the denc

Department:
Environment & Nature Conservation
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

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	(For official use only)
File Reference Number:	
Application Number:	
Date Received:	

Basic Assessment Report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

- This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
- This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
- The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily 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 typing.
- Where applicable **tick** the boxes that are applicable in the report.
- An incomplete report may be returned to the applicant for revision.
- 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 may result in the rejection of the application as provided for in the regulations.
- This report must be handed in at offices of the relevant competent authority as determined by each authority.
- No faxed or e-mailed reports will be accepted.
- The signature of the EAP on the report must be an original signature.
- The report must be compiled by an independent environmental assessment practitioner.
- 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.
- A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
- Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

- **ACTIVITY DESCRIPTION**

a) Describe the project associated with the listed activities applied for

The intention is to develop Hakskeen Pan as a multi-event outdoor arena/stadium type facility which could host future events such as land speed record attempts including the Bloodhound SSC, speed testing, concerts and festivals etc. Approximately 16 150ha will be rezoned to accommodate the mixed-use tourism-related area (refer to Appendix A2 and A3).

Although the Basic Assessment Report and the Environmental Management Programme have been compiled with focus on the speed events (Bloodhound SSC), the general recommendations and mitigation measures outlined in the BAR, specialist reports and the EMP should be adopted by any other future events.

The construction of infrastructure for the speed events held/to be held on Hakskeen Pan has commenced.

The infrastructure constructed to date includes the following and is included in a separate Section 24G Application under the NEMA EIA Regulations 2010:

- a 20km long, 500m wide track has been constructed, including a 300m wide safety buffer on either side of the track. Construction comprises of the following:
  - 317 workers have cleared by hand an area of 20km x 1,1km of all surface stones and pebbles.
  - Rehabilitation of the pan in the form of removing an existing causeway which was previously the main road between Mier and Rietfontein has taken place. This road which was 1m high was removed and the pan restored to its original surface and level.
  - Material removed from the road was placed back in the borrow pits created many years ago when this road was first built.
  - In certain areas it was necessary to remove stones which protruded above the surface but which extended to below the surface of the pan. These cases only represent a total estimated area of 500m x 300m when combined thus only 0,68% of the total amount of stones removed unearthed by machines, the rest was removed by hand.
  - The only place where grading has and will take place is to repair manmade indentations and elevations in the form of old tracks created by locals or in the case of the elevated causeway which was removed.
- Temporary structures (mostly shipping containers) placed on the edge of the pan for various functions such as control, storage, hospitality, showers and toilets etc.) located at the landside/Speedweek camp.
- A 110kVa diesel generator, with a 3500l diesel tank and bund, also housed within a portable shipping container on site.
- Two telecommunications masts placed at the landside camp and next to the R31
- 6 x 10 000l jo-jo tanks have been constructed for the storage of water on site.
- Water is sourced from local borehole near the site, via a 16m long, 40mm diameter pipeline.

- There is also a 110kVa diesel generator, with a 3500l diesel tank and bund, also housed within a portable shipping container on site.
- A 44000l sewerage septic/holding tank has also been constructed at the landside/ Speedweek camp for the temporary storage of all effluent. The tank is emptied by a honeysucker by the local Municipality when it is full. At this stage it is not known what additional infrastructure (conservancy tanks etc.)
- Farm boundary fencing was also moved to accommodate the track
- There was also a 7km, 500m wide track for the speedweek events, however, no preparation of this track was required.

The following infrastructure and development still needs to take place, and is the subject to this NEMA Application in terms of the 2014 EIA Regulations:

- A landing strip will be "constructed" that will be less than 1.4km to accommodate film, support and/or medical crews. No solid permanent infrastructure will be built, but the landing strip will be marked, cleared of any large rocks and stones and have temporary lighting/signalling installed
- Additional temporary structures (including tents, marquees, stages, grand stands/viewing area, shipping containers, ablution facilities, exhibition stands, additional water tanks) will be installed at the landside/Speedweek camp area for the development of the hospitality and viewing area.
- A technical camp (Technical Camp Option B) consisting of temporary structures will be located at the existing MTN telecommunications tower next to the R31, with direct access from the R31. Please note that it is proposed that some of the area surrounding the telecommunications tower be infilled with natural material (sand and rock from the pan or surrounding area) to elevate the technical camp.
- A fuel depot area for the storage of fuel will be located to the western side of the pan. Fuel will be stored in portable fuel tankers, and be located within a bund area. Hydrocarbons will be stored and dispensed from 3 standard road-going tankers. The diesel would likely be stored in the RSA standard 22,000 litre tanker, with JET A-1 and petrol in the standard 11,000 litre tankers.
- No new roads were constructed for the activities, and only existing tracks on the pan were used.

Designated viewing areas are expected to be constructed at or near the landside/ speedweek camp. These would more likely be located on the pan surface, and not on the dune areas on the edge of the pan (the dunes areas will be designated as no-go areas to spectators).

Spectators are expected to be shuttled to the viewing areas by busses at specified times, and no private vehicles will be allowed onto the pan. Parking areas will be provided, either on the pan on the northern side of the R31, or in an open area to the west of the Technical Camp.

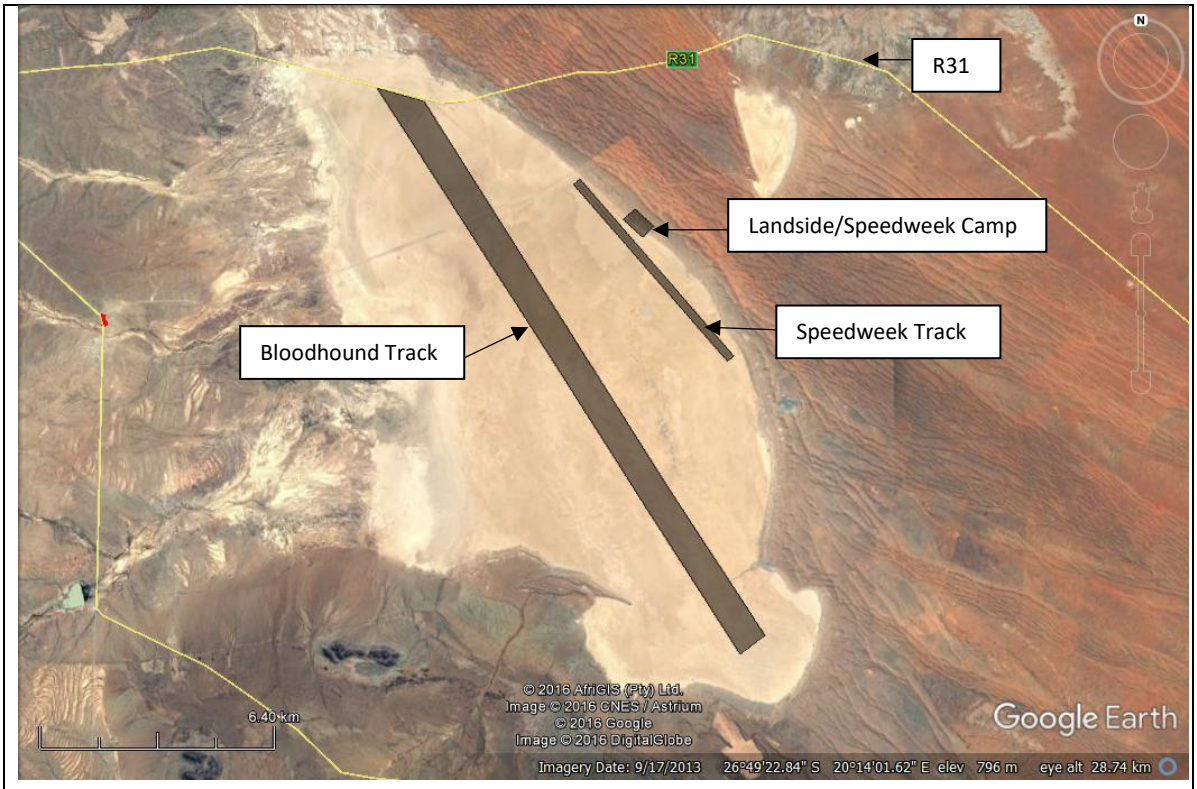

Figure 1: Google Earth image of Hakskeen Pan.

