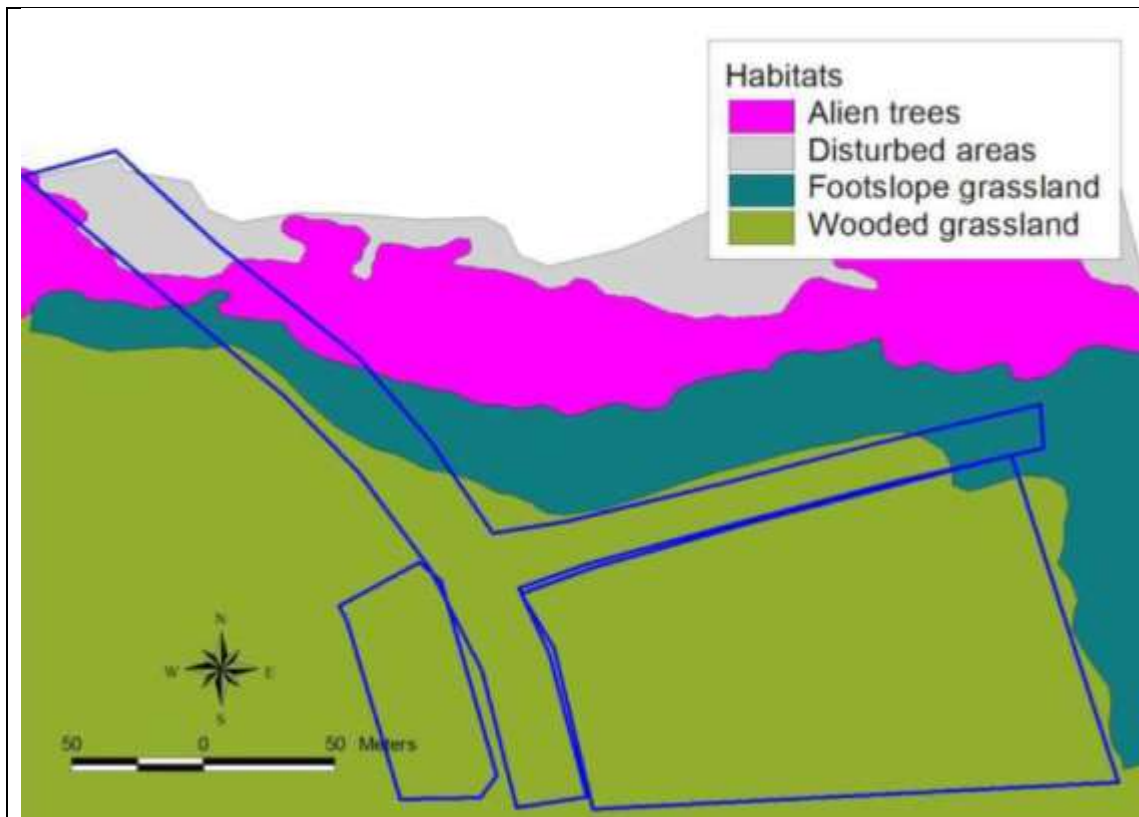


Figure 6: Habitats of the Estcourt Hospital Site

5. WATERCOURSES AND HYDROLOGY

The site is located within Quaternary Catchment V70E; falling under the Thukela Water Management Area (WMA). The proposed area sits within a tributary to the Boesmans River.

According to the NatureStamp 2016 report, the site consists of some areas of hydrological interest. These areas have been tabulated and described in detail in the Wetland Delineation and Assessment Report in Appendix E02.

In summary, 3 distinct areas were identified, these being:

1. **Channeled Valley Bottom (stream)**: Valley-bottom areas with a well-defined stream channel but lacking characteristic floodplain features. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.
2. **Active Channel**: The perennial channel that feeds into the Boesmans. Shallow Orthic soils deposited by alluvial movements.
3. **Riparian Habitat**: Dominated by woody species. Sedge and other obligate species were noted further downstream.

Figure 7 shows the proposed access roads and hospital development in relation to the watercourse features that were delineated on the site.

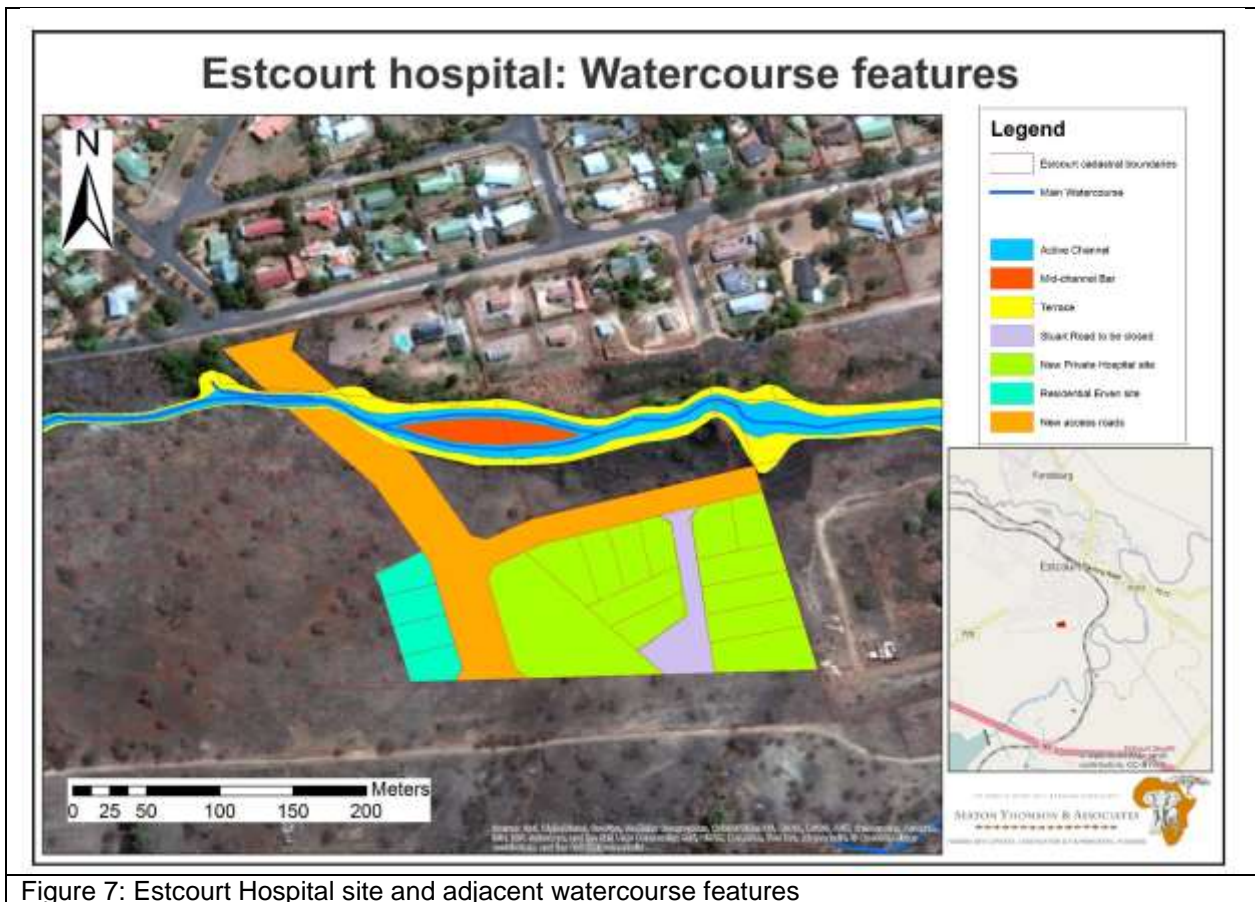


Figure 7: Estcourt Hospital site and adjacent watercourse features

The Present Ecological State (PES) of the system was also assessed, and it was determined that the PES category of **C**, which indicates that the system is “Moderately modified: A loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.” The riparian areas were invaded by alien plant species. The immediate surrounding areas are largely natural with good quality riparian woody species and natural veld/savanna on the surrounding slopes which form the main source of water contributions.

