

July
2012

Final Basic Assessment for Development of 37
Pioneer Road, Kloof
DM/0039/2011



Prepared by

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agriculture, environmental affairs & rural development

Department:
Agriculture, Environmental Affairs
& Rural Development
PROVINCE OF KWAZULU-NATAL

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EIA File Reference Number:
NEAS Reference Number:
Waste Management Licence Number:
(if applicable)
Date Received:

DC/
KZN/EIA/

BASIC ASSESSMENT REPORT

Submitted in terms of the Environmental Impact Assessment Regulations, 2010 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

This template may be used for the following applications:

- **Environmental Authorization** subject to basic assessment for an activity that is listed in Listing Notices 1 or 3, 2010 (Government Notices No. R 544 or No. R 546 dated 18 June 2010); or
- **Waste Management Licence** for an activity that is listed in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) for which a basic assessment process as stipulated in the EIA Regulations must be conducted as part of the application (refer to the schedule of waste management activities in Category A of Government Notice No. 718 dated 03 July 2009).

Kindly note that:

1. This **basic assessment report** meets the requirements of the EIA Regulations, 2010 and is meant to streamline applications. This report is the format prescribed by the KZN Department of Agriculture, Environmental Affairs and Rural Development. Please make sure that this is the latest version.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with text.
3. Where required, place a cross in the box you select.
4. An incomplete report will be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it will result in the rejection of the application as provided for in the regulations.
6. No faxed or e-mailed reports will be accepted.
7. The report must be compiled by an independent environmental assessment practitioner ("EAP").
8. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
9. The KZN Department of Agriculture, Environmental Affairs and Rural Development may require that for specified types of activities in defined situations only parts of this report need to be completed.
10. The EAP must submit this basic assessment report for comment to all relevant State departments that administer a law relating to a matter affecting the environment. This provision is in accordance with Section

24 O (2) of the National Environmental Management Act 1998 (Act 107 of 1998) and such comments must be submitted within 40 days of such a request.

11. **Please note that this report must be handed in or posted to the District Office of the KZN Department of Agriculture, Environmental Affairs and Rural Development to which the application has been allocated (please refer to the details provided in the letter of acknowledgement for this application).**

DEPARTMENTAL REFERENCE NUMBER(S)

File reference number (EIA):	
File reference number (Waste Management Licence):	

SECTION A: DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER AND SPECIALISTS

1. NAME AND CONTACT DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Name and contact details of the EAP who prepared this report:

Business name of EAP:	EnviroPro		
Physical address:	333 Surprise Ridge Road; 106 Kirtlington Ridge Hillcrest 3610		
Postal address:	PO Box 1391 Kloof		
Postal code:	3640	Cell:	082 887 4362 082 568 3687
Telephone:	031 765 2942	Fax:	086 549 0342
E-mail:	iain@enviropro.co.za and josette@enviropro.co.za		

2. NAMES AND EXPERTISE OF REPRESENTATIVES OF THE EAP

Names and details of the expertise of each representative of the EAP involved in the preparation of this report:

Name of representative of the EAP	Education qualifications	Professional affiliations	Experience at environmental assessments (yrs)
Josette Oberholzer	BSc (Hons) MSc	Member of IAIASA; EAPSA certified	9
Iain Jourdan	BSoc Sci (Hons) in Geographical Science	Member of IAIASA	5

3. NAMES AND EXPERTISE OF SPECIALISTS

Names and details of the expertise of each specialist that has contributed to this report:

Name of specialist	Education qualifications	Field of expertise	Section/ s contributed to in this basic assessment	Title of specialist report/ s as attached in Appendix D

			report	
Peter Allen	Pr.Eng. B.Sc (Eng) (Wits) Grad Dip Eng M.S.A.I.C.E	Consulting Geotechnical Engineers	Geotech	Geotechnical investigation: Septic Tank effluent disposal 37 Pioneer Road Kloof.

SECTION B: ACTIVITY INFORMATION

1. PROJECT TITLE

Describe the project title as provided on the application form for environmental authorization:

Development of 37 Pioneer Road, Kloof.

2. PROJECT DESCRIPTION

Provide a detailed description of the project:

The applicant proposes to develop the property identified as PTN 1 ERF 656 Chelmsfordville, Kloof at 37 Pioneer Road, Kloof. The project entails the development of two residential units which will be accessed via a single driveway leading off Pioneer Road that will service both units. The property is located within an existing residential area, and a drainage line runs through the centre of the site. Both the residential units as well as the driveway will be within 32m of the edge of the drainage line and are therefore subject to a Basic Assessment in terms of the NEMA legislation.

Access to the site will be directly off Pioneer Road. The applicant proposes to develop one three bedroomed unit measuring 207m² and one two bedroomed ancillary unit measuring 102m². The main unit will also include a double garage while the ancillary unit will have a single garage attached to it. The entire development area for the buildings and driveway will be 580m². The two units will each be serviced by French drains with associated evapotranspiration areas measuring 411 m² and 232m² respectively. There is already an existing pan handle access road off Pioneer which will be extended to allow full access to 37 Pioneer Road. The access driveway will measure approximately 71,5m in length.

The site is bordered to the north, west and south by existing residences and there is currently construction activity occurring on the property immediately south-west of the proposed site. The eastern portion of the site is bordered by an open space area in to which the drainage line flows. The site which is situated in a bowl like depression is located at the head of a drainage line which ultimately enters a tributary of the Palmiet River. The previous owner commenced with construction of a single residential unit but development was halted and the existing structure will be demolished. A non perennial drainage line runs through the center of the site in an easterly direction when water is present. The site was partially cleared by the previous owner however some vegetation remains. This vegetation appears to be a mix of garden variety exotics and some indigenous plants.

3. ACTIVITY DESCRIPTION

Describe each listed activity in Listing Notice 1 (GNR 544, 18 June 2010), Listing Notice 3 (GNR 546, 18 June 2010) or Category A of GN 718, 3 July 2009 (Waste Management Activities) which is being applied for as per the project description:

The proposed location for the residential units will place them within 32m of a watercourse, therefore the following regulations will apply:

11. The construction of:

(x) buildings exceeding 50 square metres in size; or

(xi) infrastructure or structures covering 50 square metres or more

Where such construction occurs within a water course or within 32 meters of a watercourse, measures from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

The upgrading of the dirt track to an entrance driveway will require implementation of a pipe crossing and this may result in more than 5 cubic meters of excavation and infill within the drainage line.

18. 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 or more than 5 cubic metres from:

(i) a watercourse; (ii) the sea; (iii) the seashore;

(iv) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving;

(a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or

(b) occurs behind the development setback line.

4. FEASIBLE AND REASONABLE ALTERNATIVES

“**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.

Describe alternatives that are considered in this report. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Site Alternatives

There are no site alternatives as the applicant owns the property and wishes to develop it for residential use.

Layout Alternatives

Preferred Alternative – Layout A1

The preferred layout as recommended by the EAP sets the main residence further back from the drainage line and adjacent to the proposed driveway. It also places the ancillary unit further back from the drainage line and closer to the site boundary, pulling the evapotranspiration area further back from the drainage line.

Layout A2

This is the original layout that was proposed which places the main unit and ancillary unit closer to the drainage line and brings the evapotranspiration area for the ancillary unit into closer proximity to the drainage line.

No Go

The property will remain in its current undeveloped state and the partially built rondawel / tower structure will remain on site.

Sections B 5 – 15 below should be completed for each alternative.

5. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. List alternative sites were applicable.

Alternative:	Latitude (S):	Longitude (E):
Alternative S1 ¹ (preferred site alternative)	29°47'6.92"S	30°51'7.99"E

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 500m along the route for each alternative alignment.

6. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:
Alternative L1² (preferred layout alternative)

Size of the layout:
580m²

7. SITE ACCESS

Does ready access to the site exist?

YES X	NO
71,5m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

There is an existing access and a portion of a driveway which will be extended and will measure 71,5m in length.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

8. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this report.

The site or route plans must indicate the following:

- 8.1. the scale of the plan which must be at least a scale of 1:500;
- 8.2. the property boundaries and numbers/ erf/ farm numbers of all adjoining properties of the site;
- 8.3. the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 8.4. the exact position of each element of the application as well as any other structures on the site;
- 8.5. the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 8.6. walls and fencing including details of the height and construction material;
- 8.7. servitudes indicating the purpose of the servitude;
- 8.8. sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
 - rivers, streams, water courses or wetlands;

¹ "Alternative S.." refer to site alternatives.