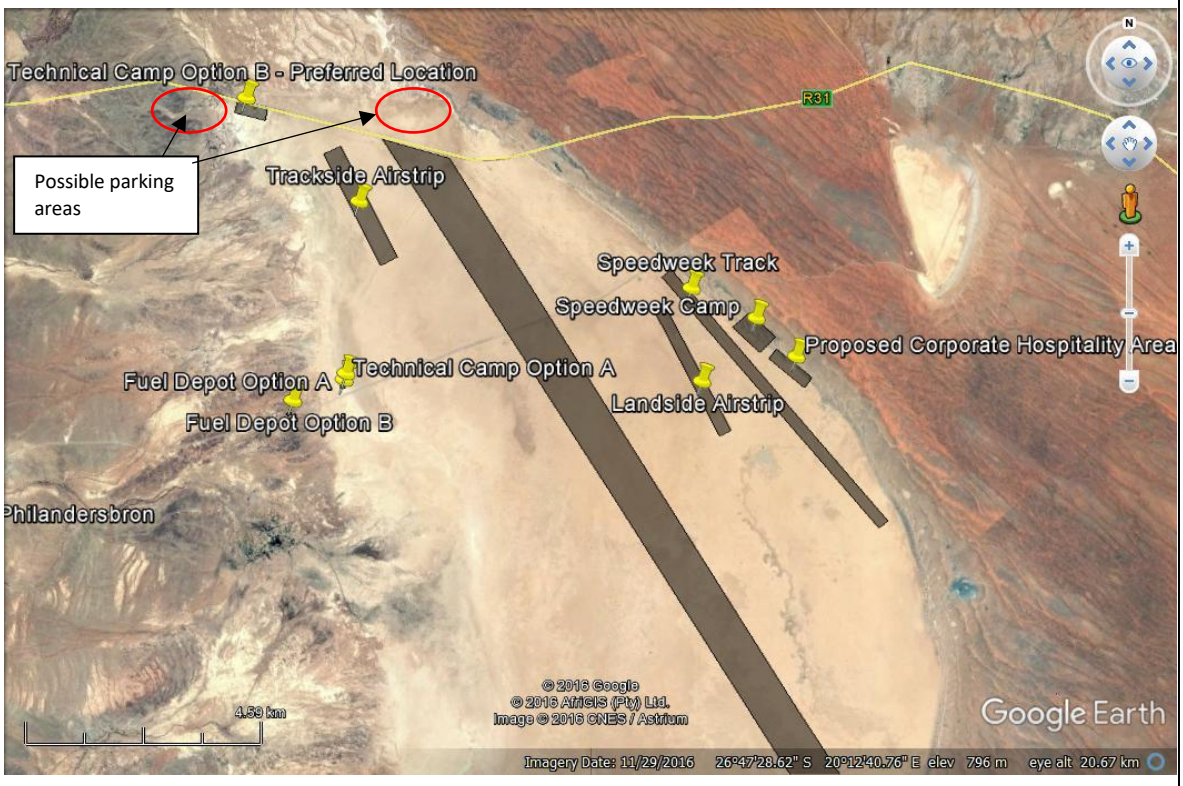

Figure 2: Google Earth image showing the various infrastructure and components of the Bloodhound SSC project (including the various options/alternatives) at Hakskeen Pan.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 983, 984 and 984	Description of project activity
Government Notice R327 (Listing Notice 1): Activity No:	
Activity 12: The **development** of; (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; **(ii) infrastructure or structures with a physical footprint of 100 square metres or more;** where such development occurs; **(a) within a watercourse;** (b) in front of a development setback; or **(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;** Excluding: (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; or (ee) where such development occurs within existing roads or road reserves or railways line reserves; or (ff) The development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	Infrastructure and structures exceeding 100m^2 will be constructed within 32m of a watercourse.
Activity 14: The **development** and **related operation** of facilities or infrastructure**, for the storage, or for the storage and handling, of a dangerous good**, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	More than 80 cubic meters (80 000 litres) of fuel may need to be stored on, or on the edge of the pan. Details, including proposed volumes to be confirmed
Activity 19: The **infilling** or **depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil,**	More than 5 cubic meters of material is expected to be moved, excavated and/or removed during construction

sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a **watercourse**;	
Government Notice R325 (Listing Notice 2): Activity No:	
None	
Government Notice R324 (Listing Notice 3): Activity No:	
Activity 6: The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more. **g. In the Northern Cape** i. In an estuary; ii. Outside urban areas, in: a) A protected area identified in terms of NEMPAA, excluding conservancies; b) National Protected Area Expansion Strategy Focus areas; c) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; d) Sites or areas identified in terms of an International Convention; e) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; f) Core areas in biosphere reserves; g) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; h) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; **i) Areas within watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;**	Temporary structures (tents) may be erected on or near the edge of the pan to accommodate spectators, staff etc. The exact numbers are not known, but is expected to be more than 15
Activity 7: The development of aircraft landing strips and runways 1.4 kilometres and shorter. g. In the **Northern Cape** i. In an estuary; ii. **Outside urban areas, in**: a) A protected area identified in terms of NEMPAA, excluding conservancies; b) National Protected Area Expansion Strategy Focus areas; c) World Heritage Sites; d) Sensitive areas as identified in an environmental management framework as	A landing strip will be “constructed” that will be less than 1.4km to accommodate film, support and/or medical crews. No solid permanent infrastructure will be built, but the landing strip will be marked, cleared of any large rocks and stones and have temporary lighting/signalling installed

contemplated in chapter 5 of the Act and as adopted by the competent authority; e) Sites or areas identified in terms of an International Convention; f) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; g) Core areas in biosphere reserves; h) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core of a biosphere reserve; i) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; **j) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland.** iii. In urban areas: a) Areas zoned for use as public open space; b) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.	
Activity 10: The **development and related operation** of facilities or infrastructure **for the storage, or storage and handling of a dangerous good**, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres. **g. In the Northern Cape** i. In an estuary; ii. Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland; **iii. Outside urban areas, in:** a) A protected area identified in terms of NEMPAA, excluding conservancies; b) National Protected Area Expansion Strategy Focus areas; c) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; d) Sites or areas identified in terms of an International Convention; e) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; f) Core areas in biosphere reserves; g) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in	More than 30 cubic meters (30 000 litres) of fuel may need to be stored on, or on the edge of the pan. Approximately 44 000litres of various fuels (diesel, petrol and Jet A-1) will be stored in road-going tankers, as well as oxidiser (HTP).

terms of NEMPAA or from the core areas of a biosphere reserve; h) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined; i) Within 500 metres of an estuary. iv. Inside urban areas: a) Areas zoned for use as public open space; b) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; c) Within 500 metres of an estuary.	

- **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 application as required by Appendix 1 (3)(h), Regulation 2014.Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) 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.

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. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

The only other reasonable and feasible alternative is an alternative site for the proposed speed events and Bloodhound SSC landspeed record attempts.

A number of sites were looked at around the world. The main requirements for the Bloodhound SSC landspeed record attempt, is a track that is long, hard and flat enough. Two sites were identified in South Africa: Verneukpan and Hakskeen Pan.

Verneukpan

Vernuekpan, located approximately 65km south of Kenhardt in the Northern Cape, was the first site considered, as it was the site of a previous landspeed record attempt in 1929.

Early indications were that the pan was long, hard and flat enough to accommodate the required track, with the possibility of constructing an 18km long and 1.1km wide track.

However, a full survey of the pan revealed that the shale bed was breaking up underneath the playa surface and would cause a lot of problems. Due to the large amount of work clearing Verneukpan, it was decided to search for an alternative.

Since Verneukpan was completely eliminated as an alternative site early on, no further specialist assessments of the site were conducted.

Hakskeen Pan

Hakskeen Pan, located approximately 12km east of Rietfontein in the Northern Cape, was the second alternative site investigated in South Africa.

The pan also provided ideal conditions to accommodate the track, being long, flat and hard enough to accommodate a 20km long track.

Although the pan would also need substantial work (clearing of stones and rock off of the track), the pan was in a better condition than Verneukpan, and less work was needed.

Hakskeen Pan was therefore the preferred and only viable alternative site.

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Entrance to Hakskeen Pan	26º 45' 01.77"	20º 11' 06.93"
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S2 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Various options for the location of the fuel depot, technical camp and hospitality areas have been considered. At this stage, Technical Camp Option B are the preferred locations for the technical camp, as it has better access due to its proximity to the R31. The area is also more degraded. Technical Camp Option A is not preferred as it is further from the R31 and is less disturbed. Two options are given for the fuel depot area. Fuel Depot Area A, located on the western side of the pan (see Figure 2), but still on the pan, is preferred from an ecological point of view. Fuel Depot Area B is also located to the west of the pan, but is located just off the pan. This option is preferred from a freshwater point of view. Currently, the preferred hospitality area will be at the Speedweek/Landside camp. Parking areas are proposed on either the northern part of the pan (northern side of R31) and/or on the open area to the west of the technical camp (Option B), just off of the R31	Technical Camp Option B: 26° 44' 30.77"	20° 08' 35.91"
	Technical Camp Option A: 26° 47' 30.00"	20° 09' 44.21"
	Fuel Depot Area Option A: 26° 47' 26.11"	20° 09' 44.84"
	Fuel Depot Area Option B: 22° 47' 43.25"	20° 09' 07.04"

Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)

Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

No technology alternatives were considered.

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

N/A

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

This would mean that no-development would take place and the proposed site will remain as is. The Speed Events including the Bloodhound SSC project could not continue.

Although this option would result in no potential negative environmental impacts, the significant social benefits from implementing the activity would not be achieved.

The no-go option would only have been recommended if it were found that the proposed activities on this site or in this area might potentially cause substantial detrimental harm to Hakskeen Pan and the surrounding environment.

According to the Socio-economic Assessment (**Appendix D2**), the employment and business opportunities associated with hosting the Bloodhound event, the benefits for the local and regional hospitality and tourism sector, the unique opportunity for establishing Hakskeen Pan as one of the best high speed testing areas in the world and the international exposure of the Mier area and the Northern Cape Province, together with the legacy benefits would be forgone. The No-Development option would therefore represent a lost opportunity for Upington and the local economy. This would represent a negative social cost. The No-Development option would therefore represent a significant missed opportunity and is therefore not supported.

Paragraphs 3 – 13 below should be completed for each alternative.

- **PHYSICAL SIZE OF THE ACTIVITY**

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

Alternative:	**Size of the activity:**
Alternative A1 (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	m
Alternative A2 (if any)	m
Alternative A3 (if any)	m

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

- **SITE ACCESS**

Does ready access to the site exist?	YES	~~NO~~
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

N/A. No new roads are planned.

Existing tracks on the pan will be used as far as possible, especially for general public movement and logistics.

It may be necessary for staff and support vehicles to cross the pan, off of the existing tracks. However, due to the nature of the pan, this is not expected to cause any significant impacts to the pan. According to the Freshwater Impact Assessment (**Appendix D4**), when the pan is dry, it is exceedingly hard and it is evident that vehicle tires do not make much of an impression. Hence it is not expected that vehicles crossing the pan during the dry season is about to have a discernible impact on the survival of life forms and on the ecology of the pan.

Direct access will be obtained from the R31. The R31 falls within the jurisdiction of the Department of Roads and Public Works, Northern Cape, who shall be the relevant authority regarding necessary access wayleaves and traffic management for the event.

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.

- **LOCALITY MAP**

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);

- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (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 and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

- **LAYOUT/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 document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

- **SENSITIVITY MAP**

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

- **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.

- **FACILITY ILLUSTRATION**

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

- **ACTIVITY MOTIVATION**

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

• **Is the activity permitted in terms of the property's existing land use rights?**	~~YES~~	NO	Please explain
The existing zoning of Agricultural Zone I does not allow for the proposed tourism-related activities to be developed on the proposed properties. Approximately 16 150ha will have to be rezoned to Special Zone to accommodate the proposed development. This Special Zone zoning will be specifically defined to cater for all the intended land uses envisaged on the study area.			
• **Will the activity be in line with the following?**			
(a) Provincial Spatial Development Framework (PSDF)	YES	~~NO~~	Please explain
The Northern Cape Provincial Spatial Development Framework (PSDF) recognises the tourism sector as a key economic sector and that the growth thereof can rejuvenate other sectors of the economy. Growth in this sector will also serves as an important linkage between the Northern Cape Province and the other provinces within South Africa. The farm portions (segments of Farm Mier 585/0, Mier 585/107 and Windhoek 122/0) that forms the study area of this application can be found within the earmarked Eco-Tourism Corridor as envisaged by the PSDF of the Northern Cape. One of the prioritised strategies and implementation guidelines within the PSDF are to encourage tourism-related developments within the designated tourism corridors and adjacent to national parks and provincial nature reserves. The Northern Cape Spatial Development Framework (NCSDF) aims to ensure the effective utilisation of land and resources. The NCSDF also serves to enhance the future of the Northern Cape and its people by ensuring that: 1. All land-uses allow people to live with dignity and improve the integrity of the environment. 2. Innovative management and technology is used to balance resource use with the carrying capacity of the environment. 3. The comparative and competitive advantages in the province are developed and utilised sustainably. The NCSDF therefore emphasises development that is ecologically sustainable in the long-term. The Speed events and Bloodhound SSC initiative will advance the objectives of the NCSDF, specifically the utilisation of comparative advantages and improved quality of life (through job creation). The role of the BHIDS therefore is to ensure that this development is undertaken in the most effective and sustainable manner possible. The NCSDF also identifies the Kgalagadi Transfrontier Park as a common resource of huge importance. The southern portion of this Park resides in the David Kuiper Local Municipality and therefore may receive additional visitors and publicity as a result of the Bloodhound SSC project.			