Furthermore, the Ecological Importance and Sensitivity (EIS) Assessment was determined for the Estcourt riparian areas. The category was calculated to be **Moderate**. This indicates that: “Quaternaries/ delineations that are considered to be unique on a provincial or local scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually not very sensitive to flow modifications and often have a substantial capacity for use.”

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

In terms of the 2014 EIA regulations, the following public participation was undertaken:

- Advert placed in the Estcourt and Midlands Newspaper
- A site notice was erected on site on the corner of Jannie De Waal and Hellet Ave.
- All surrounding land owners were sent letters of invitation to participate in the EIA process
- The Ward Councilor was sent a letter of invitation and informed of the development
- Emails were sent to all local authorities for which email addresses could be obtained
- The local municipality and local stakeholders were sent letters of invitation to participate in the EIA process

2. LOCAL AUTHORITY PARTICIPATION

The local municipality, local Ward Councilor and other and local stakeholders were sent letters of invitation to participate in the EIA process. There has been no comment from any of them at this point.

A full Public Participation report is included as Appendix D to this Report, where proof of the above is contained.

3. INTERESTED PARTIES PARTICIPATION

All surrounding land owners were sent registered letters of invitation to participate in the EIA process. There has only been 1 comment received. A full Public Participation report is included as Appendix D to this Report, where the comments and responses section deals with this.

SECTION D: EXISTING AND PROPOSED SERVICES

1. WASTE AND EFFLUENT

There is an existing *225mm diameter* sewer located towards the north of the site, and south of the small watercourse. Analysis of the topography shows that it is possible to connect to this existing pipeline. Umtshezi Local Municipality indicated that there is sufficient capacity in the sewer pipeline to cater for a development of this nature. (WSP Services Report, 2016). A more detailed analysis is provided in the Engineering Services Report in Appendix E03 to this report.

2. WATER USE

The nearest existing water pipeline is a 100mm diameter pipeline and is located on the northern side of the servitude of Roland Hellet Avenue. The calculated daily water demand is 35 840 kl/day, which equates to 280 l/bed/day. A more detailed analysis is provided in the Engineering Services Report in Appendix E03 to this report.

The proposed water connection to the site will be a 110mm UPVC CL12 pipeline, installed along the Jannie de Waal Avenue servitude towards the development, within the proposed access road (WSP report, 2016). On site water storage in case of water supply problems must be incorporated into the hospital development.

Hospitals are classified as moderate risk in the fire risk category and thus the proposed hospital would have a minimum design fire flow of 6000 l/min (100 l/s). (WSP report, 2016).

3. POWER SUPPLY

Power will be supplied from the existing local electrical grid. All avenues will be investigated by the architects and design consultants to build in green energy (solar etc...) into the hospital development to limit impact and load on the grid. Two (2) additional diesel generators are proposed as back up if the local grid fails. Furthermore, two (2) Uninterrupted Power Supply (UPS) are proposed to run essential parts of the hospital such as the emergency room and intensive care units if there is a power failure.

4. ACCESS ROAD AND BRIDGE

Access to the development is proposed via Jannie de Waal Avenue. Jannie de Waal Avenue is a single lane dual carriageway road. This road will be extended over the watercourse to serve as access to the new hospital development. A pre-cast concrete box culvert is proposed over the watercourse. The proposed specifications of the culverts at the new access road are as follows: 8m x 1.5m opening required and a width of 8m to allow two lanes of traffic to pass over it. 32 culverts of size 2m x 1.5m x 1.22m is needed to achieve this. A more detailed analysis is provided in the Engineering Services Report in Appendix E03 to this report.

The following figures shows the proposed cross-section of the bridge and the proposed culvert design.