² "Alternative A.." refer to activity, process, technology or other alternatives.

- the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation including protected plant species (even if it is degraded or infested with alien species);
- 8.9. for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 8.10. the positions from where photographs of the site were taken.

Photographs taken at the co-ordinates provided. Please see photographs in Appendix B with descriptions of locations where each photograph was taken.

9. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

10. FACILITY ILLUSTRATION

A detailed illustration of the facility must be provided at a scale of 1:200 and attached to this report as Appendix C. The illustrations must be to scale and must represent a realistic image of the planned activity/ies.

11. ACTIVITY MOTIVATION

11.1. Socio-economic value of the activity

What is the expected capital value of the activity on completion?
 What is the expected yearly income that will be generated by or as a result of the activity?
 Will the activity contribute to service infrastructure?
 Is the activity a public amenity?
 How many new employment opportunities will be created in the development phase of the activity?
 What is the expected value of the employment opportunities during the development phase?
 What percentage of this will accrue to previously disadvantaged individuals?
 How many permanent new employment opportunities will be created during the operational phase of the activity?
 What is the expected current value of the employment opportunities during the first 10 years?
 What percentage of this will accrue to previously disadvantaged individuals?

R1 800 000.00	
NA	
YES	NO x
YES	NO x
+20 contractors/sub- contractors	
+R650k	
90%	
Possibly two new domestic worker positions as well as gardening position.	
Up to R900 000.00	
100%	

11.2. Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

It is anticipated that the development will offer desirable living for parents with children at Thomas Moore. The proposed landscaping scheme for the site will match that of the conservancy effectively providing an extension of this conservancy onto the site. Development of the site will also improve safety and security in the neighbourhood as all the house break ins into the neighbouring properties over the past 15 years have been carried out via access through this property as it provides a link from Pioneer road through this property to houses along Ipiti Road.

Indicate any benefits that the activity will have for society in general:

The Development of the site will also improve safety and security in the neighbourhood as all the house break ins into the neighbouring properties over the past 15 years have been carried out via access through this property as it provides a link from Pioneer road through this property to houses along Ipiti Road.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

Development of the site will also improve safety and security in the neighbourhood as all the house break ins into the neighbouring properties over the past 15 years have been carried out via access through this property as it provides a link from Pioneer road through this property to houses along Ipiti Road.

12. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:	Administering authority:	Date:
1. National Environmental Management Act	All government bodies	1998
2. National Water Act	DWAF	1998
3. National Waste Management Act	DEAT	2008
4. Environmental Conservation Act	DEAT	1996

13. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

13.1. Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES X	NO
+5m ³	

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of? (describe)

Construction rubble/ solid waste will be collected in a skip and disposed of at a registered landfill site by the certified waste contractor appointed by the main construction contractor.

Where will the construction solid waste be disposed of? (provide details of landfill site)

Should any material require disposal, this will be disposed of at either the Bisasar Road Landfill site which is the nearest registered landfill or incorporated into the eThekweni Municipal Waste Stream.

Will the activity produce solid waste during its operational phase?

YES X	NO
2m ³	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of? (provide details of landfill site)

NA

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

NA

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine the further requirements of the application.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO X
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO X
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

13.2. Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO <input checked="" type="checkbox"/>
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If yes, what estimated quantity will be produced per month?

NA m³

Will the activity produce any effluent that will be treated and/or disposed of on site?

Yes	NO <input checked="" type="checkbox"/>
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO <input checked="" type="checkbox"/>
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If yes, provide the particulars of the facility:

Facility name:	NA		
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

NA

13.3. Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES <input checked="" type="checkbox"/>	NO
--	----

If yes, is it controlled by any legislation of any sphere of government?

YES	NO <input checked="" type="checkbox"/>
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If yes, contact the KZN Department of Agriculture, Environmental Affairs and Rural Development to obtain clarity regarding the process requirements for your application.

If no, describe the emissions in terms of type and concentration:

There will be release of vehicle emissions during the construction phase.

13.4. Generation of noise

Will the activity generate noise?

YES <input checked="" type="checkbox"/>	NO
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If yes, is it controlled by any legislation of any sphere of government?

YES	NO <input checked="" type="checkbox"/>
-----	---

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

The noise generated will be from the construction vehicles used during construction and will thus be a temporary impact.
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14. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

<input checked="" type="checkbox"/> Municipal	<input type="checkbox"/> water board	<input type="checkbox"/> groundwater	<input type="checkbox"/> river, stream, dam or lake	<input type="checkbox"/> Other	<input type="checkbox"/> the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

NA litres

Does the activity require a water use permit from the Department of Water Affairs?

YES	NO <input checked="" type="checkbox"/>
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If YES, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this report.

15. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

Both units will be fitted with solar geysers to reduce electricity consumption.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

NA – there are no alternative energy sources available and the residences will operate using electricity, however solar geysers will be fitted which will reduce electricity usage.

SECTION C: SITE/ AREA/ PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A):

- Subsections 1 - 6 below must be completed for each alternative.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Indicate the general gradient of the sites (Please cross the appropriate box).

Alternative S1 (preferred site):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5 X	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site (Please cross the appropriate box).

Alternative S1:

Ridgeline	Plateau	Side slope of hill/mountain X	Closed valley	Open valley	Plain	Undulating plain/low hills	Dune	Sea-front
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3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Has a specialist been consulted for the completion of this section?

YES X	NO
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If YES, please complete the following:

Name of the specialist:	Peter Allen & Associates	
Qualification(s) of the specialist:	Pr.Eng. B.Sc (Eng) (Wits) Grad Dip Eng M.S.A.I.C.E	
Postal address:	P.O Box 879 Kloof	
Postal code:	3640	
Telephone:	031 701 0179	Cell:
E-mail:		Fax:

Is the site(s) located on any of the following (cross the appropriate boxes)?

Alternative S1 (preferred site):

Shallow water table (less than 1.5m deep)	YES	NO X
Dolomite, sinkhole or doline areas	YES	NO X

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Seasonally wet soils (often close to water bodies)	YES X	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO X
Dispersive soils (soils that dissolve in water)	YES	NO X
Soils with high clay content (clay fraction more than 40%)	YES	NO X
Any other unstable soil or geological feature	YES	NO X
An area sensitive to erosion	YES	NO X

The area is underlain by Natal Sandstone with associated sandy to silty residual and transported soils.

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUND COVER

Has a specialist been consulted?

YES	NO X
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If YES, please complete the following:

Name of the specialist:	NA		
Qualification(s) of the specialist:	NA		
Postal address:	NA		
Postal code:	NA		
Telephone:	NA	Cell:	
E-mail:	NA	Fax:	

Are there any rare or endangered flora or fauna species (including red data species) present on any of the alternative sites?

YES	NO X
-----	---------

If YES, specify and explain:

--

Are there any special or sensitive habitats or other natural features present on any of the alternative sites?

YES X	NO
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If YES, specify and explain:

A non perennial drainage line runs through the site.
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Are any further specialist studies recommended by the specialist?

YES	NO X
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If YES, specify:

NA

If YES, is such a report(s) attached?

YES	NO
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Signature of specialist: _____ Date: _____

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Alternative S1:

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens X
Sport field	Cultivated land	Paved surface	Building or other structure X	Bare soil

The previous owner commenced with development of a small tower or rondawel, however this construction was never completed and this will be demolished.