(b) Urban edge / Edge of Built environment for the area	YES	~~NO~~	Please explain
The site is located outside the urban edge.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	~~NO~~	Please explain

According to the Bloodhound Integrated Development Strategy (**Appendix D1**), The mission of the ZF Mgcawu DM according to their five year IDP is *"to enhance economic development for the benefit of communities in the ZF Mgcawu District area by creating and maintaining an effective administration and a safe environment to attract tourists and investors".*

Guided by this mission the ZF Mgcawu District Municipality (DM) sets out the following goals and objectives:

1. Build an efficient administration that serves the people of ZF Mgcawu with excellence.
2. Ensure economic growth and job creation.
3. Maintain an attractive natural and building environment
4. Ensure that ZF Mgcawu is a safe and secure place to live, visit and do business in.
5. Contribute towards decreasing HIV/AIDS mortality and economic impact.
6. Promote and strengthen the tourism industry.
7. Improve the municipality's capacity to play a coordinating role in land reform.
8. Create an effective Disaster Management Centre.
9. Ensure that the finances of the Municipality are managed well.

The ZF Mgcawu DM IDP also emphasises specific interventions for the Mier Local Municipality (LM) (now Dawid Kruiper Local Municipality) including:

1. Improved water, sanitation and road infrastructure and services.
2. Increased access to low cost housing.
3. Enhanced LED through tourism, mining and agriculture investment.

The ZF Mgcawu DM IDP places emphasis on infrastructure improvements, economic growth, and tourism development in the District, and in particular the Mier LM. The BHIDS will seek to advance these objectives through the identification of viable investment opportunities and tourism projects.

The Mier Local Municipality IDP acknowledges the limited capacity within the Municipality and the need for a 'turn-around strategy'. The Bloodhound SSC Integrated Development Strategy (BHIDS) recognises this lack of capacity and addresses it by recommending collaboration with the District and Province in the hopes of efficient project implementation and skills transfer.

The ZF Mgcawu DM IDP places emphasis on infrastructure improvements, economic growth, and tourism development in the District, and in particular the Mier LM. The BHIDS will seek to advance these objectives through the identification of viable investment opportunities and tourism projects.

(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
No SDF has been prepared for the old Mier Municipal area			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	~~NO~~	Please explain
The ZF Mgcawu Environmental Management Framework highlights the varied landscape of the area which provides a unique and special character to the area which has the potential to contribute to a variety of local and international tourism opportunities, especially if scenic routes are developed that takes these landscapes into account.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
• **Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?**	YES	~~NO~~	Please explain
The Mier Integrated Development Plan, as the only available plan on municipal level, will be applied to this tourism related application. The IDP of the Mier Municipality recognises that the pans within the old Mier Municipal area are being used for vehicle testing without the necessary land use rights having been obtained. The Department of Economic Development and Tourism wishes to utilise a portion of Hakskeen Pan as a tourism destination and have already appointed the relevant consultants to ensure this development proposal will adhere to all applicable legislation. One of the outcomes for local economic development is to stimulate growth in the tourism sector and this intended tourism development, which will be established on Hakskeen Pan, will go a long way in promoting the Northern Cape as a tourism destination, since global events such as the Bloodhound Project will make use of the proposed tourism facility. The IDP of the Mier Municipality has identified the Bloodhound Project as one of the opportunities within the Mier Municipality SWOT analysis. As mentioned in the previous paragraph, the intent is to establish a tourism related development on Hakskeen Pan and that the Bloodhound Project will be incorporated as one of the main economic initiatives to promote the intended tourism development on Hakskeen Pan. It is important to note that the proposed development will also benefit the surrounding community, not only on an economic level, but also through the establishment of community facilities.			
• **Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)**	YES	~~NO~~	Please explain
According to the Socio-economic assessment (**Appendix D2**), the activities associated with the pre-event and planning and hosting phase will create significant employment and business opportunities for local community members in the Mier area and the Dawid Kruiper Local Municipality. The hosting of the Bloodhound event will also create significant benefits for the local hospitality, tourism and business sector. The Bloodhound land speed record event is also a unique, global event and will			

create a once in a life time opportunity to place Hakskeen Pan on the international map and establish it as one of the best high speed testing sites in the world. The event will also create a unique opportunity to show case the Mier area, Northern Cape and South Africa to the rest of the world.

In addition, the event will create an opportunity for a number of significant legacy opportunities linked to the establishment of Hakskeen Pan as an internationally recognised high speed testing and events venue. With proper planning and management these benefits will be long term.

• **Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)**	YES	~~NO~~	Please explain

Since the intention is to develop Hakskeen Pan as a multi-event outdoor arena/stadium type facility which could host future events such as further land speed record attempts, speed testing, concerts and festivals etc. large amounts of people/visitors can be expected on, and on the edge of the pan. Unfortunately, it is not known at this stage what the volumes of visitors/spectators will be for the Bloodhound SSC event, and for any future events.

At this time, it is unsure how many people (spectators) are expected on the pan during the Bloodhound SSC runs and record attempts. With proper mitigation measures in place, the pan itself is expected to be able to accommodate significant numbers of spectators, with the only limiting factor to the maximum number of spectators allowed being the availability of services.

At this stage, the only limiting factor seems to the availability of sanitation services, according to the Bulk Engineering Services Report. Chemical ablution facilities would be the most appropriate measures, especially in the short term, and especially due to the versatility of this measure (the location and number of toilets can be adapted as per each events requirement). However, since the waste will have to be disposed of at a wastewater treatment facility, and the only wastewater treatment works in the vicinity of Hakskeen Pan is at Rietfontein, which is already overloaded this option may not be viable, unless the waste is transported over a greater distance to a facility that has capacity, or the capacity at Rietfontein WWTW is increased.

The municipality is expected to be the service provider, although additional service providers may be required.

Currently there is sufficient water availability from the recently constructed Kalahari East Pipeline which runs along the R31 towards Rietfontein.

• **Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)**	YES	~~NO~~	Please explain

Unknown at this stage

• **Is this project part of a national programme to address an issue of national concern or importance?**	~~YES~~	NO	Please explain
No, however, additional job opportunities and economic development are a national importance. The proposed activity is also seen as having significant national importance, due to the global nature of the event.			
• **Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)**	YES	~~NO~~	Please explain
After a global search for adequate sites for the Bloodhound SSC land speed record attempt, Hakskeen Pan, located approximately 12km east of Rietfontein in the Northern Cape, was identified as the most suitable location. The pan provides ideal conditions, being long, flat and hard enough to accommodate a 20km long track.			
• **Is the development the best practicable environmental option for this land/site?**	YES	NO	Please explain
Although the proposed development will result in and expected to have some potential environmental impacts, these are considered insignificant at this stage. The best environmental option would be the no-go alternative. However, the massive social benefits of the proposed project would not be realised. The potential benefits from a socio-economic perspective are considered to significantly outweigh any potential environmental impacts. With appropriate measures, as per the Specialist recommendations and the Environmental Management Programme, any potential negative environmental impacts are expected to be satisfactorily mitigated. None of the specialist assessments to date have found any significant potential negative impact from the proposed development that could potentially cause substantial detrimental harm to Hakskeen Pan. According to the Freshwater Assessment (**Appendix D4**), there is no indication that the Bloodhound SCC should not go ahead on the grounds of possible deleterious impacts on the aquatic environment.			
• **Will the benefits of the proposed land use/development outweigh the negative impacts of it?**	YES	~~NO~~	Please explain
No significant negative environmental impacts have been identified or are expected. Any negative environmental impacts identified (see section B and D) have been adequately mitigated. The socio-economic benefits are expected to outweigh these environmental impacts. According to the Socio-economic Impact Assessment (**Appendix D2**), the significance, with mitigation, of the all of the potential negative impacts associated with the operational phase was rated as Low Negative. All of the potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. According to the Freshwater Impact Assessment (**Appendix D4**), there is no indication that the Bloodhound SCC should not go ahead on the grounds of possible deleterious impacts on the aquatic environment.			

• **Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?**	~~YES~~	NO	Please explain
Not necessarily. Although there are other pans in the region, it is foreseen that Hakskeen Pan will be developed as an "outdoor arena". Hakskeen Pan will have the infrastructure and location benefits to host future possible land speed record attempts and other activities such as festivals.			
• **Will any person's rights be negatively affected by the proposed activity/ies?**	YES	NO	Please explain
No person's rights are expected to be negatively affected by the proposed development. The activity is expected to have a general positive impact on the residents of the area.			
• **Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?**	~~YES~~	NO	Please explain
The development is located outside the urban edge			
• **Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?**	~~YES~~	NO	Please explain
• **What will the benefits be to society in general and to the local communities?**			Please explain

According to the Socio-economic Impact Assessment (**Appendix D2**), the following positive social impacts can be expected during the pre-event planning and establishment phase, Hosting phase

Potential positive impacts

- Creation of employment and business opportunities and opportunity for skills development and on-site training associated with the preparation of Hakskeen Pan;
- Benefit for local tourism and accommodation sector;
- Establishment of the Kalahari East Water Pipeline;
- Establishment of cell phone infrastructure in the area.
- Support of the local economy via the creation of employment and business opportunities;
- Benefit to local tourism and accommodation sector;
- Raise profile of Hakskeen Pan, the Northern Cape and South Africa.