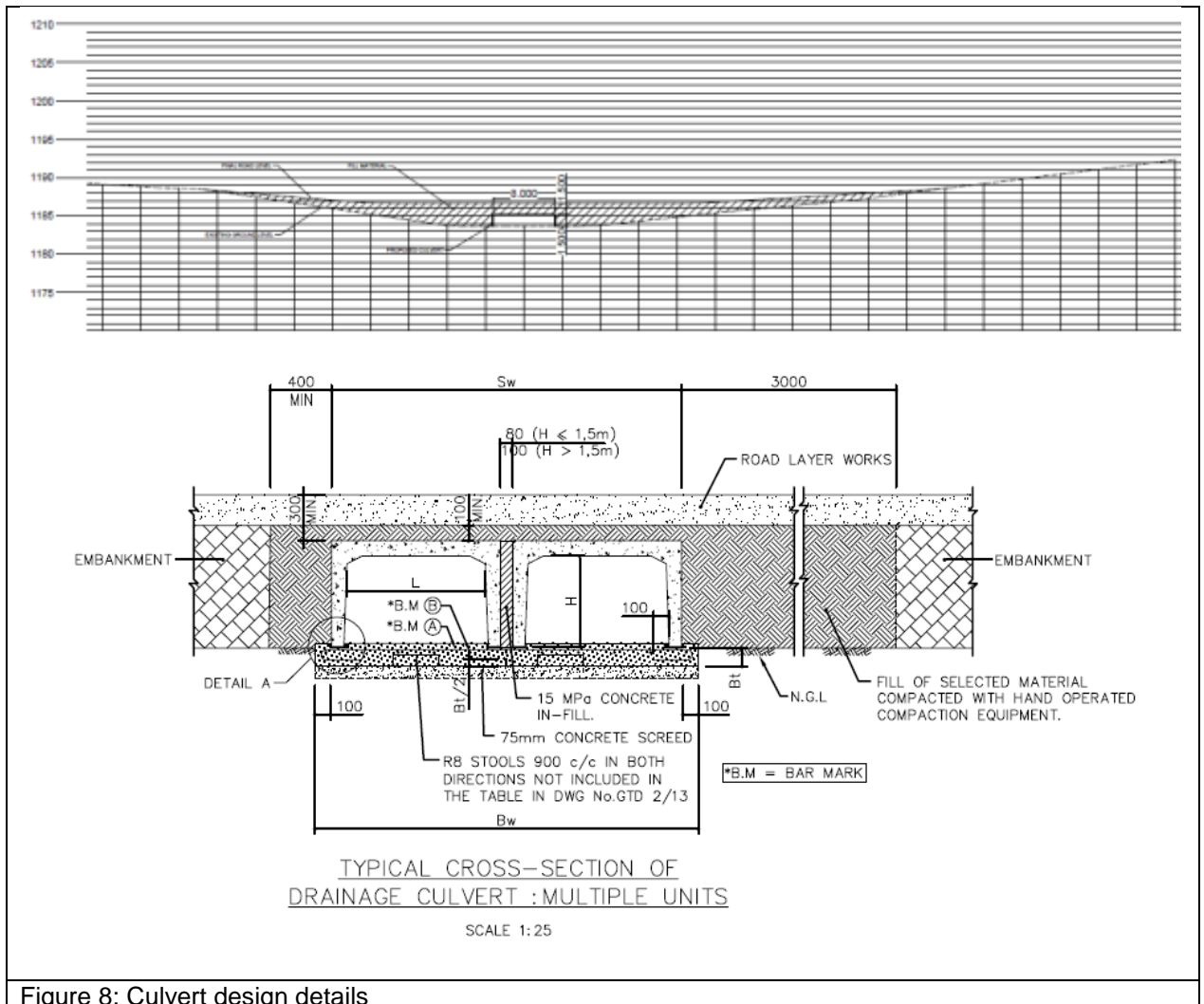


Figure 8: Culvert design details

The Jannie De Waal/ Roland Hellet intersection is proposed to become a four leg intersection having an **all - way stop control**. As discussed previously, the fourth leg will be an extension on Jannie De Waal Avenue in the southern direction leading to the site where the access will be gained (Traffic Report, WSP, 2016).

It is proposed that 1.5m wide paved sidewalk be constructed along one side of the proposed extension of Jannie De Waal Avenue which will join the proposed site access and Roland Hellet Avenue (Traffic Report, WSP, 2016).

The full traffic report is attached as Appendix E04 to this report.

Figure 9 below shows the proposed access road layout from Roland Hellet to the hospital site and the proposed hospital entrance.



Figure 9: Estcourt Hospital proposed access road layout

The following figure, Figure 10, shows the proposed intersection layout of Jannie De Waal and Roland Hellet, which will become an all-way stop.

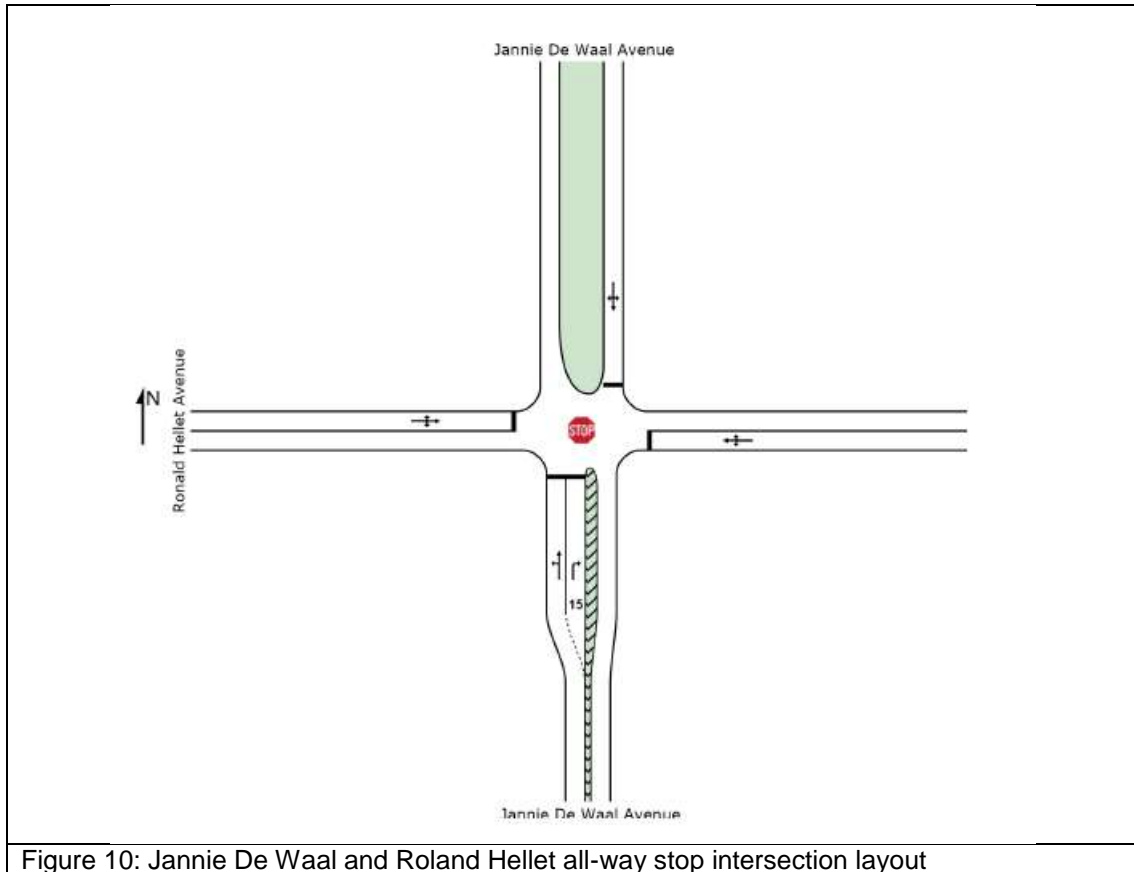


Figure 10: Jannie De Waal and Roland Hellet all-way stop intersection layout

5. STORMWATER DESIGN

A more detailed analysis is provided in the Engineering Services Report in Appendix E03 to this report, however, the key points have been listed here:

The post development runoff was calculated as:

- 13 000m² coverage, erf size 16 000m²
- 1 in 5 year =332 l/s (0.332m³/s)
- 1 in 20 year =518 l/s (0.518m³/s)
- 1 in 50 year =673 l/s (0.673m³/s)

Based on the runoff figures the minor internal stormwater system is to consist of 450mm diameter concrete pipes, and the major system (outlet) to be a 600mm diameter pipe, both laid at a minimum grade of 1 in 100.

It is proposed that attenuation be done on site, in the form of an attenuation pond. This would ensure that post development runoff matches pre development runoff volumes. This means downstream infrastructure and watercourses would not be influenced by the development. An indicative size for this attenuation pond is 300m³/ HA of development, thus **480m³** for a development of 1.6HA.

Furthermore, it is advised that other methods of Sustainable Drainage Systems (SuDS) for stormwater management be implemented on the site to further reduce runoff.

The SuDS principles and control measures that should be implemented on the site include (Armitage *et al*, 2013):

- Rainwater harvesting from rooftop runoff for potential emergency firefighting use or for the irrigation of hospital gardens.