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Cross the land uses and/or prominent features that currently occur within a 500m radius of the site and give a description of how this influences the application or may be impacted upon by the application:

Land use character			Description
Natural area	YES	NO	
Low density residential	YES	NO	
Medium density residential	YES	NO	There is existing medium residential development surrounding the site. There may be some disturbance during construction but once completed, the proposed development will be in line with the surrounding land use. There are several B&B's within the area.
High density residential	YES	NO	
Informal residential	YES	NO	
Retail commercial & warehousing	YES	NO	There are a few small retail stores, a garage and Take Away located some 500m to the east of the site. It is not expected that such a small scale development will impact on these activities.
Light industrial	YES	NO	
Medium industrial	YES	NO	
Heavy industrial	YES	NO	
Power station	YES	NO	
Office/consulting room	YES	NO	
Military or police base/station/compound	YES	NO	
Spoil heap or slimes dam	YES	NO	
Quarry, sand or borrow pit	YES	NO	
Dam or reservoir	YES	NO	
Hospital/medical centre	YES	NO	
School/ crèche	YES	NO	Thomas More College is situated to the south east of the site. The school is some distance from the property and is accessed via a different road. It is not expected that the development will have any impact on the school.
Tertiary education facility	YES	NO	
Church	YES	NO	There is a Hindu temple some 500m from the site. It is not expected that the development will have any impact on the temple.
Old age home	YES	NO	
Sewage treatment plant	YES	NO	
Train station or shunting yard	YES	NO	
Railway line	YES	NO	

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Major road (4 lanes or more)	YES	NO	
Airport	YES	NO	
Harbour	YES	NO	
Sport facilities	YES	NO	
Golf course	YES	NO	
Polo fields	YES	NO	
Filling station	YES	NO	
Landfill or waste treatment site	YES	NO	
Plantation	YES	NO	
Agriculture	YES	NO	
River, stream or wetland	YES	NO	There is a non perennial drainage line running through the site.
Nature conservation area	YES	NO	
Mountain, hill or ridge	YES	NO	The site is situated on the side slope of a hill; therefore care will need to be taken to manage erosion during construction.
Museum	YES	NO	
Historical building	YES	NO	
Protected Area	YES	NO	
Graveyard	YES	NO	
Archaeological site	YES	NO	
Other land uses (describe)	YES	NO	

6. CULTURAL/ HISTORICAL FEATURES

The site measures less than 5000 square meters, therefore no application to AMAFA is required.

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or within 20m of the site?

YES	NO X
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If YES, contact a specialist recommended by AMAFA to conduct a heritage impact assessment. The heritage impact assessment must be attached as an appendix to this report.

Briefly explain the recommendations of the specialist:

NA

Will any building or structure older than 60 years be affected in any way?

YES	NO X
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Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

YES	NO X
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If YES, please submit the necessary application to AMAFA and attach proof thereof to this report. NA

SECTION D: PUBLIC PARTICIPATION

The following steps were followed during the public participation process.

- Relevant authorities and stakeholders were notified by e-mail including eThekweni Municipality, Department of Water Affairs, Department of Agriculture Forestry and Fisheries, WESSA, EKZN Wildlife, Department of Transport and the ward councilor.

- Notices were hand delivered to all residents and neighbours adjacent to the site. Where notices could not be delivered, they were placed in post boxes.
- Signboards were placed along Pioneer road adjacent to the site so as to be visible to passing traffic.
- Adverts were placed in the Mercury (Regional) and Highway Mail (community) newspapers.
- A meeting was held with the ward councilor.
- A BID was prepared and submitted to all registered I &APs and authorities.
- A copy of the BAR will be made available to all I &APs.

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the local and district municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—

- (i) illiteracy;
- (ii) disability; or
- (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that an application for environmental authorization has been submitted to the KZN Department of Agriculture, Environmental Affairs and Rural Development in terms of the EIA Regulations, 2010;(ii)
 - (iii) a brief project description that includes the nature and location of the activity to which the application relates;
 - (iv) where further information on the application can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE PROCESS

The EAP must ensure that the public participation process is according to that prescribed in regulation 54 of the EIA Regulations, 2010, but may deviate from the requirements of subregulation 54(2) in the manner agreed by the KZN Department of Agriculture, Environmental Affairs and Rural Development as appropriate for this application. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate.

Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before this application is submitted. The comments and responses must be captured in a comments

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and response report as prescribed in the EIA regulations (regulation 57 in the EIA Regulations, 2010) and be attached as Appendix E to this report.

6. PARTICIPATION BY DISTRICT, LOCAL AND TRADITIONAL AUTHORITIES

District, local and traditional authorities (where applicable) are all key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of this application and provided with an opportunity to comment.

Has any comment been received from the district municipality?

YES	NO
X	

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

The report has been provided to the eThekweni Metropolitan Municipality for comment. All comments and responses received to date have been included in the comments and response table in Appendix E.

Has any comment been received from the local municipality?

YES	NO
X	

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

The report has been provided to the eThekweni Municipality. All comments and responses received to date have been included in the comments and response table in Appendix E.

Has any comment been received from a traditional authority? NA

YES	NO

If "YES", briefly describe the feedback below (also attach any correspondence to and from this authority with regard to this application):

There is no traditional authority in this area, however a copy of the report has been provided to the ward councilor who is the elected representative of the community. All comments and responses received to date will be included in the comments and response table in Appendix E.

7. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	NO
X	

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

All comments received to date have been included in the comments and response table in Appendix E.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

[See Comments and Response Table in Appendix E.](#)

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached as [Appendix E](#) to this report):

[See Comments and Response Table in Appendix E.](#)

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

2.2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

- a. Site alternatives
- b. Process, technology, layout or other alternatives

2.3. IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

- a. Site alternatives
- b. Process, technology, layout or other alternatives

SITE ALTERNATIVES

There are no site alternatives as the applicant has acquired this portion of land and wishes to develop it for residential purposes. Therefore only the site at 37 Pioneer Road will be assessed.

CONSTRUCTION PHASE

Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed site.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Temporary disturbance of traffic. 2. Damage to surrounding infrastructure and services by irresponsible contractors. 3. Generation of emissions from construction vehicles. 4. Construction activities and the exposure of soil resulting in dust release which may cause a nuisance on and off the site. 5. Erosion of exposed soil leading to deposition of eroded material into the water course, causing flooding and sedimentation of downstream properties. 6. Damage to water course, its banks and riparian zone due to movement of construction vehicles and heavy equipment within the channel during construction of the culvert and crossing point. 7. Damage to riparian vegetation as well as other vegetation on the site. 8. Improper management of stormwater during construction leading to stormwater damage off the site. 9. Temporary increase in waste and litter due to the construction process. 10. Improper disposal of construction rubble generated during demolition i.e. illegal burying or dumping of rubble. 11. Contamination of the receiving environment due to inappropriate storage and usage of 	<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Surrounding stakeholders will be notified prior to disruptive activities during construction. The contractor must take into consideration the potential movements of surrounding stakeholders and ensure that vehicles do not block accesses or cause an obstruction on the roads. Point's men must be in attendance to direct traffic when heavy vehicles are accessing or leaving the site to ensure that there are no accidents, especially when heavy vehicles are moving onto and off of Pioneer Road which is a busy road. 2. As standard construction practice the engineer and contractor will identify all existing services that may be affected prior to construction to ensure that there is no services disruption. 3. All construction vehicles must be fitted with the appropriate silencers and exhausts. Vehicles must be regularly serviced to prevent excessive emissions as a result of poor maintenance. Emissions generated from these vehicles are expected to be negligible and are not expected to significantly affect surrounding