A number of the initiatives associated with the pre-event planning and establishment phase are integrally linked to creating a positive legacy. In this regard these activities will not only benefit the hosting of Bloodhound event, but will also benefit future events and activities both on Hakskeen Pan and in the surrounding areas. These initiatives include:

- Establishment of on-site camping facilities at Hakskeen Pan, specifically establishment of key services, such as water and power;
- Development and support for the establishment of local SMMEs that have the capacity and skills to provide catering, camping, cleaning, ablution, logistics and other services for large events held on the pan and the surrounding area;
- Upgrading of tourism information centres, implementation of tourism awareness campaign, upgrading tourism websites and signage and training of local tour guides;
- Promotion of Northern Cape Extreme Brand;
- Upgrading local airstrips;

- Development and branding of Hakskeen pan as an international speed testing facility and also as a venue that can accommodate other events, such as concerts, product launches etc. However, hosting of other events should not pose a threat to ability of the pan to host speed testing events;
- Up-grading of local tourism venues and establishment of more, up-market tourism lodges in the area.

• **Any other need and desirability considerations related to the proposed activity?**	Please explain

Besides the Bloodhound SSC event, the idea is to establish Hakskeen Pan as a sort of "outdoor arena" and facility, which could host future events such as further speed record attempts, speed testing, concerts and festivals etc.

• **How does the project fit into the National Development Plan for 2030?**	Please explain

Economic development and job creation is a National importance.

• **Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**

The general objectives of Integrated Environmental Management have been taken into account through the following:

- The actual and potential impacts of the activity on the environment, socio-economic conditions and cultural heritage have been identified, predicted and evaluated, as well as the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impact, maximizing benefits and promoting compliance with the principles of environmental management – *please refer to Section D below*.
- The effects of the activity on the environment have been considered before actions taken in connection with them – *alternatives have been considered and investigated (please refer to Section A below).*
- Adequate and appropriate opportunity for public participation was ensured through the public participation process – *please refer to Section C for the public participation information, including the list of identified Interested and Affected parties, as well as the methods for identifying and informing I&APs of the application and proposed activity*.
- The environmental attributes have been considered in the management and decision-making of the activity – *an EMP has been included (**Appendix G**) with the proposed activity and must adhere to the requirements of all applicable state Authorities.*

• **Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.**

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural and social interests – *the proposed activity will have a significant beneficial impact on people, as it will provide much needed economic opportunities.*
- Development must be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied.
- Where waste cannot be avoided, it is minimised and remedied through the implementation and adherence of EMP.

- The use of non-renewable natural resources is responsible and equitable – *no exploitation of non-renewable natural resources occurs with the proposed activity.*
- The negative impacts on the environment and on people's environmental rights have been anticipated and prevented, and where they cannot be prevented, are minimised and remedied - *refer to Section F below*.
- The interests, needs and values of all interested and affected parties have been taken into account in any decisions through the Public Participation Process – *please refer to Section C for the public participation information.*
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and benefits – *refer to Section B below.*
- The effects of decisions on all aspects of the environment and all people in the environment have been taken into account, by pursuing what is considered the best practicable environmental option – *the proposed activity is expected to have minimal/negligible environmental impacts, especially after mitigation measures as described under Section D and E and in the EMP are implemented.*

• APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Water Act (NWA, Act 36 of 1998).	S21 (c) and (i) application.	Department of Water and Sanitation	Not yet
SPLUMA	ZF Mgcawu District Municipality	Rezoning from Agricultural to Special Use	Not yet
National Environment Management: Waste Act 2008 (Act 59 of 2008)	DENC	Waste Management Licence	Not yet
National Heritage Resources Act, 1999 (Act 25 of 1999)	SAHRA	Permit	Not yet

• WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	~~NO~~
If YES, what estimated quantity will be produced per month? Unknown		m^3

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

The general solid waste generated during construction will be consolidated on site during construction, and disposed of at the nearest approved municipal landfill site.

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

The general solid waste generated during construction will be consolidated on site during construction, and disposed of at the nearest approved municipal landfill site.

Will the activity produce solid waste during its operational phase?

- If YES, what estimated quantity will be produced per month? – Unknown at this stage

YES	~~NO~~
	m^3

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

This is to be confirmed, but it is expected that all solid waste will be consolidated on site (either in wheelie bins and /or skips), to be removed on a regular basis by the municipality and/or other service provider.

There will be no burying, incinerating or other means of waste disposal allowed on site.

According to the Freshwater Assessment (**Appendix D4**), waste is to be collected and transported off-site, from where it can be separated, recycles and disposed of on a sanitary landfill. To conduct these actions on Hakskeen Pan is deemed to be too risky, from an environmental impact point of view.

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

According to the Bulk Engineering Services Report (**Appendix D9**), there are four registered solid landfill sites in the vicinity of Hakskeen Pan, located at Rietfontein, Loubos, Philandersbron and Groot Mier. All of which are classified as Class G: C: B- disposal sites.

General Waste refers to any waste that does not fall within the definition of Hazardous Waste. In other words, waste that does not pose a significant threat to public health or the environment. The waste generated at Hakskeen Pan can be screened on site and the General Waste disposed off at one of the solid landfill sites.

The Hazardous waste will have to be pre-treated on site and disposed of according to the chemical and physical composition on a registered hazardous waste landfill site. There is not such a landfill site in the Mier area. According to the Bulk Services Report, it is recommended that hazardous materials procured from suppliers on a use-or-return basis. Any hazardous materials generated from categorised goods must be appropriately packaged for disposal at a registered hazardous waste landfill site.

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

N/A

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 whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	~~YES~~	NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	~~YES~~	NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	~~YES~~	NO
If YES, what estimated quantity will be produced per month?		m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	~~NO~~

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.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	~~YES~~	NO

If YES, provide the particulars of the facility:

Facility name:			
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:

At the moment, the Speedweek facility is provided with a conservancy tank which is emptied with a tanker truck from time to time. The sewage then is taken off site. It is foreseen that the sewage from the Bloodhound facility at the Speedweek site as well as from the technical camp will be collected in conservancy tanks and moved off site.

The treatment of sewage on-site at this stage of the project is deemed as environmentally risky and as not feasible.

According to the Bulk Engineering Services Report (**Appendix D9**), waste water will have to be collected and disposed of at an operational wastewater treatment works. The closest wastewater treatment facility is located at Rietfontein, approximately 14km from the Hakskeen Pan. The treatment facility consists of a set of oxidation ponds. According to the municipality the system is hydraulically overloaded due to the additional sewage load received from Philandersbron and Loubos and is unable to accommodate additional load.

The following proposals may be considered:

- Increasing the capacity of the Rietfontein WWTW. Consider the possibility of increasing the capacity of the existing wastewater treatment works at Rietfontein to accommodate the current load from Rietfontein, Philandersbron and Askham, as well as the load that will be generated on Hakskeen Pan. This will be mutually beneficial for both stakeholders.
- On-site treatment. Depending on the volume generated, on-site treatment can be considered. This can be achieved by the construction of an on-site treatment facility, such as an oxidation pond system which require low maintenance. A package type plant can also be considered but have more operation and maintenance requirements. Environmental aspects will have to be considered.
- Chemical ablution facilities. The waste will have to be disposed of at a wastewater treatment facility. The only wastewater treatment works in the vicinity of Hakskeen Pan is at Rietfontein. The system is already overloaded and this option will not be viable.

Chemical ablution facilities would be the preferred measure, especially in the short term, due to the versatility of this measure (the location and number of toilets can be adapted as per each events requirement). However, since the waste will have to be disposed of at a wastewater treatment facility, and the only wastewater treatment works in the vicinity of Hakskeen Pan is at Rietfontein, which is already overloaded this option may not be viable, unless the waste is transported over a greater distance to a facility that has capacity, or until such time as the capacity at Rietfontein WWTW is increased.

An on-site package plant can also be a viable option, however, it should not be placed on, or in close proximity to the pan.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	~~NO~~
If YES, is it controlled by any legislation of any sphere of government?	~~YES~~	NO

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

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

Dust and Exhaust fumes from Bloodhound SSC during high speed runs

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	~~YES~~	NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	YES	~~NO~~
If YES, is it controlled by any legislation of any sphere of government?	~~YES~~	NO

Describe the noise in terms of type and level:

The Bloodhound SSC will attempt to break the current landspeed record, and will see the vehicle possibly breaking the sound barrier and resulting in a sonic boom.

During the record attempt, the vehicle will do two runs within an hour, resulting in potentially two sonic booms within approximately an hour. A sonic boom is very brief, typically between 100 and 500 milliseconds.

The noise will therefore only be temporary, and is not expected to have any significant impacts due to the location of the pan and its proximity to any residential areas (nearest town is located approximately 4km from the pan) and the topography. Spectators are also unlikely to be negatively impacted, as the noise will be anticipated and prepared for.

According to the Socio-economic Impact Assessment (**Appendix D2**), the closest towns to the site are located between 4 and 6.5 km from the site. Given these distances, the significance of the noise impacts generated during testing are likely to be low. In addition, testing will not be carried out at night when the potential for noise impacts on the nearest towns is greater.

The Hakskeen Pan is screened from the Klein Mier and Groot Mier by low, red dune ridges that flank the eastern part of the pan. These ridges will assist to reduce potential noise impacts to the east generated by high speed testing.

- **WATER USE**

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

~~Municipal~~	Water board	~~Groundwater~~	~~River, stream, dam or lake~~	Other	~~The activity will not use water~~

According to the Bulk Engineering Services Report (**Appendix D9**), the Kalahari-East to Mier Pipeline runs within the R31 road reserve, adjacent to the Hakskeen Pan. The pipeline was designed to supply potable water to the Mier area. The design capacity of the pipeline is approximately 13 l/s over twenty-four hours and operates under gravity.

A 21 ML earth-fill reservoir was also constructed approximately 6 km from Groot Mier to provide two weeks' storage capacity in the event of an emergency.

Water provision to Hakskeen Pan is not expected to be a problem. Water provision for the Bloodhound event will be required at the Technical Camp, 4 x potential temporary housing sites and the Speedweek camp. A water distribution network of approximately 25km will be required to servethe above-mentioned areas.

In the event that the demand exceeds the supply it is proposed that storage capacity be increased on site to store water during off peak times for use under peak conditions. This would be in the form of polypropylene tanks (Jo Jo tanks) that will provide four days storage capacity in the event of interrupted water supply and to accommodate peak flows.

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: -	litres

Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs? If YES, please provide proof that the application has been submitted to the Department of Water Affairs.	YES	~~NO~~

- **ENERGY EFFICIENCY**

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

N/A.

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

N/A

SECTION B: 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 B and indicate the area, which is covered by each copy No. on the Site Plan.