- The use of soakaways (are usually excavated pits that are packed with coarse aggregate and other porous media and are used to detain and infiltrate stormwater runoff from a single source).
- Permeable pavements comprise load-bearing, durable and pervious surfaces such as concrete block pavers laid on top of granular or stone base that can temporarily store stormwater runoff. This can be used well in car parking areas.
- Filter strips along roads and car parking areas, which are vegetated areas of land that are used to manage shallow overland stormwater runoff through filtration
- Swales, which are shallow grass-lined channels with flat and sloped sides that are used to convey stormwater from one place to another.
- Infiltration trenches along roads and car park areas. These are excavated trenches which are lined with a geotextile and backfilled with rock or other relatively large granular material.
- Bio-retention areas should be implemented within the parking lot and landscaped garden areas. These area areas of landscaped depressions used to manage stormwater runoff through several natural processes such as filtration, adsorption, biological uptake and sedimentation.

The following collage (Figure 11) indicates the various SuDS techniques that can easily be implemented:



SECTION E: IMPACT ASSESSMENT

1. IMPACTS THAT MAY RESULT FROM CONSTRUCTION AND OPERATIONAL PHASE OF THE PREFERRED ALTERNATIVE (New private hospital)

Preferred Proposal – New private hospital, residential portion and access road			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Traffic – noise and disturbance. – Both during construction and during operational phase of hospital	HIGH	<p>There is no doubt that there will be additional noise and disturbance during construction phase in the immediate adjacent areas surrounding the site. The residential area of Estcourt along Jannie De Waal drive will be temporarily impacted on. However, the construction of the hospital will not have a major negative impact on traffic and noise from the site if the following mitigation measures are adequately adhered to:</p> <ul style="list-style-type: none"> • Fence off and screen (using shade cloth) the all side of the development site. This fencing off and screening will assist to shield noise to neighboring residential areas, as well as provide a contained work site for construction personnel. • Schedule all deliveries between certain times of the day, and NOT before 9am or after 3pm. • No work is to be undertaken on Sunday's and normal working hours of 6am to 6pm must be adhered to, to avoid disturbance outside of these times. • Trucks and delivery vehicles must strictly obey speed limits within a 600m radius of the site to not cause additional noise from driving at high speed through the Estcourt residential areas. • The proposed development will be accessed via Roland Hellet Drive, where the new extension of Jannie De Waal Drive is proposed to be built. • All recommendations made in the Traffic report must be adhered to and implemented 	MODERATE
<p>Petrol, diesel and oil spills from construction vehicles - caused by potential inadequate maintenance</p> <p>Diesel and oil spills from the diesel generators proposed to be installed for the hospital (during</p>	MODERATE	<ul style="list-style-type: none"> • Regularly inspect and check all vehicles for any leaks. • Keep any oil, petrol or diesel in cement and brick bunded areas, Bunding must be 110% of the capacity of the storage container (this includes the diesel generators to be installed during operation of the hospital) • During construction, only minor 	LOW

operation phase)		<p>maintenance to be done on the site, all major maintenance must be done at the contractor's workshop offsite to avoid any major spillages.</p> <ul style="list-style-type: none"> • Diesel generators and fuel storage should all be located on a hardened surface, within a bunded area, <u>which drains into a common drain and grease trap</u>. The grease traps must be maintained weekly, and all accumulated grease and oil must be removed by an accredited management company and disposed of at an accredited hazardous waste site. • Possible overfilling and spillages during refueling of the diesel generators should be prevented at all costs. • Strict procedures for the management of the diesel generators must be developed and adhered to. • All staff employed by the hospital and who are instructed to operate the diesel generators must be adequately trained to prevent spillages during filling up of the generators, as well as in emergency situations • Fuel and oil "<i>spill kits</i>" to be visible and close to the diesel generators at all times 	
Impact on or loss to any potential Cultural, Historic and Archaeological Features	NEGLIGIBLE	<ul style="list-style-type: none"> • There are no cultural or historical features on this site. • If any historical remains of kraals or archaeological features are found during construction (underground), the ECO and developer must be made aware of it straight away, and SAHRA may be called in to investigate. 	NEGLIGIBLE
General noise disturbance – construction and operational noise	HIGH	<ul style="list-style-type: none"> • Fence off and screen (using shade cloth) the all side of the development site. This fencing off and screening will assist to shield noise to neighboring residential areas, as well as provide a contained work site for construction personnel. • Schedule all deliveries between certain times of the day, and NOT before 9am or after 3pm. • No construction work is to be undertaken on Sunday's and normal working hours of 6am to 6pm must be adhered to, to avoid disturbance outside of these times 	MODERATE
<p>Soils and geology - Changes to Soil Structure as a Result of Disturbance - Loss of topsoil due to erosion.</p> <p>Erosion of soils off the site</p>	LOW	<ul style="list-style-type: none"> • There will be a cut to fill principle used on the site where necessary for the hospital, although cognizance has been taken of the slope in the design of the hospital. • All geological and structural engineering standards must be adhered to in accordance with the NHBRC and 	LOW

<p>Erosion of soils at the bridge crossing point</p>		<p>general Engineering requirements.</p> <ul style="list-style-type: none"> • During construction, erosion control measures on soil stockpiles must be put in place as per the EMP and enforced on the site. Soil catching structures and sand bags are to be used to curb erosion. • Sand bags, at least 50cm high are to be packed on the inside of the fence along the north and eastern sides (boundary) of the construction site, to reduce stormwater flow off the construction site and in to the adjacent veld and watercourse. • Soil is to be stockpiled around the sides of the site and on the higher ground so that it does not wash away off the site during heavy storms. • All soil stockpiles should have erosion control measures around them such as sandbags, haybales or silt fences. 	
<p>Surface and groundwater pollution (quality) during Construction and operation of the hospital</p> <p>Only possible source of groundwater contamination may come from a diesel, oil or petrol spill during the construction and operational phase</p>	<p>MODERATE</p>	<ul style="list-style-type: none"> • During construction of the hospital: Keep any oil, petrol or diesel in cement and brick banded areas, Bunding must be 110% of the capacity of the storage container (this includes the diesel generators to be installed during operation of the hospital) • Only minor maintenance to be done on the site, all major maintenance must be done at the contractor's workshop offsite to avoid any major spillages. • Diesel generators and fuel storage should all be located on a hardened surface, within a banded area, which drains into a common drain and grease trap. The grease traps must be maintained weekly, and all accumulated grease and oil must be removed by an accredited management company and disposed of at an accredited hazardous waste site. • Possible overfilling and spillages during refueling of the diesel generators should be prevented at all costs. • Strict procedures for the management of the diesel generators must be developed and adhered to. • All staff employed by the hospital and who are instructed to operate the diesel generators must be adequately trained to prevent spillages during filling up of the generators, as well as in emergency situations • Fuel and oil "spill kits" to be visible and close to the diesel generators at all times • The use of Sustainable Drainage Solutions (SuDS) in car parking areas and in landscaped gardens around the 	<p>MODERATE</p>