<p>hazardous materials and substances (cement, fuel etc.)</p> <ol style="list-style-type: none"> 12. Insufficient number of toilet facilities resulting in unsanitary conditions on site. 13. Inappropriate disposal of toilet waste resulting in the contamination of the receiving environment. 14. Contaminated run off polluting the water course and impacting on stormwater quality downstream of the site. 15. Generation of noise. 16. Speeding construction vehicles creating unsafe working conditions. 17. Encroachment of alien vegetation into areas disturbed during construction. <p>Indirect impacts:</p> <ol style="list-style-type: none"> 18. Unsustainable sourcing of raw materials such as gravel, sand, water etc. which could result in the promotion of illegal mining operations which can cause significant damage to the environment. <p>Cumulative impacts:</p> <ol style="list-style-type: none"> 19. General increase of waste to landfill 	<p>communities.</p> <ol style="list-style-type: none"> 4. A water cart should be used to dampen dusty surfaces and suppress dust. 5. Areas exposed to erosion must be protected through the use of sand bags, berms and efficient construction processes i.e.: limiting the extent (footprint) and duration period that areas are exposed. The water course must be treated as a sensitive area and movement of vehicles in and around the water course must be restricted to prevent ingress of sediment. During construction, a 15m buffer should be retained around the water course, except where entry is required to create the formal crossing point and the French drains i.e. access should be restricted except where absolutely necessary. Furthermore, no storage of materials or parking of vehicles should be permitted within 15m of the water course. In order to limit construction impact, it is recommended that the formal crossing and culvert on the drainage should be completed up front to reduce damage incurred when vehicles drive across the drainage line to access the rest of the site. This single crossing point must be established and demarcated. Multiple crossing points must not be permitted. This formal crossing point must then be used by all vehicles and the rest of the water course must be demarcated as a no go area. Damage to the crossing point must then be rehabilitated once the formal culvert has been established. All exposed soils should be re-vegetated immediately on completion to control erosion and prevent loss of soil. 6. The water course must be demarcated and a 15m no go buffer area must be marked around it with danger tape. It is proposed that work on the crossing point commence as part of the first phase of construction and that the formal crossing point be completed as early as possible so that vehicles can make use of this crossing point for the duration of the project, instead of using an informal crossing point that would cause more damage to the water course. A 15m buffer should then be imposed on the rest of the water course during construction with no traffic or vehicles or storage permitted
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	<p>within this buffer zone, except where required to work on the crossing point. This will reduce the area affected. Vehicles may not cross the water course at any other point than the designated crossing point. Until completion of the culvert and crossing point, a single crossing point must be established and used until the formal crossing is complete; this should then be closed and rehabilitated. This should be designated at the point where the formal crossing will ultimately be placed. Heavy vehicle access to the water course and river banks must be restricted, except where required to construct the crossing. Non-essential equipment and vehicles are to remain at least 15m from the water course banks at all times. Materials may not be stored within 15m of the water course. It is also proposed that heavy tracked vehicles i.e. excavators should not be used as they will cause more damage to surrounding vegetation and the banks. A lighter smaller vehicle such as a TLB is suggested. It is understood that some vegetation clearing may occur and that there is little apart from lawn grass around the channel at present, however, wherever possible, this grass must be retained. Re-planting and vegetation must occur as soon as possible after the work on the channel has been completed.</p> <p>7. There is very little vegetation around the water course which is grassed over. Where possible, other trees around the boundary will be retained. Trees that are to be retained must be marked with danger tape. Replanting of vegetation, especially around the evapotranspiration areas is encouraged. Only indigenous species should be planted. Although the geotechnical report recommends the planting of water loving plants such as Kikuyu grass, it is preferred that indigenous varieties be used.</p> <p>8. Temporary stormwater management measures must be implemented during construction to prevent erosion and damage both on and off the site. These measures should prevent the channeling of water directly into the water course. Temporary berms should be placed on the slope to prevent channeling of water and</p>
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	<p>eroded soil down the valley line.</p> <ol style="list-style-type: none"> 9. Littering will not be permitted on site. Waste management will be controlled through the implementation of the EMPr. A waste management area must be demarcated and appropriate waste receptacles kept on site which must be emptied regularly. A record of all waste generated must be kept and safe disposal certificates must be kept for all rubble and any hazardous waste materials such as oils, soil contaminated by oil or fuel spills etc. 10. Contractors will be required to dispose of construction rubble at an appropriate landfill site. It must be noted that more than 25 tons of rubble may not be disposed of on another property for use as fill unless the development has received environmental authorization to do so. Delivery notes and safe disposal certificates must be retained as proof of appropriate disposal and should be inspected during the construction audits conducted by an independent environmental consultant. 11. All hazardous materials and substances must be stored within a secured area in the construction camp. No storage of material may occur within 15m of the water course. The storage area must be hard surfaced, bunded and under cover. Cement mixing must be done on a hard surface that is protected from storm water runoff. Empty cement bags must be kept dry until disposed of at a permitted landfill and must not be stored where water can carry cement dust into the environment. 12. Appropriate and sufficient toilet facilities to be provided by the contractor and will be controlled through the implementation of the EMPr. Chemical toilets from a reputable company must be used. Long drops and pit latrines will not be acceptable. 13. Toilet facilities must be provided by a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record. Any spills must be immediately contained and the spilled material disposed of appropriately. Toilets may not be located within 15m of the water course. 14. It must be ensured that only clean
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	<p>storm water runoff enters the surrounding environment. Any contaminated run off must be collected and disposed of. Tools should be washed into a container for the capture of grey water which can then be disposed to sewer. No vehicle washing should be permitted on site and only emergency / minor vehicle repairs should be permitted. All major servicing should be done off site. If vehicles are re-fuelled on site, precautions must be taken to prevent spillage of fuel by using drip trays. It is advisable for all vehicles to be equipped with drip trays. Bulk fuel storage will not be permitted on site.</p> <p>15. The noise generated will be a temporary impact during construction. All construction vehicles must be fitted with standard silencers and normal working hours must be strictly adhered to (07h00 to 17h00 weekdays and 07h00 to 12h00 on Saturdays) especially given the proximity of nearby residents. Staff must be instructed to keep noise to a minimum. Noisy equipment should be shielded wherever possible and all equipment and vehicles must be well maintained to prevent excessive noise due to lack of servicing.</p> <p>16. Speed limits must be obeyed and enforced. Cognisance of the sites location within a residential area and alongside a busy highway must be taken and precautions to ensure traffic safety must be made.</p> <p>17. This is managed in the construction EMPr. Alien vegetation should not be allowed to gain a foothold on the site, however, where it is covering exposed soil that would otherwise remain exposed until developed, it may serve to control erosion and surface stormwater flow.</p> <p>Indirect impacts:</p> <p>18. The implementation of the EMPr will manage these issues. Contractors must provide proof of sustainable sourcing of materials i.e. permits for quarries and sand winning operations from which stone and sand have been obtained. Illegal quarries and sand winning operations must not be supported.</p> <p>Cumulative impacts:</p> <p>19. Waste generated during the</p>
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	<p>construction will consist of building rubble and construction materials and general litter and will only be temporarily generated during the construction period. Volume of waste disposed of must be recorded and all waste must be disposed of at a permitted landfill. Where possible, waste should be recycled.</p>
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OPERATIONAL PHASE