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

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

- Has a specialist been consulted to assist with the completion of this section? YES | NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:	**Province**	Northern Cape
	District Municipality	ZF Mgcawu District Municipality
	Local Municipality	Dawid Kruiper Local Municipality (formerly Mier Municipality)
	Ward Number(s)	
	Farm name and number	Farm 585, Portion 107 of Farm 585 and Portion 0 of Farm 122
	Portion number	
	SG Code	C02800000000058500000, C02800000000058500107, C02800000000012200000
	Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.	

Current land-use zoning as per local municipality IDP/records:	Agricultural zoning
	In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?	YES	~~NO~~

- **GRADIENT OF THE SITE**

Indicate the general gradient of the site.

Alternative S1:

Flat	~~1:50 – 1:20~~	~~1:20 – 1:15~~	~~1:15 – 1:10~~	~~1:10 – 1:7,5~~	~~1:7,5 – 1:5~~	~~Steeper than 1:5~~

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

Alternative S3 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

- **LOCATION IN LANDSCAPE**

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	
2.2 Plateau		2.5 Open valley		2.8 Dune	X
2.3 Side slope of hill/mountain		2.6 Plain		2.9 Seafront	
2.10 At sea					

- **GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

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

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)	~~YES~~	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	~~YES~~	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	~~NO~~	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	~~NO~~	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	~~NO~~	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	~~NO~~	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	~~NO~~	YES	NO	YES	NO
An area sensitive to erosion	~~YES~~	NO	YES	NO	YES	NO

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.

Please refer to the Wetland Hydropedology Impact Report (**Appendix D3**), for a detailed description of the geology and hydrogeology of Hakskeen Pan.

According to the Wetland Hydropedology Impact Report (**Appendix D3**), the soils within the pan can be divided into three main groups as based on surface characteristics. The surface characteristics have a significant influence on the trafficability of the pan surface as well as the measurement of penetration resistance.

- Soils with Rocks and Rock Outcrops

These soils occur mainly on the edge of the pan and are characterised by significant occurrences of loose rock and rock outcrops

- Soils with a Hard or Thin Surface Crust

Soils with a hard or thin surface crust dominate in the pan and typically exhibit prisms with some cracks that extend downwards for a centimetre or two. These soils appear to not have significant salt accumulation at the surface and are considered to form part of the dryer parts of the pan. As a consequence, vehicle and tyre track impacts are limited to the surface and without indentations

- Soils with a Soft and Puffy Surface Crust

Soils with puffy surface crusts are considered to occur in locally wetter areas of the pan. The distribution of these soils is erratic for most of the pan but they also occur in concentrated areas throughout the pan. The soil surface consists of a thin and very brittle soil crust with precipitated salts underneath. Vehicle tracks are distinctly more visible as the surface crusts are crushed.

Penetration resistance data as generated for the track is split into two sets namely 1) the bulk of the samples and 2) four points sampled around point H5. The penetration resistance values for the bulk of the sample sites indicate that the soils increase in hardness rapidly within 1 to 2 cm depth. At a depth of 3 cm the average value exceeds 4000 kPa and at a depth of 5 cm all the samples exceeded values of 5000 kPa. In comparison, the values generated for Point H5 differed markedly as the maximum penetration resistance was only encountered at a depth of 11 to 12 cm. The bulk of the samples correspond to areas described as hard or thin surface crusts) and the samples generated at Point H5 correlate with those described as (soft and puffy surface crusts).

The Electrical Conductivity values for the soils are extremely high and indicative of significant concentrations of soluble salts.

The particle size analysis and texture data indicates that the pan is dominated by materials of the fine / very fine sand fraction as well as silt and clay particles.

The results of the mineralogical analysis confirms the presence of large concentrations of Na and Cl in the form of high percentages of halite. Most of the other minerals are not very soluble (and some are almost completely insoluble) and their constituents will therefore not have been detected with the chemical analysis of soil samples. However, the presence of significant quantities of $CaCO_3$ indicates the presence of large quantities of $HCO3^{-}/CO3^{-2}$ anions. The $CaCO_3$ is almost completely insoluble at the pH levels found in the pan soils and therefore it is considered to have made a very negligible contribution to the soluble Ca determined in the water extracts.

According to Freshwater Assessment (**Appendix D4**), ground water movement is from the mostly dry Aoub River south westerly towards Mier and Hakskeen Pan. Ground water is in the secondary aquifer in the Dwyka formation tillites. Yields differ widely, even 10 m apart. Ground water quality is very poor with high conductivity and exceeds the 60 mS/m drinking water level. The saltiness is mostly the results of high concentrations of chlorides. The formation underlying Hakskeen Pan is largely impermeable and floodwater evidently does not “leak” into the ground water.

Temporary wetlands can be demarcated by soils. Most soil types have a concentration of iron oxides that are reduced under the anaerobic conditions in waterlogged soils. The reduced product typically

shows up grey and these soils become increasingly mottled as waterlogged and dry conditions alternate. This is a process known as “gleying”.

The shallow soils of Hakskeen Pan are derived from weathered tillite. When dry these soils typically crack. It feels spongy under foot. These are not the soils that have been described for temporary wetlands. It is a soil specific to the ephemeral pans of the Northern Cape, such as Hakskeen Pan.

- **GROUNDCOVER**

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

~~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~~
~~Sport field~~	~~Cultivated land~~	~~Paved surface~~	~~Building or other structure~~	~~Bare soil~~

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.

- **SURFACE WATER**

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	~~YES~~	~~NO~~	~~UNSURE~~
Non-Perennial River	~~YES~~	~~NO~~	~~UNSURE~~
Permanent Wetland	~~YES~~	~~NO~~	~~UNSURE~~
Seasonal Wetland – Please see description below	~~YES~~	~~NO~~	~~UNSURE~~
Artificial Wetland	~~YES~~	~~NO~~	~~UNSURE~~
Estuarine / Lagoonal wetland	~~YES~~	~~NO~~	~~UNSURE~~

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

The classification of Hakskeen Pan as a wetland has been problematic, as it does not necessarily conform to the general description of a wetland.

According to the Freshwater Assessment (**Appendix D4**), an ephemeral pan in an arid landscape does not fit the general description of a wetland in various South African policy documents.

According to the Wetland Hydropedology Assessment (**Appendix D3**), in 2005 the Department of Water Affairs and Forestry published a manual entitled "A practical field procedure for identification and delineation of wetland and riparian areas" (DWAF, 2005). The "…manual describes field indicators and methods for determining whether an area is a wetland or riparian area, and for finding its boundaries." The definition of a wetland in the guidelines is that of the NWA and it states that wetlands must have one or more of the following attributes:

- "Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation""
- The presence, at least occasionally, of water loving plants (hydrophytes)"
- "A high water table that results in saturation at or near the surface, leading to anaerobic conditions developing in the top 50cm of the soil."

The guidelines further list four indicators to be used for the finding of the outer edge of a wetland. These are:

- Terrain Unit Indicator. The terrain unit indicator does not only identify valley bottom wetlands but also wetlands on steep and mild slopes in crest, midslope and footslope positions.
- Soil Form Indicator. A number of soil forms are listed as indicative of permanent, seasonal and temporary wetland zones.
- Soil Wetness Indicator. Certain soil colours and mottles are indicated as colours of wet soils. The guidelines stipulate that this is the primary indicator for wetland soils. (Refer to the guidelines for a detailed description of the colour indicators.) In essence, the reduction and removal of Fe in the form of "bleaching" and the accumulation of Fe in the form of mottles are the two main criteria for the identification of soils that are periodically or permanently wet.
- Vegetation Indicator. This is a key component of the definition of a wetland in the NWA. It often happens though that vegetation is disturbed and the guidelines therefore place greater emphasis on the soil form and soil wetness indicators as these are more permanent whereas vegetation communities are dynamic and react rapidly to external factors such as climate and human activities.

The main emphasis of the guidelines is therefore the use soils (soil form and wetness) as the criteria for the delineation of wetlands.

From the detailed soil survey conducted for the site (as reported earlier) no hydromorphic soils were found. The only soils found in the pan and catchment are arid soil forms without redox morphology. All the soil features point to periodic influences of water but the expression of prolonged saturation in the form of redox indicators is lacking. In addition, the presence of relatively high levels of NO_3 on the pan indicates arid conditions in which there is not enough saturation (both in terms of intensity and duration) to reduce NO_3 compounds. This is a basic first step requirement for redox morphology to develop. Therefore, there is no support for considering the pan a wetland area from a soil form or soil wetness indicator perspective.

Although the definition of Hakskeen Pan as a wetland is problematic, according to the Fresh Water Report (**Appendix D4**), is can be assumed that Hakskeen Pan is indeed a legitimate water resource that answers to the definition of the National Water Act, even though the only acknowledged user of the resource is nature. Because of the dormant but very much alive biota in the bone-dry soil, it is indeed a water resource, even though there is no water during the dry part of the cycle.

With regards to the ecological importance and sensitivity of Hakskeen Pan, according to the Fresh Water Report (**Appendix D4**), Hakskeen Pan should not be considered to be particularly sensitive.

However, because there might be endemic species, Hakskeen Pan might be important from a conservation point of view. The presence of such species is still to be confirmed by scientific research.

It must be noted that due to the limited timeframes, extensive and long-term studies of the pan are not possible in this application.

- **LAND USE CHARACTER OF SURROUNDING AREA**

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

Natural area	~~Dam or reservoir~~	~~Polo fields~~
~~Low density residential~~	~~Hospital/medical centre~~	~~Filling station~~ ~~H~~
~~Medium density residential~~	~~School~~	~~Landfill or waste treatment site~~
~~High density residential~~	~~Tertiary education facility~~	~~Plantation~~
~~Informal residential~~~~A~~	~~Church~~	~~Agriculture~~
~~Retail commercial & warehousing~~	~~Old age home~~	River, stream or wetland – please see description above
~~Light industrial~~	~~Sewage treatment plant~~~~A~~	~~Nature conservation area~~
~~Medium industrial~~ ~~AN~~	~~Train station or shunting yard~~ ~~N~~	~~Mountain, koppie or ridge~~
~~Heavy industrial~~ ~~AN~~	~~Railway line~~ ~~N~~	~~Museum~~
~~Power station~~	~~Major road (4 lanes or more)~~ ~~N~~	~~Historical building~~
~~Office/consulting room~~	~~Airport~~ ~~N~~	~~Protected Area~~
~~Military or police base/station/compound~~	~~Harbour~~	~~Graveyard~~
~~Spoil heap or slimes dam~~~~A~~	~~Sport facilities~~	~~Archaeological site~~
~~Quarry, sand or borrow pit~~	~~Golf course~~	Other land uses (describe)

If any of the boxes marked with an "N "are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	~~YES~~	NO
Core area of a protected area?	~~YES~~	NO
Buffer area of a protected area?	~~YES~~	NO
Planned expansion area of an existing protected area?	~~YES~~	NO
Existing offset area associated with a previous Environmental Authorisation?	~~YES~~	NO
Buffer area of the SKA?	~~YES~~	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A

- **CULTURAL/HISTORICAL FEATURES**

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 paleontological sites, on or close (within 20m) to the site? If YES, explain:	YES	~~NO~~
	Uncertain	
A number of Heritage resources were identified in and around the study area. Please see description and findings below.		