		hospital will assist is “scrubbing” stormwater runoff and filtering it through bioswales, bio-retention areas, filter strips or infiltration trenches	
Groundwater - quantity	LOW	<ul style="list-style-type: none"> • There is no major impact on groundwater quantity expected. • No water will be drawn from groundwater for use by the development (during either construction or operation phases) 	LOW
Surface water – quantity and stormwater management from hospital and hospital grounds and car parking area	HIGH	<ul style="list-style-type: none"> • There is no major impact on surface water quantity expected, except during heavy or prolonged rain periods where there will be stormwater runoff. • No water will be drawn from surface water for use by the development (during either construction or operation phases) • The use of <u>Sustainable Drainage Solutions</u> (SuDS) in car parking areas and in landscaped gardens around the hospital will assist is “scrubbing” stormwater runoff and filtering it through bioswales, bio-retention areas, filter strips, permeable pavements or infiltration trenches • In addition to the SuDS requirements, a 480m³ attenuation pond/ container must be built to attenuate flows from the development in accordance with engineering requirements 	MODERATE
Air pollution due to dust, odours and fuel fumes– construction and operational phases	MODERATE	<ul style="list-style-type: none"> • The only impact envisaged is that of dust from construction vehicles on the site. • Roads and intersection upgrades at the existing intersection of Jannie De Waal and Roland Hellet will take place as per the Traffic Report, as well as entry and exit lanes from the hospital. • All roads on the construction site are to be damped down with a water bowser to prevent all dust at all times. • The main access road (extension of Jannie De Waal Drive) must be watered on a regular basis to prevent dust 	LOW
Impacts on safety and security Danger from earthmoving equipment, laborers on site, localized crime	MODERATE	<ul style="list-style-type: none"> • The relevant policing and security forces that are responsible for the area, must be approached and become involved in the monitoring of activities on the site. • The developer is also responsible to control access to the site and guard the site to reduce crime. • Construction personnel will only be allowed to live on the site under very controlled circumstances, in the demarcated construction camp area • Fence off and screen (using shade cloth) the all side of the development 	MODERATE

		site. This fencing off and screening will assist to shield noise to neighboring residential areas, as well as provide a contained work site for construction personnel.	
Waste Management – general disposal of waste (including sewerage) Disposal of medical waste	MODERATE	<ul style="list-style-type: none"> All waste will be disposed of by the municipality, as agreed by the service agreements and bulk service contributions. A certified and accredited medical waste management company must be contracted by the Private Hospital to remove all of the medical waste that is generated by the hospital Waste storage and management areas on the hospital premises must be strictly controlled and monitored, as medical waste is hazardous and must be secured until collection from the relevant service provider General waste generated by the development will be disposed of at a registered landfill site as agreed by the municipality Sewerage will connect into the currently existing sewerage network in the area, as described in the Engineering Report. 	LOW
Visual - Decrease in aesthetic appeal of the area, and increase in visual obtrusiveness	HIGH	<ul style="list-style-type: none"> There is no doubt that the visual nature of the site will completely change, mostly due to vacant land now becoming developed. The site is however somewhat shielded from the residential area of Estcourt by the riparian vegetation along the watercourse Fence off and screen (using shade cloth) the all side of the development site. This fencing off and screening will assist to shield noise to neighboring residential areas, as well as provide a contained work site for construction personnel. 	MODERATE
Fire - Destruction of veld and properties due to fire from construction site Fire – during operational phase of the hospital	MODERATE	<ul style="list-style-type: none"> All firefighting equipment is to be onsite at all times during construction Any fire started intentionally or unintentionally from the site during construction will be the responsibility of the contractors and site developers The design and construction of the hospital must conform to ALL fire safety standards and legislation Automatic fire sprinkler systems must be installed inside the hospital Fuel and oil “<i>spill kits</i>” to be visible and close to the generator at all times 	LOW
Vegetation (Flora) Loss of Vegetation / biodiversity	HIGH	<ul style="list-style-type: none"> A pre-construction plant rescue operation must be initiated in order to relocate the various plants found on the site that are listed as declining (namely 	MODERATE

		<p><i>Crinum bulbispermum</i>, <i>Pterocelastrus rostratus</i> and <i>Hypoxis hemerocallidea</i>)</p> <ul style="list-style-type: none"> • A pre-construction follow up site visit by a qualified vegetation specialist (preferably during winter months) must be conducted to confirm a number of <i>Aloe</i> species that may need to be relocated. • A plan rescue plan has been included in the Environmental Management Plan and must be adhered to. • All alien and invasive plants within the stream area where the proposed access road bridge will be located must be removed. • Larger trees (+3 meter tall) on the site should be tagged and their positions surveyed before construction commences. Where possible, these trees should be left in place and incorporated into the hospital landscaping between roads, parking areas and buildings. • Where possible, large trees that have to be removed to make space for roads, services and buildings should be kept and transplanted • Once construction is complete, all landscaping and planting within the hospital grounds must be indigenous only. • Plants harvested/ rescued must be stockpiled and used in the landscaping of the hospital grounds. 	
Wildlife (fauna) - Disturbance to natural wildlife and/or loss of natural wildlife/ loss of habitat	LOW	<ul style="list-style-type: none"> • The site is very close to the town of Estcourt and has been impacted on to some extent by the edge effects from Estcourt. • Most large mammals would have already left the site to conservation areas further away, and to the large open veld and mountainous terrain to the south of the site . • No animals will be allowed to be trapped or killed during the construction phase of the development • There is a huge natural green veld and mountainous area to the south of the site, and this is the area that most (if not all) larger mammals will frequent. 	LOW
Service (impact to existing services – mainly during operational phase)	HIGH	<ul style="list-style-type: none"> • The various upgrades and connections (as proposed in the Engineering report) to service infrastructure in and around the site must be implemented before the operational phase of the hospital can commence • All service agreements and bulk service contributions are to be paid before any connections are made • There is an existing sewer line on the 	MODERATE

		northern side of the site, and the sewer will connect into this line.	
Watercourse – proximity of development to watercourse.	HIGH	<ul style="list-style-type: none"> The hospital footprint will not encroach into the watercourse area, nor will be closer than 30m from the edge of the watercourse. Therefore, there will be no development within 30m of the edge of the watercourse, apart from the access road (extension of Jannie De Waal Drive). It is <u>not</u> proposed to build Joycedale Road at this stage, which is the road on the northern boundary of the hospital site, as access will be taken from Jannie De Waal. This means that the actual development footprint is a further 15 meters from the edge of the watercourse as was previously thought. At the very least, the northern and eastern boundary of the site must be fenced off before construction commences. These boundaries are more than 30m from the edge of the watercourse, and will thus act the buffer fence to protect the watercourse. Sandbags must be placed at least 50cm high along the entire length of the northern and eastern fence line, to assist with stopping soil washing into the buffer, which will assist with maintaining integrity of the watercourse and buffer area. 	MODERATE
Bridge crossing point south of Roland Hellet Avenue	HIGH	<ul style="list-style-type: none"> The crossing over the riparian zone associated with the watercourse must remain on the existing alignment of the servitude (under the existing powerlines), in order to prevent further, unnecessary disturbance of riparian habitat upstream or downstream of the site. The bridge should be designed and built in accordance with engineering specification as outlined in the engineering report. Only minor temporary diversions (using temporary soil infill and sandbags) should be allowed around the areas under construction, to continue to have site access. The bridge should be designed to allow free flow of water beneath it and prevent concentration of flows. It is strongly recommended that the bridge crossing span the entirety of the watercourse All construction activity should be contained within this demarcated servitude. Haybales should be used instream to create 2 small “dams” placed at 2 	MODERATE