<p>Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed site.</p> <p><i>Direct impacts:</i></p> <ol style="list-style-type: none"> 1. Increased traffic impacting on surrounding neighbours and road network. 2. Development of the site increasing stormwater flow leaving the site and impacting on stormwater management services currently provided by the site. 3. Location of French drains and evapotranspiration areas within 32m of the watercourse impacting on downstream water quality. 4. Densification of the site. 5. Impact on ecosystem services provided by the stormwater channel i.e. enhancement of water quality, erosion control, sediment trapping and support of biodiversity. 6. Impact on adjacent MOSS designated woodland area. 7. The culvert pipes at the vehicle crossing may become blocked resulting in localized flooding and erosion. 8. High flow events overtopping the vehicle crossing, damaging it and resulting in localized damage, erosion and flooding. <p><i>Indirect impacts:</i></p> <ol style="list-style-type: none"> 9. Loss of open space and impact on sense of place for nearby residents. <p><i>Cumulative impacts:</i></p> <ol style="list-style-type: none"> 10. Cumulative impact on downstream environment and water flow. 	<p>Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:</p> <p><i>Direct impacts:</i></p> <ol style="list-style-type: none"> 1. The proposal is for the development of a 3 bedroomed main unit of 207m² and a second two bedroomed ancillary units measuring 110m². Allowing for two cars per household this will result in the introduction of at most 4 vehicles into the area, and even allowing for a third vehicle for the three bedroomed unit, this will bring a maximum of 5 vehicles into the neighbourhood. Therefore it is not believed that this small a number of vehicles will be sufficient enough to cause a traffic problem as a result of the development. There is one other driveway on the same section of road and immediately adjacent to the site. 2. With the site currently undeveloped (apart from the rondawel / tower that was commenced by the previous owner) it will be providing services associated with stormwater management. The open space will allow stormwater to dissipate and slow before entering the water course and then feeding into the adjacent MOSS woodland. Development of the site would increase hard surfaces within the catchment and would therefore increase stormwater velocity which may result in erosion of the water course and flooding and erosion further downstream. The geotechnical report recommends that stormwater from downpipes and surfaced areas be discharged to the municipal system where possible. A review of the eThekweni maps system seems to indicate no municipal stormwater infrastructure in the area. Therefore the alternate suggestion to use soakpits will need to be effected. The report states that the soil conditions are suitable for soakpits. These should be sized at 1m³ of soakpit to every 40m³ of surface area drained.
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	<p>These cannot be placed immediately upslope of the French drains and should not be within the evapotranspiration areas, and must be downslope of the buildings so that they do not undermine the foundations. These soakpits should ensure that stormwater is slowed and controlled and will assist in keeping pre and post development flow rates the same. Further to this, only 31% of the site will be developed, leaving at least 69% undeveloped and available for infiltration of stormwater. It is also recommended that stormwater control measures be implemented on the driveway. This should be made as permeable as possible i.e. using grass blocks or concrete strips with an increased surface roughness to prevent water building velocity and causing erosion at the base of the driveway and at the water course. Further to this, indigenous vegetation planting should be encouraged to increase the ability of the vegetated areas to slow and retain stormwater. Hygrophilous plant species can be used in and around the drainage line. The septic tank system must be properly maintained.</p> <p>3. The average distance from the drainage line to the French drains is 15m with a minimum distance of 10m at the closest point. The evapotranspiration areas lie outside the water course for the most part except in one location where the ETA for the main unit just touches the water course. These ETAs function to dissipate water that has been clarified and treated in the septic tank and then further filtered by the French drain before entering the ETA. The function of the ETA is to dissipate this water. According to the letter from the engineer (appendix D), soil conditions 10m downslope from a French drain are generally dry as most of the seepage is removed by evapotranspiration or deep infiltration before this point. Therefore the engineer considers the risk of pollution to be minimal, especially as the drainage line is dry for most of the year. The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up</p>
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	<p>water from these areas. Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.</p> <p>4. The property measures 2 619m² and approximately 800m² will be developed i.e. +- 30% coverage by hard surfaces. This will leave +-70% of the site undeveloped and vegetated. The development will also be restricted to the western side of the site, leaving the bulk of the undeveloped area to fall adjacent to the MOSS area.</p> <p>5. The ecosystem services currently provided by the site are primarily around stormwater control. In terms of biodiversity, the site is grassed and vegetated primarily by garden exotics. However adjacent neighbours have noted that the site is used by birds and small mammals. The property does lie adjacent to the MOSS woodland area and therefore might support some associated faunal species. With development there will be loss of some open space area but the bulk of the site, specifically that adjacent to the MOSS area will remain undeveloped and will be vegetated with suitable indigenous species so as to compliment the adjacent open space area. The installation of stormwater soakpits will ensure that run off generated by development will be controlled and the undeveloped portion of the site (70%) as well as the drainage line will still continue to provide stormwater management services. It is not believed that development of the site will result in loss of biodiversity, but with suitable landscaping with indigenous species, especially adjacent to the Moss area, the biodiversity of the site can be</p>
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	<p>improved. It is therefore suggested that game permeable fencing be used adjacent to the Moss area.</p> <p>6. The bulk of the undeveloped area of the site will lie adjacent to the Moss area, thereby providing an effective buffer between this open space area and the development. This area will be planted with suitable indigenous species so as to compliment the adjacent open space area. The distance from the buildings to the Moss area is 47m at the widest point, 14m at the narrowest point due to the shape of the site and 30m at the midpoint.</p> <p>7. The engineer proposes to make use of a single 300mm diameter pipe which will be sufficient for the hydrological requirements of the drainage line. This should be regularly cleared and maintained to ensure that it does not become blocked. A 600mm diameter pipe would allow passage of larger materials but given the small size of the water course, this might be too large and will need to be set deeper in the channel to ensure that the lower lip is level with the bottom of the water course. The pipe must be laid so as to lie level with the bed of the water course to prevent sedimentation build up and allow easy through flow.</p> <p>8. The crossing may be overtopped during high flow events, however it will be designed to allow flow across its surface. For the most part, water will flow underneath it through the culvert pipes.</p> <p>Indirect impacts:</p> <p>9. The development of the site will result in the loss of open space, however the development will still leave +/-70% of the site as undeveloped, which will still retain the open space and vegetated feel of the site. The development will be in keeping line with surrounding developments.</p> <p>Cumulative impacts:</p> <p>10. As the site is at the head of the drainage line and falls within the catchment for the Palmiet and finally the Umgeni rivers, impacts on the site can have further cumulative impacts downstream. Provided the EMP is followed and suggested mitigation measures are implemented, this risk can be mitigated.</p>
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TECHNOLOGY ALTERNATIVES

A number of construction impacts will be as per the previous section (a), and only those specific to the two layout alternatives will be discussed here.

CONSTRUCTION

ALTERNATIVE A1: Preferred Alternative – Layout A1	
<p>Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed technology alternatives.</p> <ol style="list-style-type: none"> 1. Construction impacts as per the previous section. 2. Construction of the buildings will take place within 10m and 15m of the water course, construction of the stormwater soakpits within 3m of the water course and construction of the French drains within 15m and 10m of the water course. 	<p>Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:</p> <ol style="list-style-type: none"> 1. Mitigation of impacts as per previous section. 2. During construction, precautions must be taken to reduce the level of activity and level of impact within 15m of the water course. To this end, it must be ensured that no storage or stockpiling of materials or parking of vehicles takes place within 15m of the water course which must be marked out beforehand. Any vegetation that is cleared within 15m of the watercourse or on the site for that matter must be replaced with suitable indigenous species immediately. Once construction of the French drains and stormwater soak pits is complete, these areas must be immediately re-vegetated with suitable indigenous species in keeping with those found in the adjacent Moss system.
ALTERNATIVE A2: Layout A2	
<p>Impacts The following lists the potential impacts associated with the construction phase and is applicable to the proposed technology alternatives.</p> <ol style="list-style-type: none"> 1. Construction impacts as per the previous section. 2. Construction of the buildings will take place within 3m and 6m of the water course, construction of the stormwater soakpits within the water course and construction of the French drains within 15 and 6m of the water course. 	<p>Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:</p> <ol style="list-style-type: none"> 1. Mitigation of impacts as per previous section. 2. During construction, precautions must be taken to reduce the level of activity and level of impact within 15m of the water course. To this end, it must be ensured that no storage or stockpiling of materials or parking of vehicles takes place within 15m of the water course which must be marked out beforehand. Any vegetation that is cleared within 15m of the watercourse or on the site for that matter must be replaced with suitable indigenous species immediately. Once construction of the French drains and stormwater soak pits is complete, these areas must be immediately re-vegetated with suitable indigenous species in keeping with those found in the adjacent Moss system. This layout does place the buildings and structures closer to the water course thereby reducing the buffer area, which is not recommended.

OPERATIONAL PHASE

ALTERNATIVE A1: Preferred Alternative – Layout A1

<p>Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed technology alternatives.</p>	<p>Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:</p>
<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Location of the buildings within 10m and 15m of the water course. 2. Operational impacts associated with placement of the stormwater soakpits within 3m of the water course. 3. Operational impacts associated with French drains being located within 15m and 10m of the water course. 4. Disposal of sewage sludge during maintenance. <p>Indirect impacts:</p> <ol style="list-style-type: none"> 5. As per previous section. <p>Cumulative impacts:</p> <ol style="list-style-type: none"> 6. As per previous section. 	<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. This places buildings at the maximum possible distance from the water course given the site and 3m building lines. Given that this water course is primarily dry, with water only expected to flow during a higher level rainfall event, this buffer distance should be sufficient. The gradient of the site means that the buildings will be situated at a higher level than the water course itself, further reducing likelihood of flooding. The natural ground level where the primary building will be placed is 1m above the level of the water course at the lowest point. The natural ground level for the ancillary structure is at least 5m above the level of the water course at its lowest point. At present the water course does not have a defined channel and is not defined by riparian vegetation. It is anticipated that the biodiversity value and stormwater management services would be improved if this buffer area were to be vegetated with suitable indigenous species. No further structures or hard surfaces should be placed within this area. 2. The stormwater soakpits will operate to slow stormwater received from the hard surfaces allowing into soak into the soil in this area. It is not believed that placement of these soak pits within close proximity to the water course will disrupt it in any way, provide the natural ground levels are maintained and the area disturbed is re vegetated immediately on completion. 3. Each of the French drains is located 10m and 15m away from the water course. The evapotranspiration areas lie outside the water course for the most part except in one location where the ETA for the main unit just touches the water course. These ETAs function to dissipate water that has already been clarified and treated in the septic tank and further filtered by the French drain before entering the ETA. The function of the ETA is to dissipate this water. According to the letter from the engineer (appendix D),

	<p>soil conditions 10m downslope from a French drain are generally dry as most of the seepage is removed by evapotranspiration or deep infiltration before this point. Therefore given the predominantly conditions, the engineer is satisfied that the French drains will not pose a pollution threat to surface water (Appendix D). The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up water from these areas. Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.</p> <p>4. Sewage sludge may need to be removed during maintenance but will not be removed or disposed of during normal course of events. A reputable company must be commissioned to remove any sewage sludge should this become necessary. This must be disposed of at a permitted landfill. It must be ensured that access to the septic tanks can be maintained.</p> <p>Indirect impacts:</p> <p>5. Mitigation of impacts as per previous section.</p> <p>Cumulative impacts:</p> <p>6. Mitigation of impacts as per previous section.</p>
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ALTERNATIVE A2: <u>Layout A2</u>	
Impacts The following lists the potential impacts associated with the operational phase and is applicable to the proposed technology alternatives.	Mitigations The following lists mitigation measures that may eliminate or reduce the potential impacts listed:
<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. Location of the buildings within 3m and 6m of the water course. 2. Operational impacts associated with 	<p>Direct impacts:</p> <ol style="list-style-type: none"> 1. This places buildings within very close proximity to the water course. Although the water course is primarily