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:
A Heritage Impact Assessment was conducted on the study area to evaluate impacts of the proposed activity on cultural heritage resources. According to the Heritage Impact Assessment (**Appendix D5**), the following observations were made: - <u>On the pan</u> In the piles of stone cleared from the proposed track, much of this material was found to be rock that is sedimentary and not in any way archaeological in nature. A second component consists of small quartzite and other pebbles, many of them rounded, possibly derived from Dwyka tillite known to occur in the wider landscape. A very few of these latter had been flaked or consisted of flakes, constituting an extremely ephemeral archaeological trace on the pan floor. Their very small number indicates a near to zero impact on archaeological traces by any of the proposed developments on the pan surface itself including in the vicinity of the MNT tower and the proposed fuel depots. While traversing the pan not a single such artefact was found *in situ*. - <u>In the dunes adjacent to the pan</u> An unmarked grave, elliptical in shape and capped by flat stones, was recorded at 26°46'00.6" 20°13'50.0" near the old road that used to traverse the pan

A number of isolated finds (see table 3.4.1 of the Heritage Impact Assessment (**Appendix D5**)) were located at the landside camp/ Speedweek camp that indicate the presence of Stone Age occupation at various times in the past. None of these appeared to constitute a specific site that was readily definable spatially, but rather a palimpsest of repeated perhaps ephemeral inhabitations of uses of the dunes. It is conceivable that further material or higher densities occur below the surface. In this respect it was notable that exposed artefacts occur on relatively deflated surfaces as opposed to those over which active dunes are in formation.

- Fuel Depot Options and Technical Camp Option A:

The area indicated for Fuel Depot Option A and Technical Camp Option A is situated on the pan surface on the west side of the pan alongside the old Rietfontein road. This area was traversed on foot, revealing between zero and an extremely low number of flakes stone pieces, very widely scattered. This observation is consistent with observations made above for the pan floor in general.

This once again represents an extremely ephemeral archaeological trace on the pan floor where the proposed possible development would constitute a near to zero impact on archaeological traces.

The proposed site of Fuel Depot Option B (see Fig 18) is upslope, i.e. westwards, from Option A, also alongside and just north of the old Rietfontein road. It is on the gently sloping ground rising westwards from the pan and on a surface strewn with Dwyka tillite-derived cobbles and, and amongst them, much flaked Stone Age material.

Although this locale is rich in stone tools, these are probably a lag deposit, i.e. not in primary context, and hence lacking in archaeological integrity: no stratigraphy; no organic preservation; limited opportunities of charatcterising the material in any meaningful way. Almost all spreads of Dwyka tillite in the region display similar artefactual content, and this was found to be the case at Loubos as well

- Technical Camp Option B and Trackside Airstrip

These areas of potential development are both situated on the pan floor at the north western end of the pan, south of the R31 between Mier and Rietfontein. These locales have the same characteristics of other pan floor settings described above, with zero or near zero archaeological traces. There would be no heritage impact by any infrastructure development in these areas.

In terms of significance, according to the Heritage Impact Assessment (**Appendix D5**), the very small numbers of isolated artefacts noted (they seem also to be widely distributed through time, from Earlier Stone Age [>500 000 years old] to Later Stone Age [perhaps up to the 19th century]) suggests that they have low local significance (to be graded 3C in terms of the National Heritage Resources Act).

The grave is of high sensitivity and should be subject to a detailed management plan if there is a chance that development may encroach into the area where it is situated.

All pan and pan-side settings, with the exception of the grave site, the significance of impact is likely to be low. The grave site is of high sensitivity and it is recommended that it be a no-go area.

According to the Palaeontological Desktop Assessment (**Appendix D6**), the sensitivity of the study area is difficult to gauge at present since the palaeontology of Hakskeen Pan and its surrounds is currently very poorly-known. Most of the pan itself is probably of low sensitivity but there are several sedimentary rock units represented around the margins of the pan that are either already known to contain fossils or that might prove fossiliferous.

Dwyka Group glacially-related bedrocks cropping out along the western and eastern margins of Hakskeen Pan have previously been reported to contain fossil Permo-Carboniferous plants - *e.g.*

Glossopteris leaves, with petrified wood also a possibility - but precise locality details are not available. The overlying postglacial Prince Albert Formation (Ecca Group), cropping out along the southern pan margins, is unusually well-exposed in the region but in this area its palaeontology is unknown. It might contain trace fossils, invertebrates and plant remains, for example. Baking of the Ecca mudrocks by Karoo dolerite intrusions may have enhanced or compromised fossil preservation. Surface gravels in pan areas might contain reworked blocks of petrified wood and teeth reworked from older sediments by erosional downwasting and sheetwash. Elsewhere in the Northern Cape dense concentrations of Pleistocene freshwater molluscs as well as disarticulated remains of fishes, birds, crabs and undetermined teeth have been reported along pan margins. Calcrete hardpans, which are especially well-developed in areas with dolerite intrusions, might contain trace fossils as well as rare vertebrate remains.

Event infrastructure as well as tourism project-related activities might disturb or damage valuable fossil heritage around the pan margins. There has already been a degree of surface disturbance entailed by the landspeed record project (*e.g.* collection of surface rocks, infilling of borrow pits). As a precautionary measure, it is therefore recommended that a short specialist palaeontological field assessment of the Hakskeen Pan project area takes place with special focus on the pan margins and rock dumps. The resulting report to SAHRA (South African Heritage Resources Agency) should document and briefly assess any fossil remains found as well as make recommendations for any mitigation measures for the remaining phases of the development.

Will any building or structure older than 60 years be affected in any way?	~~YES~~	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO
If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority. Please note that the site is larger than 5 000m^2 and the character of the site will change. The project is therefore subject to Section 38(1) of the NHRA. The project has been registered with SAHRA through SAHRIS		

- **SOCIO-ECONOMIC CHARACTER**

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The proposed project area is located within the Dawid Kruiper Local Municipality which was established in August 2016 through the amalgamation of the //Khara Hais and Mier Local Municipality. The demographic and municipal services data for the //Khara Hais and Mier Local Municipalities is therefore used in the Socio-economic Impact Assessment (**Appendix D2**). This also enables the study to gain a better understanding of the local conditions in the vicinity of the study area, namely Hakskeen Pan.

According to the Socio-economic Impact Assessment (**Appendix D2**), in terms of employment, the official unemployment rate in the //Khara Hais Local Municipality decreased for the ten year period

between 2001 and 2011, falling from 34.0 to 22.1% of the economically active population. Youth unemployment in the //Khara Hais Local Municipality also dropped over the same period, from 42.3 to 29%. For the same period the unemployment rate in the Mier Local Municipality increased, from 30.4 to 30.9%, which is higher than the provincial average of 27.4%. Youth unemployment in the Mier Local Municipality decreased over the same period, from 41.0 to 35.2%, which is marginally higher than the provincial average of 34.5%. It should also be noted that the unemployment figures do not reflect the fact that a large percentage of the low skilled employment in the Mier Local Municipality is likely to be seasonal and linked to the agricultural sector.

Economic profile of local municipality:

According to the Socio-economic Impact Assessment (**Appendix D2**), Upington is the main town of the Dawid Kruiper Local Municipality and has, since its inception, been the hub of activities in the region. In terms of its economic role the town serves as:

- Agricultural hub of the Northern Cape;
- Portal to Namibia and vice versa;
- Frontier to the Kalahari and Kgalagadi Transfrontier Park;
- Portal to the Kalahari's hunting grounds.

In terms of economic indicators, the Municipality enjoys comparative advantages in all of the economic sectors, except mining, compared to the other local municipalities that make up the ZF Mcgawu District Municipality. The fastest growing sectors in the Municipality are agriculture, electricity and water, and mining sectors. The IDP notes that the current growth occurring in these sectors should be exploited to ensure the creation of new job opportunities for local people.

Agricultural sector

The agricultural sector is largely linked to irrigation along the Orange River (Gariep), specifically table and wine grapes. In this regard the //Khara Hais region accounts for ~ 40% of South Africa's grape exports. Most of Upington's wines are produced by Orange River Wine Cellars (OWC). The company has 6 depots in the area (all of them located adjacent to the Orange River) at Upington, Kanoneiland, Grootdrink, Kakamas, Keimoes and Groblershoop. The wines from OWC are exported, inter alia, to Europe and the USA. A number of privately owned cellars also exist in the area.

In terms of the agricultural sector there are 7 smaller rural settlements and various farms. Settlements include: Lambrechtsdrift, Karos, Leerkrans, Leseding, Raaswater, Sesbrugge and Klippunt, and Kalksloot. The inhabitants of these settlements are mainly reliant upon agricultural activities for their livelihoods.

Tourism sector

Upington is well situated as a base for exploration of the region, and has an outstanding infrastructure in the form of accommodation. Various areas are classified as nature conservation areas. Spitskop Nature Reserve lies 13 km north of Upington. This nature reserve, of approximately 6 000 hectares, supports gemsbok, zebra, springbok, ostrich, eland, blue wildebeest, as well as smaller game, and can be viewed from a circular route running through the park. Other nature areas within the jurisdiction of //Khara Hais are Gariep Lodge and Uizip. The Kalahari Oranje Museum Complex has the status of a regional- and provincial museum. There are also a number of declared national monuments, including:

- Roman Catholic Church in Le Roux Street (still in use);
- NG Mother Community in Schroder Street (still in use);
- Hortentia water mill;
- Missionary complex in Schroder Street (building is being used as a museum).