		<p>points about 5 meters and then 10 meters downstream of the bridge crossing to capture sediment that will be generated by the construction of the bridge. It is further suggested that a small haybale “dam” be constructed upstream of the Heritage Road dirt road crossing the stream, which is about 600 meter downstream from the proposed bridge crossing.</p> <ul style="list-style-type: none"> The road level will be built up by 3 meters from the existing ground level, which will mean that side slopes will be constructed. It is critical that the side slopes (batter slopes) of the road bridge crossing are protected against erosion as soon as they are constructed. The use of hessian blankets and erosion sausages (coir logs) must be used to minimize the erosion. The side slopes should also be hydroseeded on hand seeded immediately to stabilize the slope. These side slopes are not to be more than 1:3 ratio slope. 	
<p>Economic investment by the applicant in public roads and a new private hospital and a few accommodation units for hospital staff.</p> <p>The Development will also a large job creator during both construction and operational phases</p> <p>Huge positive contribution to quality health care services</p>	HIGH (Positive)	<ul style="list-style-type: none"> Jobs will be created during the construction and operation phase of the development – for formal skilled jobs and informal jobs The operational phase of the hospital will need cleaning and domestic workers, landscapers, management staff, nurses, doctors a host of other ancillary staff to service patients. This will also provide for longer term jobs to semi-skilled and highly qualified people. A new private hospital will further generate local economy growth in all sectors for Estcourt and surrounds The Estcourt Private hospital will have a huge positive contribution to quality health care services in the area 	HIGH (Positive)

Alternative 1 – the no-go alternative			
Potential impacts:	Significance rating of impacts:	Proposed mitigation/ discussion on the no-go alternative:	Significance rating of impacts after mitigation:
Traffic – noise and disturbance.	HIGH	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Petrol, diesel and oil spills	NEGLIGIBLE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain and there will be no further possibility of hydrocarbon spills 	N/A for no-go alternative
Impact on or loss to any potential Cultural, Historic and Archaeological Features	NEGLIGIBLE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
General noise disturbance	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative

Soils and geology - Changes to Soil Structure as a Result of Disturbance - Loss of topsoil due to erosion.	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Surface and groundwater pollution (quality)	NEGLIGIBLE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain and there will be no pollution 	N/A for no-go alternative
Groundwater - quantity	NEGLIGIBLE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Surface water – quantity and stormwater management	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Air pollution due to dust, odours and fuel fumes	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Impacts on safety and security	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain No additional security forces will be brought into the area if the no-go alternative is realized 	N/A for no-go alternative
Waste Management – general disposal of waste (including sewerage)	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain 	N/A for no-go alternative
Visual - Decrease in aesthetic appeal of the area, and increase in visual obtrusiveness	NEGLIGIBLE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain and the site will remain undeveloped and open veld 	N/A for no-go alternative
Fire - Destruction of veld and properties due to fire	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain The site will be subjected to burning every year for livestock grazing 	N/A for no-go alternative
Vegetation (Flora) Loss of Vegetation / biodiversity	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain and no vegetation will be removed 	N/A for no-go alternative
Wildlife (fauna) - Disturbance to natural wildlife and/or loss of natural wildlife/ loss of habitat	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. 	N/A for no-go alternative
Services	MODERATE	<ul style="list-style-type: none"> If the no-go option is realized, the current status quo will remain. There will be no service upgrades and no road bridge constructed 	N/A for no-go alternative
Economic and social impacts	HIGH	<ul style="list-style-type: none"> If the no-go option is realized, then there will be no infrastructure or service development in a prime location. The need and demand for a hospital and health care facilities within the greater area will only increase NO further jobs will be created at all Estcourt and Wembezi residents, as well as many other residents in the central Kwa-Zulu Natal area will still have to travel longer distances to private hospitals 	N/A for no-go alternative

2. IMPACTS THAT MAY RESULT FROM DECOMMISSIONING AND CLOSURE PHASE OF PROPOSAL

Preferred Proposal – New private hospital, residential portion and access road			
Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:
Physical	Low	This project has an extended lifespan period, and it is determined that decommissioning of the project will never happen. Due to this, no possible mitigation can at this stage be tabled, due to many environmental changes that will take place over time, which will subsequently render any mitigation discussed, void.	Low
Bio-physical	Low	This project has an extended lifespan period, and it is determined that decommissioning of the project will never happen. Due to this, no possible mitigation can at this stage be tabled, due to many environmental changes that will take place over time, which will subsequently render any mitigation discussed, void.	Low
Social	Low	This project has an extended lifespan period, and it is determined that decommissioning of the project will never happen. Due to this, no possible mitigation can at this stage be tabled, due to many environmental changes that will take place over time, which will subsequently render any mitigation discussed, void.	Low
Economic	Low	This project has an extended lifespan period, and it is determined that decommissioning of the project will never happen. Due to this, no possible mitigation can at this stage be tabled, due to many environmental changes that will take place over time, which will subsequently render any mitigation discussed, void.	Low

3. CUMULATIVE IMPACTS

Cumulative Impacts Preferred proposal – construction phase of new Private Hospital

During construction, the site will be totally transformed from its current state. The cumulative impacts are therefore considered to be high, as the site will be completely transformed from a natural landscape setting and vacant land to new a new access road, private hospital and small residential units associated with the hospital.

The site is right on the edge of the town of Estcourt, and is within an area of land that has been earmarked many years ago for future development, to the extent that erven and streets have been laid out. As such, this proposed hospital will be adding to the urban footprint of Estcourt, but in an area identified for development.

There are currently no private hospitals within a 50km radius of Estcourt, and the population of this area is growing rapidly. Estcourt is also very well located being close to the N3 highway and to the Central Drakensberg for ease of access.

From an environmental perspective, it has been shown that this site and servitude for the access road is not overly sensitive at all. Although some smaller protected plants exist on the site, these can be very easily rescued and relocated, and used within the landscaping of the hospital grounds. The access road will cross a watercourse where there is large infestation of alien plants and thus no natural (indigenous) riparian vegetation will be affected. The watercourse is not a Freshwater Ecosystem Priority Area, and the actual footprint of the proposed bridge will be very small compared to the entire catchment system.

Mitigation measures have been put in place to deal with the various predicted impacts during the construction phase for both the proposed bridge and the hospital and residential site. The watercourse is most certainly the most sensitive feature on or near the site, and all efforts will have to be made to protect the watercourse against erosion, sedimentation and other effects as a result of construction related activity.

The table below shows the net overall impact of positive and negative impacts. It is clear that during construction, the **negative impacts will outweigh the positive impacts**, this is only due to the entire site being completely transformed from its current state.