<p>placement of the stormwater soakpits within the water course.</p> <ol style="list-style-type: none"> 3. Operational impacts associated with French drains being located within 15m and 6m of the water course. 4. Disposal of sewage sludge during maintenance. <p>Indirect impacts:</p> <ol style="list-style-type: none"> 5. As per previous section. <p>Cumulative impacts:</p> <ol style="list-style-type: none"> 6. As per previous section. 	<p>dry, with water only expected to flow during a higher level rainfall event, this buffer distance is too small even with the gradient of the site placing the buildings at a higher level than the water course itself. The water course does not have a defined channel and is not defined by riparian vegetation but it is anticipated that the biodiversity value and stormwater management services would be improved if this buffer area were to be vegetated with suitable indigenous species. No further structures or hard surfaces should be placed within this area.</p> <ol style="list-style-type: none"> 2. The stormwater soakpits operate to slow stormwater received from the hard surfaces allowing into soak into the soil in this area. However placement of these structures in the water course will potentially alter flow in the water course itself when it does hold water. 3. Each of the French drains is located 15m and 6m away from the water course. Parts of the evapotranspiration areas lie within the water course which will reduce efficiency of these areas when water does flow in the drainage line. The fact that the water course is dry for most of the year means that the risk of pollution of the water course is lower than with a perennial water course, however it would still be advisable to have more distance between the evapotranspiration areas and the water course, so as to ensure that these ETAs function properly. The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up water from these areas. Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth
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	<p>must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.</p> <p>4. Sewage sludge may need to be removed during maintenance but will not be removed or disposed of during normal course of events. A reputable company must be commissioned to remove any sewage sludge should this become necessary. This must be disposed of at a permitted landfill. It must be ensured that access to the septic tanks can be maintained.</p> <p>Indirect impacts:</p> <p>5. Mitigation of impacts as per previous section.</p> <p>Cumulative impacts:</p> <p>6. Mitigation of impacts as per previous section.</p>
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No-go alternative (compulsory)

Direct impacts:

1. The applicant will not be able to realize an income from the property which was purchased for the purposes of development.
2. The site may become overgrown with alien invasive species.

Indirect impacts:

3. The site will remain undeveloped.
4. If the site can't be developed the applicant will be unable to sell it and will not be able to recoup his purchase price.

Cumulative impacts:

5. The site will remain as open space.

2.4. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING OR CLOSURE PHASE

- a. Site alternatives
- b. Process, technology, layout or other alternatives

Alternative S1 (preferred alternative)

Direct impacts:

1. The decommissioning impacts would be similar to the construction impacts discussed in the previous section.
2. Disposal of rubble generated during decommissioning.
3. Generation of noise and dust during demolition.
4. Impact on biodiversity as there will be some damage to plant life and risk to fauna that has re-established on site.

Indirect impacts:

5. The applicant will be unable to recoup his expenses.

Cumulative impacts:

6. Increased waste to landfill.

No-go alternative (compulsory)

No-go alternative (compulsory)

The impacts associated with operation of the development have been discussed in the previous section.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Alternative S1

Direct impacts:

1. Mitigation measures would be similar to those discussed in the previous section.
2. All construction rubble and waste would need to be disposed of appropriately at an appropriate land fill site. Safe disposal certificates would need to be kept on record.
3. The noise and dust generated would be a temporary impact during decommissioning only. Significant dust would be controlled through the use of a water cart.
4. Vegetation will need to be demarcated for protection and avoided where possible. Faunal surveys and sweeps would need to be re-conducted to allow capture and relocation of fauna.

Indirect impacts:

5. Potential downstream impacts if water course is damaged during de-commissioning.

Cumulative impacts:

6. Less development in the area.

2.5. PROPOSED MONITORING AND AUDITING

For each phase of the project and for each alternative, please indicate how identified impacts and mitigation will be monitored and/or audited.

Alternative S1 (preferred site)

Alternative S2 NA

Alternative S3 NA

<p>Construction phase: It is suggested that monitoring be conducted on a monthly basis during construction to ensure compliance with the Environmental Management Program (EMPr).</p>		
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Alternative A1 (preferred alternative)

Alternative A2

Alternative A3 NA

<p>Construction phase: It is suggested that monitoring be conducted on a monthly basis during construction to ensure compliance with the Environmental Management Program (EMPr).</p>	<p>Construction phase: It is suggested that monitoring be conducted on a monthly basis during construction to ensure compliance with the Environmental Management Program (EMPr).</p>	
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3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative S1 (preferred alternative)

It is the opinion of the EAP that all potential impacts that could potentially occur during the construction and operational phase of the proposed two house development on Pioneer Road have been identified and key impacts and their mitigation measures are summarised below.

Key Construction Impacts:

Damage to water course, its banks and riparian zone due to movement of construction vehicles and heavy equipment within the channel during construction of the culvert and crossing point.

Mitigations

- The water course must be demarcated and a 15m no go buffer area must be marked

around it with danger tape.

- Work on the crossing point must commence as part of the first phase of construction so that a formal crossing point can be completed early on to be used for duration of construction.
- No traffic or vehicles or storage permitted within this 15m buffer zone, except where required to work on the crossing point. This will reduce the area affected.
- Vehicles may not cross the water course at any other point than the designated crossing point.
- Until completion of the culvert and crossing point, a single crossing point must be established and used until the formal crossing is complete; this should then be closed and rehabilitated. This should be designated at the point where the formal crossing will ultimately be placed. Heavy vehicle access to the water course and river banks must be restricted, except where required to construct the crossing.
- It is also proposed that heavy tracked vehicles i.e. excavators should not be used as they will cause more damage to surrounding vegetation and the banks. A lighter smaller vehicle such as a TLB is suggested. It is understood that some vegetation clearing may occur and that there is little apart from lawn grass around the channel at present, however, wherever possible, this grass must be retained.
- Re-planting and vegetation must occur as soon as possible after the work on the channel has been completed.

Assessment: The above impacts will occur during construction and will therefore be temporary in duration. The assessment of these impacts has taken into account the fact that there will be some impact on the water course even with the mitigations in place, but that this will be temporary and only during construction. It also takes into account the non-perennial nature of the water course which is dry for most of the year and the fact that there is very little defined channel or evidence of riparian vegetation. The intensity of the impact will be medium, but temporary, and the significance of the impact is therefore rated as medium.

Damage to riparian vegetation as well as other vegetation on the site.

Mitigations

- There is very little vegetation around the water course which is grassed over. Where possible, other trees around the boundary will be retained.
- Trees that are to be retained must be marked with danger tape.
- Replanting of vegetation, especially around the evapotranspiration areas is encouraged. Only indigenous species should be planted. Although the geotechnical report recommends the planting of water loving plants such as Kikuyu grass, it is preferred that indigenous varieties be used. Kikuyu should be avoided.

Assessment:

This is not a major concern as the site is grassed over and there is little in the way of riparian vegetation. Therefore this impact is of a low intensity and its significance is low.

Key Operational Impacts:

Impacts of increased traffic on surrounding neighbours.

Mitigations

- Allowing for two cars per household there will be at most 4 vehicles, maybe 5 at a push.
- Therefore it is not believed that this small a number of vehicles will be sufficient enough to cause a traffic problem as a result of the development.
- There is only one other driveway on the same section of road and immediately adjacent to the site.

Assessment:

It is not anticipated that there will be any noticeable impacts on adjacent neighbours or other road users as the vehicle volumes will be low. Given the fact that there is only one other entrance on this section of the road and the fact that it is a main road designed for high volumes of traffic, this impact is judged as being of low intensity and low significance.

Development of the site increasing stormwater flow leaving the site and impacting on stormwater management services currently provided by the site.

Mitigations

- +/- 70% of the site will remain as open space and the bulk of this will be located adjacent to the Moss area and within the buffer between the units and the drainage line. This will assist in dissipating stormwater.
- Stormwater soakpits will be constructed.
- Stormwater soakpits must not be placed immediately upslope of the French drains and should not be within the evapotranspiration areas, and must be downslope of the buildings so that they do not undermine the foundations.
- Stormwater control measures to be implemented on the driveway by using permeable paving i.e. grass blocks or concrete strips with an increased surface roughness to prevent water building velocity and causing erosion at the base of the driveway and at the water course.
- Further to this, indigenous vegetation planting should be encouraged to increase the ability of the vegetated areas to slow and retain stormwater. Hygrophilous plant species can be used in and around the drainage line.