Business sector

The central business district of Upington is located along the northern bank of the Orange River (then Gariep River). Due to certain physical limitations, such as the Orange River to the south and south-east and the railway line to the north, the business district has expanded westwards. Smaller suburban shopping centres are found in all residential areas. Both industrial areas on the northern and the south-western sides of the town (Updustria & Laboria) have railway facilities. Due to the unique spatial manifestation of the municipality, both the first and second economy is mostly located around the CBD and farms. Upington has a well-defined business centre with numerous residential areas. Secondary activities in the study area are mainly light industrial, warehousing, and light engineering works. Main traffic routes connect Upington, the hub of activities in the region, to cities like Kimberley, Johannesburg, Cape Town and Namibia. Upington also serves as the 'Portal' to Namibia and vice versa, the 'Frontier' to the Kalahari and the Kgalagadi Transfrontier Park, the 'Oasis' in the desert', the Agricultural hub of the Northern Cape, and the 'Portal to the Kalahari's hunting ground. Furthermore, two major national parks are situated within a few hours' drive from Upington.

Although there are a large variety of industries, there is a shortage of manufacturing industries. In this regard the //Khara Hais Local Municipality's economy is centred on the trade and retail sector, due to its strong tourism sector, leaving the local economy fairly vulnerable for any significant changes in this industry. The IDP therefore highlights the need for the //Khara Hais Local Municipality to diversify its economy into other sectors. The development of the renewable energy sector will create opportunities to diversify the local economy. The IDP also indicates that the manufacturing sector is one of the lowest performing sectors of the local economy. As a result much in the municipality has to be sourced from outside of the municipal boundaries, resulting in money flowing out of the local economy. Despite the current poor performance of the manufacturing sector there are a number of potential opportunities linked to the agro-processing and other activities.

The IDP identifies a number of potential development constraints and challenges facing the //Khara Hais Local Municipality. Of relevance to the proposed development these include a shortage of job opportunities in the area. As a result job seekers are forced to seek employment opportunities outside of the Municipality (e.g. Kimberley), etc. Despite this the employment rate for the Municipality is relatively high, with as much as 75% of people of working age who are actively seeking employment being able to secure a job. However, the majority of the employed population is found in elementary occupations, which require little or no skills. This is also reflected in the low education levels of the local population, with as much as 12% of the population aged 20 years and older having no form of education whatsoever. This, to some extent, constrains the development potential of the Municipality in the development of more advanced industries. The level of employment and type of occupations taken up by the population of the Municipality also directly affects their income levels. The low income levels also impact on buying power and the creation of business opportunities (//Khara Hais Local Municipality IDP 2012-2017).

In terms of opportunities, Upington Airport has been identified as an alternative or supplement for the O.R Tambo International Airport for cargo traffic, as there is less congestion and quicker airport turnaround times, shorter-to-market timeframes which would enhance product freshness by one day, and improved supply-chain performance, therefore offering greater benefits for cargo airlines and both importers and exporters of goods. The long runway and the strategically advantageous location of the Upington Airport make it ideal to serve the African continent. Due to this, the establishment of an Industrial Development Zone (IDZ) at the airport was proposed to (KHLM IDP 2012-2017). However, the establishment of an IDZ (Industrial Development Zone) has been replaced by the proposed establishment of a SEZ's (Special Economic Zone). New IDZ's are only established at ports and bigger manufacturing hubs.

Level of education:

Education levels in the //Khara Hais Local Municipality improved between 2001 and 2011 with the percentage of the population over 20 years of age with no schooling dropping from 13.6% to 7.1%. The percentage of the population over the age of 20 with matric also increased from 20.9 to 26.0%.

For the Mier Local Municipality the percentage of the population over 20 years of age with no schooling dropped from 19.9 to 9.1%. The percentage of the population over the age of 20 with matric also increased from 11.6 to 14.9%. The matric figures for the Mier Local Municipality are however significantly lower than the average for the ZF Mcgawu District Municipality (21.7%) and the Northern Cape (22.7%). The low education levels relative to the provincial average are likely to be linked to poor education facilities and access to good quality teachers in the Mier Local Municipality. The low matric levels will have an impact on the skills levels in the Mier Local Municipality and the economic mobility of school leavers.

The higher than average figures for the //Khara Hais Local Municipality reflect the important economic role played by the town of Upington and the associated well developed education facilities in the town.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Unknown at this stage	
What is the expected yearly income that will be generated by or as a result of the activity?	Unknown at this stage	
Will the activity contribute to service infrastructure?	YES	~~NO~~
Is the activity a public amenity?	YES	~~NO~~
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	More than 300. Please refer to Section 4.4 of Socio-economic Impact Assessment (**Appendix D2**	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	
How many permanent new employment opportunities will be created during the operational phase of the activity?	Please refer to Section 4.5 of Socio-economic Impact Assessment (**Appendix D2**	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown at this stage	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown at this stage	

- **BIODIVERSITY**

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information

(including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	N/A. No CBAs were identified on SANBI BGIS

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	~90%	The majority of the study (pan and pan edge) is natural to near natural, with only very limited disturbance.
Degraded (includes areas heavily invaded by alien plants)	~10 %	Only a small portion of the entire pan and pan edge has been impacted on. This includes the clearing of the 20km track, which accounts for approximately 7% of the pan surface area. Impacted areas also includes the existing tracks on the pan, the existing causeway that has been cleared, the Speedweek/ Landside camp area and the technical camp area (MTN telecommunications base station. There is some alien vegetation present in the study area. According to the Flora Assessment (**Appendix D7**), one invader species listed in NEMBA, 2004 (Act 10 of 2004) a Category 3 invasive species was observed, namely *Prosopis glandulosa* (Honey mesquite). Honey mesquite was found at almost all of the survey sites and is distributed across most of the project site where vegetation occurs, i.e. on the outskirts and outside the pan.
Transformed		

(includes cultivation, dams, urban, plantation, roads, etc)		

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	~~Critical~~ ~~Endangered~~ ~~Vulnerable~~ Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
		YES	~~NO~~	~~UNSURE~~	~~YES~~	NO	~~YES~~	NO

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Vegetation

According to the Flora Assessment (**Appendix D7**), Hakskeen Pan is designated as Southern Kalahari Salt Pans (AZi4) and is located within the Kalahari Karroid Shrubland (NKb5) vegetation unit which forms part of the Nama-Karoo Biome and Savanna Biome.

Southern Kalahari Salt Pans are described as low grasslands on pan bottoms (these often devoid of vegetation) often dominated by *Sporobolus* species, with a mixture of dwarf shrubs. The low shrubland dominated by *Lycium* and/or *Rhigozum* usually forms the outer belt in the salt-pan zonation systems. Other important plant species associated with these pans are *Zygophyllum tenue* and *Salsola scopiformis* as well as the herbs *Hirpicium gazanioides*, *Tribulus terrestris*; the succulent herb *Trianthema triquetra* subsp. *parvifolia* and the grasses *Enneapogon desvauxii*, *Eragrostis truncata*, *Sporobolus coromandelianus*, *S. rangei* and *Panicum impeditum*.

Kalahari Karroid Shrubland is described as a low Karroid shrubland on flat, gravel plains, where Karoo elements meet with northern floristic elements, indicating a transition to the Kalahari region and sandy soils.

Hakskeen Pan falls within the 2026CC Quarter Degree Square (QDS). The area of the pan, and subsequently the project site, is approximately 168 km^2. Information on plant species recorded for the 2026CC Quarter Degree Square was extracted from the Plants Of South Africa (POSA) online database hosted by SANBI.

According to the Flora Assessment (**Appendix D7**), 17 plant species are recorded for the 2026C Quarter Degree Square in which Hakskeen Pan occurs, as contained in the POSA database.

All of the plant species listed for the QDS are classified with a “LC” (Least Concern) Red Data status and are therefore, considered at a low risk of extinction and includes widespread and abundant species. None of the species listed are endemic to South Africa.

No tree species protected in terms of Section 12(d) of the National Forests Act, 1998 (Act No. 84 of 1998) are listed for the QDS.

None of the species listed by SANBI for the QDS are contained the Threatened and Protected Species (ToPS) List, as published in the Government Gazette Notice No. 389 of 2013 (16 April 2013) as part NEMBA, 2004 (Act 10 of 2004).

No plant species of conservation concern were found to occur on the study site.

According to the Flora Assessment (**Appendix D7**

), the vast majority of the pan is devoid of vegetation (please also see Figure 4 below). Where vegetation was found in the pan it was clustered and generally consisted only of the Ganna plant (*Salsola scopiformis*). The edges of the pan were found to generally have more vegetation, but still with low species diversity.

All sites surveyed exhibited little grass cover, however this may, in part, be due to the dry conditions around the time of the site visit and grazing from community livestock.

The location of the speed events infrastructure is optimally situated in terms of vegetation, as the layout is currently situated on those areas with the least vegetative cover. Therefore this layout would have the lowest impact. The western edge of the pan has relatively more vegetative cover than the rest of the pan due to the streams entering the Hakskeen Pan. However, it is important to note that none of the areas investigated are considered to be sensitive in terms of flora and even though the western edge of the pan is more vegetated the species diversity and sensitivity remains low.

No species of conservation concern were found to occur on site. However, one Alien Invasive Plant species (Category 3), *Prosopis glandulosa* (Honey mesquite), was found to be widespread on the project site.