Aspect	CUMULATIVE IMPACT of entire construction phase of activity (Jannie De Waal Access road and Estcourt Private Hospital)						
Impact	Cumulative impact of construction phase of the project						
	Criteria Scoring						
	Nature (N)	Extent (E)	Duration (D)	Intensity (I)	Probability (P)	Mitigation / Enhancement (M/H)	Reversibility (R)
Positive Impact	-0,25	3	2	3	3	2	
Negative Impact	1	2	2	4	3	2	2
Impact Significance for Negative Impact = $N \times (E+D) \times I \times P \div \frac{1}{2}(M+R)$							24
Impact Significance for Positive Impact = $N \times (E+D) \times I \times P \times (H)$							-22,5

Cumulative impacts preferred proposal – operational phase of the development

The largest negative impact that the development will have during the operational phase will be on traffic to and from the site as well as the impact of waste generation and stormwater runoff due to the increase urban footprint. The various mitigation measures that have been identified in the traffic assessment will assist with the controlling of the traffic, which include intersection upgrades. Waste (especially medical waste) from the hospital will be managed by qualified waste management specialists appointed by the hospital management. Stormwater runoff can be adequately managed and controlled by the implementation of Sustainable Drainage Systems (SuDS) on the site as well as a adequately designed stormwater attenuation facility as described in the engineering services report.

Various small plants and trees rescued from the site prior to construction will be stockpiled and used within the landscaped gardens, thus keeping the naturally occurring plants on the site, albeit transplanted. The plant rescue plan as outlined in the EMP must be implemented.

The table below shows the net overall impact of positive and negative impacts. It is clear that during operational phase of the new private hospital, the **impact will be a net positive one**. The positive socio-economic impacts **far outweigh** the negative environmental impacts during operational phase. This is due to the various jobs that will be created by the hospital as well as the fact that new health care facility will be within reach of a large population of people living the surrounding areas which will uplift social standards. The hospital will also provide for longer term jobs to high skilled and semi-skilled workers for many years to come. The hospital will most certainly generate local economy growth as members of outlying towns and farms will visit Estcourt as opposed to driving long distances to other private hospitals.

Aspect	CUMULATIVE IMPACT of entire operational phase (i.e. fully established and functioning private hospital)						
Impact	Cumulative impact of operation phase of the project (i.e. fully established and functioning)						
	Criteria Scoring						
	Nature (N)	Extent (E)	Duration (D)	Intensity (I)	Probability (P)	Mitigation /Enhancement (M/H)	Reversibility (R)
Positive Impact	-0,25	3	5	3	4	3	
Negative Impact	1	2	5	2	3	4	2
Impact Significance for Negative Impact = $N \times (E+D) \times I \times P \div \frac{1}{2}(M+R)$							14
Impact Significance for Positive Impact = $N \times (E+D) \times I \times P \times (H)$							-72

4. ENVIRONMENTAL IMPACT STATEMENT

Summary of predicted impacts during Construction and Operation for the proposed and preferred proposal (New Private Hospital, access road and residential portion):

Potential impacts:	Significance rating of impacts:	Significance rating of impacts after mitigation:
Traffic – noise and disturbance. – Both during construction and during operational phase of hospital	HIGH	MODERATE
Petrol, diesel and oil spills from construction vehicles - caused by potential inadequate maintenance. Diesel and oil spills from the diesel generators proposed to be installed for the hospital	MODERATE	LOW
Impact on or loss to any potential Cultural, Historic and Archaeological Features	NEGLIGIBLE	NEGLIGIBLE
General noise disturbance – construction and operational noise	HIGH	MODERATE
Soils and geology - Changes to Soil Structure as a Result of Disturbance - Loss of topsoil due to erosion. Erosion of soils off the site Erosion of soils at the bridge crossing point	LOW	LOW
Surface and groundwater pollution (quality) during Construction and operation of the hospital Only possible source of groundwater contamination may come from a diesel, oil or petrol spill during the construction and operational phase	MODERATE	MODERATE
Groundwater - quantity	LOW	LOW
Surface water – quantity and stormwater management from hospital and hospital grounds and car parking area	HIGH	MODERATE
Air pollution due to dust, odours and fuel fumes– construction and operational phases	MODERATE	LOW
Impacts on safety and security Danger from earthmoving equipment, laborers on site, localized crime	MODERATE	MODERATE
Waste Management – general disposal of waste (including sewerage) Disposal of medical waste	MODERATE	LOW
Visual - Decrease in aesthetic appeal of the area, and increase in visual obtrusiveness	HIGH	MODERATE
Fire - Destruction of veld and properties due to fire from construction		

site	MODERATE	LOW
Fire – during operational phase of the hospital		
Vegetation (Flora) Loss of Vegetation / biodiversity	HIGH	MODERATE
Wildlife (fauna) - Disturbance to natural wildlife and/or loss of natural wildlife/ loss of habitat	LOW	LOW
Service (impact to existing services – mainly during operational phase)	HIGH	MODERATE
Watercourse – proximity of development to watercourse.	HIGH	MODERATE
Bridge crossing point south of Roland Hellet Avenue	HIGH	MODERATE
Economic investment by the applicant in public roads and a new private hospital and a few accommodation units for hospital staff.	HIGH (Positive)	HIGH (Positive)
The Development will also a large job creator during both construction and operational phases		

5. FINAL SITE SENSITIVITY ASSESSMENT

Hoare, 2016 indicated that the site consists intact natural habitat that has moderately high species richness and the presence of various lower-ranked species of concern. It was noted that the area is designated as a CBA1 area in the KZN provincial conservation plan, however, the entire urban area of Estcourt is also within the CBA1 area, which brings into question the perceived importance of the CBA1 mapping, since it does not distinguish between transformed areas and natural habitats and therefore reduces the value (and accuracy) of the conservation plan for development planning.

The site is directly adjacent to the existing urban area and adjacent to a degraded stream which is invaded with numerous exotic and invasive plants. The site is associated within the zone of degradation commonly associated with human settlement (known as edge effects). There will therefore be little fragmentation associated with developing the site. (Hoare, 2016)

Overall, the site has a medium sensitivity when taking all aspects into consideration and the various mitigation measures provided in this report and in the various specialist reports ensure that no vegetation species of concern are negatively affected in an unaccounted manner. Hoare, 2016, stated that if all recommendations are adhered to then it is not expected that there will be any unacceptable impacts on the floristic receiving environment.

The entire development site (apart from the access road crossing) is more than 30 meters from the edge of the delineated watercourse. At this stage, it is not proposed to build Joycedale Road, which is the road on the northern boundary of the hospital site, as access will be taken from Jannie De Waal. This means that the actual development footprint is a further 15 meters from the edge of the watercourse as was previously thought.

Figure 12 below shows the final sensitivity mapping for the Estcourt site.

The main watercourse has been identified as HIGH sensitivity. The 30 meter buffer zone from the main watercourse has been identified as a HIGH-MEDIUM sensitivity, and the remainder of the site has been identified as MEDIUM sensitivity.

The actual hospital building footprint has also been indicated on the map, as well as the roads overlay.



Figure 12: Estcourt hospital final site sensitivity plan

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

Overall, the development of a private hospital, access road and small residential component on the site will not have a major long term environmental impact.