Assessment: Stormwater soak pits will function to control stormwater flow and allow it to infiltrate and retention of stormwater on site where possible is a better environmental option than releasing to the municipal system. Added to which, the bulk of the site will remain as open space which will be made up of a buffer area on the water course and area adjacent to the Moss area through which the drainage line ultimately flows means that stormwater. Therefore this impact can be mitigated and is rated as low.

Location of French drains and evapotranspiration areas within 32m of the watercourse impacting on downstream water quality.

Mitigations

- According to the letter from the engineer (appendix D), soil conditions 10m downslope from a French drain are generally dry as most of the seepage is removed by evapotranspiration or deep infiltration before this point. Further to this, the fact that the water course is dry for most of the year means that the risk of pollution of the water course is minimal. Based on this, the engineer is confident that the risk of pollution is minimal.
- The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up water from these areas.
- Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.

Assessment:

Taking into account the generally dry nature of the water course for most of the year, the risk of pollution from the French drains is seen as minimal. The ETA areas will also remain dry allowing them to function properly, further assisted by planting of indigenous vegetation. This impact can also be further mitigated by implementing measures discussed in this report. It is however acknowledged that there is a small risk that during prolonged heavy rainfall, the ETA areas may not function as efficiently, which could result in some pollutants entering the water course for a short period. This is a risk associated with any septic tank system. Therefore this impact as rate as medium.

Densification of the site.

Mitigations

- The property measures 2 619m² and approximately 800m² will be developed i.e. 30% coverage by hard surfaces. This will leave 70% of the site undeveloped and vegetated.

As the development will also be restricted to the western side of the site, leaving the bulk of the undeveloped area to fall adjacent to the MOSS area.

Assessment:

The current proposed densification appears reasonable and allows for open vegetated areas on site within the buffer areas and adjacent to the Moss area. This impact is rated as low.

Impact on ecosystem services provided by the stormwater channel i.e. enhancement of water quality, erosion control, sediment trapping and support of biodiversity.

Mitigations

- In terms of biodiversity, the site is grassed and vegetated primarily by garden exotics. However adjacent neighbours have noted that the site is used by birds and small mammals. The property does lie adjacent to the MOSS woodland area and therefore might support some associated faunal species.
- With development there will be loss of some open space area but the bulk of the site, specifically that adjacent to the MOSS area will remain undeveloped and will be vegetated with suitable indigenous species so as to compliment the adjacent open space area.
- The installation of stormwater soakpits will ensure that run off generated by development will be controlled and the undeveloped portion of the site (70%) as well as the drainage line will still continue to provide stormwater management services.
- It is not believed that development of the site will result in loss of biodiversity, but with suitable landscaping with indigenous species, especially adjacent to the Moss area, the biodiversity of the site can be improved.
- It is therefore suggested that game permeable fencing be used adjacent to the Moss area.

Assessment: Given the current state of the site, the impact on biodiversity is expected to be low. The fact that at least 70% of the site, the bulk of which will lie adjacent to the Moss area will be left undeveloped will allow for retention of faunal refuges and an improvement in the biodiversity with additional planting. This impact is therefore seen as low.

Impact on adjacent MOSS designated woodland area.

Mitigations

- The bulk of the undeveloped area of the site will lie adjacent to the Moss area, thereby providing an effective buffer between this open space area and the development.
- The distance from the buildings to the Moss area is 47m at the widest point, 14m at the narrowest point due to the shape of the site and 30m at the midpoint.
- This area should be planted with suitable indigenous species so as to compliment the adjacent open space area.

Assessment:

There will be sufficient buffer between the development and the Moss area and planting of indigenous vegetation within these open areas to link to the Moss system will increase connectivity between the site and the open space. This impact is rated as medium.

The culvert pipes at the vehicle crossing may become blocked resulting in localized flooding and erosion.

Mitigations

- The engineer proposes to make use of a single 300mm diameter pipe which will be sufficient for the hydrological requirements of the drainage line.
- This should be regularly cleared and maintained to ensure that it does not become blocked.
- The pipe must be laid so as to lie level with the bed of the water course to prevent sedimentation build up and allow easy through flow.

Assessment:

The impacts associated with the culvert will primarily occur during construction and can

be managed. Operational impacts are minimal provided the pipe is laid level with the water course bed therefore this impact is rated as low.

High flow events overtopping the vehicle crossing, damaging it and resulting in localized damage, erosion and flooding.

Mitigations

- The culvert is designed to allow flow across its surface but for the most part, water will flow underneath it through the culvert pipes.

Assessment:

This impact is rated as low.

Further to the above mitigation methods, an EMPr (Appendix F) has been developed to manage and control potential impacts. The EMPr should be implemented through monthly construction audits during which time recommendations within the EMPr should be enforced. If the EMPr is implemented correctly and the mitigation measures listed in this report are adhered to then the potential impacts associated with the proposal can be mitigated against. It is thus the opinion of the EAP that there are no significant environmental impacts associated with the proposal that cannot be mitigated against and that the benefits associated with the development of the stormwater management system outweigh any temporary impacts associated with its development.

Alternative A1 (preferred alternative) - Preferred Alternative – Layout A1

Construction

Technology alternative A1 will place infrastructure further away from the water course, providing at least a 10m buffer from the nearest building and French drain to the water course.

Operation

Location of the buildings within 10m and 15m of the water course.

Mitigations

- Given that this water course is primarily dry, with water only expected to flow during a higher level rainfall event, this buffer distance should be sufficient.
- The gradient of the site means that the buildings will be situated at a higher level than the water course itself, reducing likelihood of flooding.
- At present the water course does not have a defined channel and is not defined by riparian vegetation. It is anticipated that the biodiversity value and stormwater management services would be improved if this buffer area were to be vegetated with suitable indigenous species.
- No further structures or hard surfaces should be placed within this area.

Assessment:

Given the generally dry and non-perennial nature of the water course, it is believed that a reduced buffer of 10m at the closest point will be feasible. This area must however be planted up with indigenous species to increase the roughness of the buffer and increase infiltration. The impact is rated as low.

Operational impacts associated with placement of the stormwater soakpits within 3m of the water course.

Mitigations

- The stormwater soakpits will operate to slow stormwater received from the hard surfaces allowing into soak into the soil in this area.
- It is not believed that placement of these soak pits within close proximity to the water course will disrupt it in any way, provide the natural ground levels are maintained and the area disturbed is re vegetated immediately on completion.

Assessment:

Given the generally dry and non-perennial nature of the water course, it is believed that placement of stormwater soakpits in close proximity to the water course will be feasible. This area must however be planted up with indigenous species to increase the roughness of the buffer and increase infiltration. The impact is rated as low.

Operational impacts associated with French drains being located within 15m and 10m of the water course.

- Each of the French drains is located 10m and 15m away from the water course. The evapotranspiration areas lie outside the water course for the most part except in one location where the ETA for the main unit just touches the water course.
- According to the letter from the engineer (appendix D), soil conditions 10m downslope from a French drain are generally dry as most of the seepage is removed by evapotranspiration or deep infiltration before this point. The engineer is therefore satisfied that the French drains will not pose a threat to surface water (Appendix D), given the generally dry nature of the water course is dry for most of the year means that the risk of pollution of the water course is minimal.
- The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up water from these areas.
- Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.

It is the opinion of the EAP that the preferred option offers the best solution for developing the site when compared with Alternative Layout A2.

Alternative A2 – Layout A2

Layout alternative A2 is the original layout proposed by the applicant which places the buildings within 3m of the water course and French drains within 6m of the water course at the nearest points.

Location of the buildings within 3m and 6m of the water course.

Mitigations

- This places buildings within very close proximity to the water course.
- Although the water course is primarily dry, with water only expected to flow during a higher level rainfall event, this buffer distance is too small even with the gradient of the site placing the buildings at a higher level than the water course itself.
- The gradient of the site means that the buildings will be situated at a higher level than the water course itself, reducing likelihood of flooding.
- At present the water course does not have a defined channel and is not defined by riparian vegetation. It is anticipated that the biodiversity value and stormwater management services would be improved if this buffer area were to be vegetated with suitable indigenous species.
- No further structures or hard surfaces should be placed within this area.

Assessment: The reduced buffer leaves no margin for error and places structures in very close proximity to the water course. Although the water course is predominantly dry for most of the year and structures will be above the level of the water course, there is still a risk of flooding and impacts on the water course. This impact is seen as medium to high.

Operational impacts associated with placement of the stormwater soakpits within the water course.

Mitigations

- The stormwater soakpits operate to slow stormwater received from the hard surfaces allowing into soak into the soil in this area. However placement of these structures in the water course will potentially alter flow in the water course itself when it does hold water.

Assessment: It is not recommended that stormwater soakpits be placed within

the water course.

Operational impacts associated with French drains being located within 15m and 6m of the water course.

Mitigations

- Each of the French drains is located 15m and 6m away from the water course. Parts of the evapotranspiration areas lie within the water course which is likely to reduce efficiency of these areas when water does flow in the drainage line.
- The fact that the water course is dry for most of the year means that the risk of pollution of the water course is lower than with a perennial water course, however it would still be advisable to have more distance between the evapotranspiration areas and the water course, so as to ensure that these ETAs function properly.
- The risk can be further reduced by planting suitable indigenous plant species within the evapotranspiration areas as these will assist in soaking up water from these areas.
- Further to this, the septic tank system must be properly maintained which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.

Assessment:

A wider buffer area would be preferred between the French drains and the water course and there is concern that the location of the ETA areas within the water course will totally reduce their functioning during rainfall. This impact is rated as medium to high.

It is the opinion of the EAP that this alternative is less feasible and less sustainable in the long term.

No-go alternative (compulsory)

Direct impacts:

1. The applicant will not be able to realize an income from the property which was purchased for the purposes of development.
2. The site may become overgrown with alien invasive species.

Indirect impacts:

3. The site will remain undeveloped.
4. If the site can't be developed the applicant will be unable to sell it and will not be able to recoup his purchase price.

Cumulative impacts:

5. The site will remain as open space.

SECTION F. RECOMMENDATION OF EAP

Is the information contained in this report and the documentation attached hereto in the view of the EAPr sufficient to make a decision in respect of this report?

If "NO", please contact the KZN Department of Agriculture, Environmental Affairs and Rural Development regarding the further requirements for your report.

YES X	NO

If "YES", please attach the draft EMPr as Appendix F to this report and list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

With respect to the technology alternatives, it is recommended that preferred alternative A1,

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be approved.

The following are specific recommendations for mitigating impacts during construction and operation. However, all construction activities must be monitored and controlled through the implementation of the construction Environmental Management Program (EMPr) which provides more specific details on each issue identified in the BAR.

Stakeholders, Properties & Services

1. The contractor should liaise with local residents and road users regarding restriction of access during construction.
2. As standard construction practice the engineer and contractor should identify all existing services that may be affected prior to construction.

Traffic & Construction Vehicles

3. Appropriate signage and barriers must be used to cordon off construction areas.
4. Speed limits must be obeyed.
5. All construction vehicles should be fitted with the appropriate silencers and exhausts.
6. Point's men must be in attendance to ensure safe movement of vehicles onto and off the site and to prevent accidents.

Housekeeping, waste management, storage and materials handling

7. All hazardous materials and substances should be stored within a secured area in the construction camp. The storage area should be a hard surfaced, bunded and covered area.
8. Littering must not be permitted on site.
9. Cement mixing must be done on a hard surface that is protected from storm water runoff.
10. Contractors should be required to dispose of construction rubble at an appropriate landfill site. Delivery notes and safe disposal certificates to prove appropriate disposal should be available.
11. Appropriate and sufficient toilet facilities must be provided by the contractor.
12. Toilet facilities must be provided by a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal certificates must be kept on record.

Dust and erosion control

13. Exposed areas should be rehabilitated and re-vegetated as soon as possible during construction.
14. A water cart should be used to dampen dusty surfaces and suppress dust.
15. Areas exposed to erosion must be protected through the use of sand bags, berms and efficient construction processes i.e.: limiting the extent (footprint) and duration period that areas are exposed. The contractor must ensure that any blockages created during construction are resolved.

Stormwater management and protection of the water course

16. The engineer/contractor must ensure that only clean storm water runoff enters the environment. Any contaminated run off must be collected and disposed of.
17. No excavated material or fill material may be stored within the water course or within 15m of the water course.

Working around the Water course, Stormwater Management, establishment of Water course crossing and pipe culvert

18. In order to limit construction impact, it is recommended that all work on the stormwater channel as part of the stormwater management plan be completed as part of the first phase of construction. This will ensure that the necessary stormwater control is established early on and will control erosion and sedimentation during the rest of the construction period.
19. A single crossing point must be established and demarcated and multiple crossing points avoided. To this end, it is therefore recommended that work on the formal road crossing and pipe culvert be completed as part of the first phase of construction. This formal crossing point must then be used by all vehicles and the rest of the water course

- must be demarcated as a no go area.
20. Until the formal crossing point is completed, a single crossing point must be designated and used until the formal crossing is complete. This crossing point must then be rehabilitated and closed once the formal culvert has been established.
 21. The culvert pipe must be laid so as to lie level with the bed of the water course to prevent sedimentation build up and allow easy through flow.
 22. All exposed soils should be re-vegetated as soon as possible and re-vegetation and planting on and around the channel should occur as early as possible.
 23. A 15m buffer should then be imposed on the rest of the water course during construction with no traffic or vehicles or storage permitted within this buffer zone, except where required to work on the crossing point and when needed to shape the channel. This will reduce the area affected.
 24. Heavy vehicle access to the water course and river banks must be restricted, except where required to construct the crossing.
 25. Non-essential equipment and vehicles are to remain at least 15m from the water course banks at all times.
 26. During the channel excavation and shaping exercise, heavy tracked vehicle i.e. excavators should not be used as they will cause more damage to surrounding vegetation and the banks. A lighter smaller vehicle such as a TLB is suggested.
 27. Stormwater soakpits must not be placed immediately upslope of the French drains and should not be within the evapotranspiration areas, and must be downslope of the buildings so that they do not undermine the foundations.
 28. Stormwater control measures to be implemented on the driveway by using permeable paving i.e. grass blocks or concrete strips with an increased surface roughness to prevent water building velocity and causing erosion at the base of the driveway and at the water course.

Vegetation, Fauna and buffer areas

29. Where possible, trees around the boundary should be retained.
30. Trees that are to be retained must be marked with danger tape.
31. Indigenous vegetation in keeping with the adjacent Moss area must be planted within the buffer area and over the evapotranspiration areas.
32. The buffer on the water course to be maintained throughout the life of the development (10m at narrowest point and 15m on average). This area may not be further developed.
33. Kikuyu grass is not recommended.
34. Further to this, indigenous vegetation planting should be encouraged to increase the ability of the vegetated areas to slow and retain stormwater. Hygrophilous plant species can be used in and around the drainage line.
35. Game permeable fencing should be used adjacent to the Moss area.

Septic Tank Maintenance

36. The septic tank system must be properly maintained during operation which will require: periodic de-sludging of the septic tank; ensuring that no antiseptics, petrol or other chemicals are allowed to enter the system as these can kill the bacteria which operate to break down the waste; excess food, fat and waste should not be allowed to enter via kitchen drains – this can be ameliorated by placing a fat trap on these drains before they enter the septic tank. This can be cleaned regularly to prevent build up; other materials such as newspaper and cloth must be kept out of the system and soakpits for stormwater must not be located near the septic tank soak pits.
37. A reputable company must be commissioned to remove any sewage sludge should this become necessary. This must be disposed of at a permitted landfill. It must be ensured that access to the septic tanks can be maintained.

SECTION G: APPENDICES

The following appendices must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

- Comments & Response report & Comments
- Proof of Notification of I A&Ps:
 - Notice boards
 - Adverts
 - Notification and communications with I &APS
 - Meetings with Community Representatives (Meeting Minutes, Attendance Registers, Signed Agreement to Notify Community)
 - Registered I&APS

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Public Participation

Comments & Response Report & Comments Received

Proof of Notification of I A&Ps

Notice boards

2. The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—
3. (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
4. (i) the site where the activity to which the application relates is or is to be undertaken; and
5. (ii) any alternative site mentioned in the application;

Adverts

- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

Notification and communications with I &APS

- (b) giving written notice to—
- (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the local and district municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity (as identified in the application form for the environmental authorization of this project); and
 - (vii) any other party as required by the competent authority;

Background Information Document (BID)

Meetings with Community and Community Representatives (Meeting Minutes, Attendance Registers,)

Registered I & APs

Appendix F: Draft Environmental Management Programme (EMPr)

Appendix G: Other information