The access road (Jannie De Waal extension) will have some minor impact on surrounding watercourses, especially at the crossing point, during the construction phase. To avoid impacts, various mitigation measures have been put forward which are deemed to be very adequate to curb any major environmental damage. The design of the crossing must have adequate stormwater runoff and a number of concentrated flow release points should dissipate and regulate flow off the surfaces towards the watercourse, via a number of discharge points along the bridge. At all times, disturbance to watercourse areas should be avoided. (from NatureStamp, 2016). Attenuation structures within the hospital development must be provided for runoff from the development.

Hoare, 2016, stated that If all recommendations are adhered to then it is not expected that there will be any unacceptable impacts on the floristic receiving environment.

Actual on the ground impacts associated with the hospital site are in fact very low, if all mitigation measures are strictly adhered to. The greatest impact, as described above, will be during the construction of the access road bridge, and during operation will be that of stormwater management. However, the various mitigation measures and high industry standards will have to be adhered to for the private hospital, which will of course greatly mitigate these potential problems.

The development will undoubtedly result in increased use of resources, increased traffic and a changed physical footprint on the site. Mitigation measures have been provided for all aspects that are likely to impact on the environment, including stormwater, services and traffic - these have also been included in the EMP and must be adhered to.

The development of the site will have short term construction phase impacts, and these impacts will be limited to:

1. Impact in the watercourse during bridge construction
2. Erosion and potential topsoil loss if not managed accordingly
3. Loss of existing natural vegetation

The above impacts can however be adequately mitigated by the use of sand bags, silt traps and haybales to assist with stormwater flows during rain storms. The site is not pristine in anyway, but does have a number of protected plant species. The existing vegetation will be replaced by indigenous vegetation in the overall development landscaping and bulbous plants and larger trees will where at all possible be kept in place and incorporated into the development landscaping.

During the “operational” phase, the main impact will be that of stormwater runoff from the development as well as medical waste management. There is however proposed mitigation for these potential impacts, and with the mitigation in place, the impacts are deemed to be very low if not negligible. The implementation of Sustainable Drainage Systems (SuDS) on the site should be mandatory.

From a habitat perspective, the site contains habitat that is widespread throughout the Estcourt area, and is not specifically sensitive or limited to the site, despite being identified as a CBA1 area. The development of the property will not adversely affect any habitat for fauna and flora, or the watercourse. This is also clear from the various findings and conclusions drawn by the vegetation specialist who undertook the assessments on the site. The construction will have a minor negative effect on surroundings, but this impact can be substantially mitigated if the mitigation measures as proposed are implemented.

The Integrated Development Plan 2015 for the local municipality indicated that, within the municipality, areas such as Wembezi and Estcourt are likely to attract most of the population growth due to their strategic location. The increase in population in this area means that there is a need for various services, including health care services. As more people join medical aids, the need for private health care also increases.

The IDP, 2015, further indicates that an analysis of the spatial distribution of health facilities reveals that areas such as Wembezi, and Weenen each have one clinic yet they provide service to large areas with households in excess of the norm of 6000 households per clinic or a clinic within a 5km radius from each household. The rate of population growth in these areas emphasizes a need for these facilities in these areas. (IDP, 2015)

From the above IDP extracts, it is clear that there is currently a huge need for health care services in the district, and with the increasing population, the need will only grow. From a social and economic perspective, the proposed private hospital will have a huge positive effect on Estcourt, Wembezi and surrounding towns. The hospital will also provide for longer term jobs to high skilled and semi-skilled workers for many years to come. The hospital will most certainly generate local economy growth as members of outlying towns and farms will visit Estcourt as opposed to driving long distances to other private hospitals.

7. IMPACT SUMMARY FOR THE NO-GO ALTERNATIVE

If the proposed new private hospital development is not undertaken, then the current status quo of the site will remain. The site has remained like this for many years, and in terms on onsite impacts, nothing will change. All vegetation will remain, and it will remain a very valuable piece of unused land close to Estcourt. Currently, the site is not used to its full potential and has already been earmarked for future development, to the extent that erven and streets have been laid out. If the no-go alternative is realized, then the pressure for prime developable land and health care services in the municipality will only increase. The site is not deemed to be overly sensitive and is very close to the N3 highway, making access easy. Due to all of the above, the no-go alternative is not a preferred alternative at all.

The direct impacts associated with the hospital NOT being constructed includes:

- The positive socio-economic activities in terms of job creation would not occur.
- Identified impacts during both the construction and operational phase are moderate to low (and very manageable) and therefore do not point heavily towards the no-go option being considered a feasible alternative.
- A valuable piece of land on prime property will be left undeveloped and vacant.
- The need and demand for health care services will only increase in the area

If the no-go alternative is realised, then the pressure for prime developable land and the need for proper healthcare in the area will only increase. The site is close to the N3 highway and already earmarked for development. The no-go alternative is not a preferred alternative at all.

8. RECOMMENDATION OF PRACTITIONER

- All conditions of the EMPr must be strictly adhered to
- A pre-construction plan rescue operation must be initiated in order to relocate the various plants found on the site that are listed as declining (namely *Crinum bulbispermum*, *Pterocelastrus rostratus* and *Hypoxis hemerocallidea*)
- A pre-construction follow up site visit by a qualified vegetation specialist (preferably during winter months) must be conducted to confirm a number of *Aloe* species that may need to be relocated.
- Larger trees (+3 meter tall) on the site should be tagged and their positions surveyed before construction commences. Where possible, these trees should be left in place and incorporated into the hospital landscaping between roads, parking areas and buildings.
- All proposed service upgrades must be upgraded in accordance with the Engineering Services Report
- An onsite ECO must be appointed to oversee all construction related activities, and audit the site in terms of the EMPr
- Sand bags and/or haybales must be used for the control of stormwater during the construction phase of both the hospital site and access road
- It is advisable that Sustainable Drainage Systems such as rain water harvesting, permeable paving, bio filters and grassed swales are incorporated into the overall landscaping and design to control stormwater

9. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

An Environmental Management Programme (EMPr) has been drafted and is contained in Appendix F to this report. This EMPr must be strictly implemented for all phases of the proposed development.

SECTION F: APPENDICES

Appendix	A: Plan(s) A 01 Estcourt Hospital Locality Plan – topographical map A 02 Estcourt Hospital Locality – aerial image A 03 Estcourt hospital rezoning application plan
Appendix	B: Site photographs
Appendix	C Facility illustrations – C 01 Estcourt Hospital site plan C 02 Estcourt Hospital Ground floor plan C 03 Estcourt Hospital First floor plan C 04 Estcourt Hospital Lower ground level plan
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Appendix A

A 01 Estcourt Hospital Locality Plan – topographical map

A 02 Estcourt Hospital Locality – aerial image

A 03 Estcourt hospital rezoning application plan

Appendix B: Photographs

Appendix C: Facility illustrations

C 01 Estcourt Hospital site plan

C 02 Estcourt Hospital Ground floor plan

C 03 Estcourt Hospital First floor plan

C 04 Estcourt Hospital Lower ground level plan

Appendix D: Public Participation Information

Appendix E: Specialist reports (including Services Reports)

E 01: Vegetation Assessment

E 02: Wetland delineation and functional assessment

E 03: Engineering Outline Scheme Report

E 04: Traffic Assessment

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Appendix F: EMP

Appendix G: Impact assessment Methodology