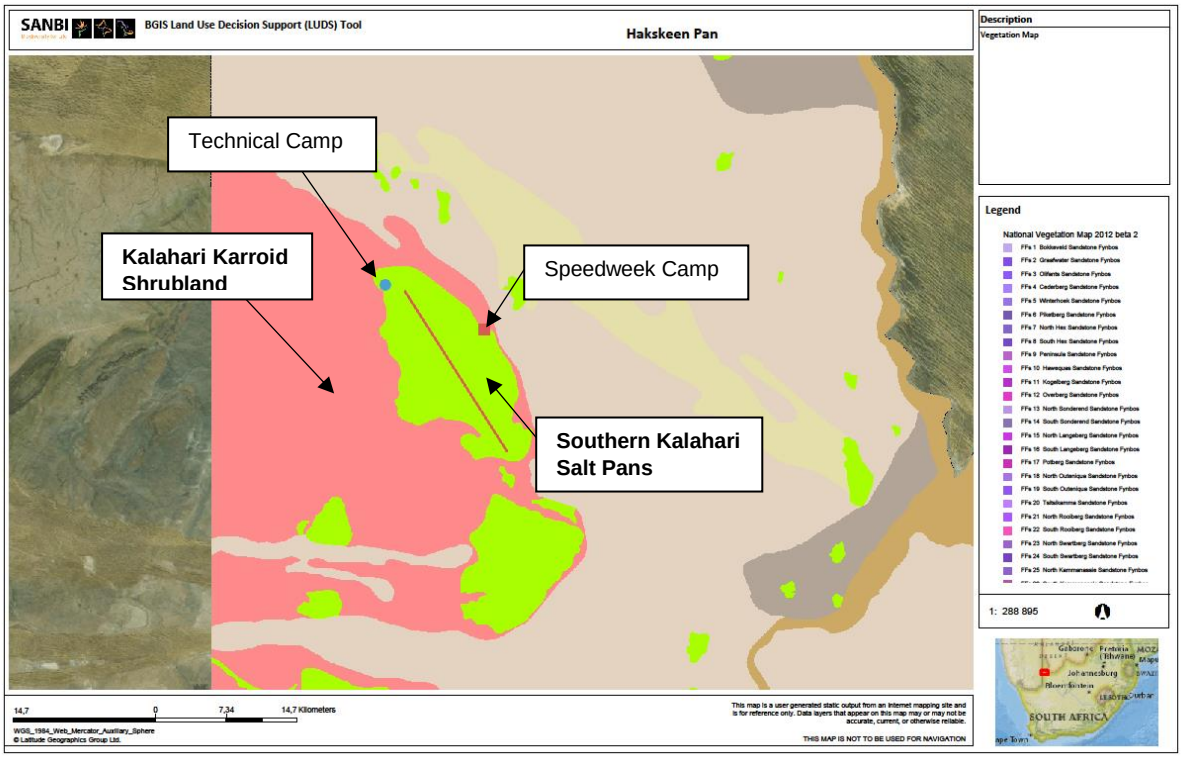

Figure 3: SANBI BGIS map showing the vegetation cover of the area.

Figure 4: General view of the pan showing the distinct lack of vegetation.

Figure 5: General view of the pan edge.

Figure 6: General view of at the Speedweek/landside camp.

Fauna

Please refer to the Terrestrial Impact Assessment (**Appendix D8**) for a detailed description of the fauna found within the study area.

According to Terrestrial Impact Assessment (**Appendix D8**) seven (7) red data species (either Threatened or Protected Species protected under NEMBA or IUCN, or both) were found in the region for the area in which Hakskeen Pan is located. However, most of these species had focused activity on the western border of the pan where the development is minimal and in most cases the habitat there will remain undamaged, if well mitigated.

The larger area and the center of the Hakskeen Pan were investigated as thoroughly as possible due to movement restraints to protect the integrity of the soil of the pan. The habitat integrity was found to be in an intact manner for the area and especially on the western side signs of movement and activity were sighted. No animals or movement were observed on the pan itself, as it is extremely dry and hot, reaching temperatures above 40 degrees. The soil was found to be compacted, which is expected from a pan, which in essence is a closed system.

To the eastern side of the pan, there are signs of human intervention, particularly where the tower and ablution buildings are located. The field visit was held approximately a week after a larger camping out event and after a week minimal signs of human disturbance were visible due to the hardy nature of the soil and the environment.

Important findings of the Terrestrial Impact Assessment (Appendix D8)

- ***Ad hoc Sensitive species and areas***

Water means life and in this instance the increase in habitat is evident towards the western side of the pan where the drainage lines are located. This area was identified as more sensitive due to increase in numbers and diversity of species within the framework of this study (see Figure 7 below). The sensitive areas were determined based on the close relationship and dependence faunal species will have with their habitat and in this case, the increase of the shrub and tree layer, means the increase in shelter and food resources. These increases were mostly consisting of invertebrates, several bird species and butterflies which all depend on the shelter and food source provided during some stage of their lifecycle. Increase in invertebrates, reptiles, small mammals and birds are all favorable for the occurrence for predatory species as well.

Fuel Depot Option B is closest to the drainage areas and therefore, the area proposed for the Fuel storage Option A is deemed more plausible from an ecological point of view, although it is important that the area be bunded or other protection measures be implemented to protect the pan when flooding occurs. The fairy shrimp that hatches when the pan is under water will become extinct if fuel and oils are allowed to enter the surface water.

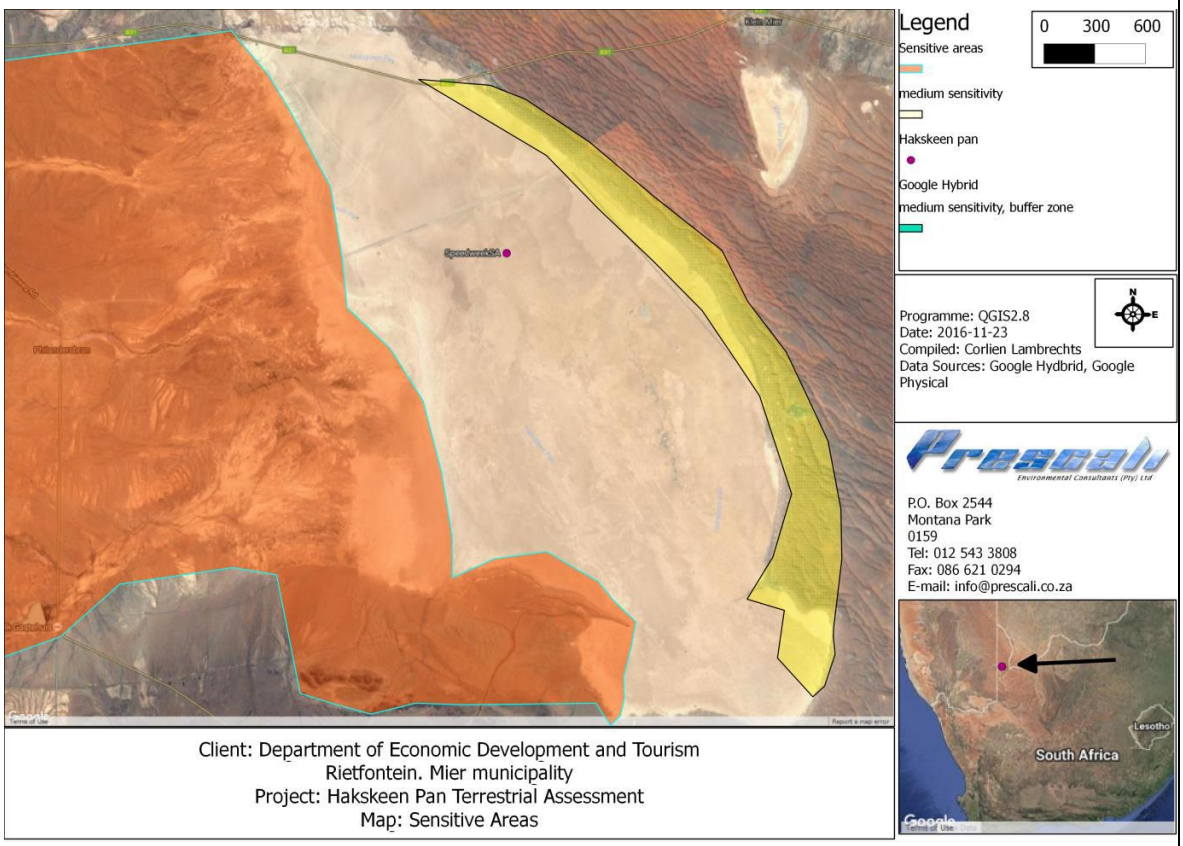

Figure 7. Sensitivity map produced to give an indication of sensitive drainage areas and the dunes (**Figure 5-1 of Appendix D8**)

- **Mammals**

The habitat type suggests low/moderate species diversity in terms of mammalian groups. The surrounding farms has several game listed and is also used for hunting activities in some areas. Several burrows were sighted during the field survey, which suggests jackal, ground squirrel and aardvark activity. They are expected within the area and specific habitat type.

The areas to the west where most of the species activities were seen or signs located, indicate the western areas has more shelter available and did have increased shrub and thorn tree habitat which attracted more animal species than those found on the eastern borders. The western area of the pan is characterized by drainage lines and water will occur longer here after rain events. This is where most of the diggings and droppings were found along the dry drainage channels and more root-rich areas.

Several carcasses of antelope were found in the eastern borders, indicating the harsh environment and the suspected problematic fencing leading to the early demise of these animals. As nature intends, carcasses was visibly utilized by the predatory species in the area.

In accordance with the 2015 ToPS listing, several mammals are listed under “The Protected Species Species”, listed because of their high conservation value and of national importance. The Aardvark, *Orycteropus afer*, is listed within this category.

- **Mammalian richness**

An evaluation of the habitat type and the state of the environment leads to the assumption that there is moderate wildlife diversity and richness within this area. This is however typical of the Kalahari environment and animals living here are adapted for this conditions and lifestyle.

The richness of all animals found during the study seemed to be highest in the western areas declining toward the eastern dryer parts of the pan.

- **Avi-fauna**

The birds noted in the baseline study show that the species richness is high within the area. Most birds expected to be seen within the area are Near Passerine birds and Birds of Prey. This may be because of the sparse vegetation layer, and the availability of only shrub or tree layer within the area, mostly *Acacia* species, which provide suitable feeding and nesting possibilities for some tree dwelling species.

Important Avi-fauna was sighted in the field assessment, with protected statuses. These were only located to the far north of the site and to the western border.

- *Gyps africanus* (White-backed vulture) (Critically Endangered IUCN 3.1) and Endangered ToPS listed, 2015
- *Ardeotis kori* (Kori bustard) (Near-Threatened status in IUCN 3.1) and Protected ToPS 20133
- *Phoenicopterus ruber* Flamingos, presumably Greater Flamingo apparently come to feed on the fairy shrimp when the pan is flooded.

- **Amphibians**

The habitat type within the area implies that there are not many suitable areas or niches for these types of species. No surface water is present within the project site or near the Hakskeen Pan development. Sites with water is located toward the western border and further upstream associated with the river and various wetlands. None of these are close to the project area.

It is however important to note that the broader area mat contain other farm surface water areas which is not salt dominated, and therefore will be habitat for amphibians. These areas will not be impacted by the activities on Hakskeen Pan.

- **Reptiles**

During the field visit the following species was encountered in the field:

- *Trachylepsis spilogaster* (Kalahari tree skink),
- *Trachylepis sparsa* (Karasburg Tree Skink)
- Amphisbaenidae, spp unknown. (Round headed worm lizard)

It is however important to note that no Red data species occur within this area (according to SANBI database) and all species recorded during the baseline study is of the Least Concern status within the IUCN list.

- **Insects**

Insects will not be considered within this document due to their abundance in the veld and low importance in the framework and objective of this study. Insects are considered to remain if habitat stays favorable. Insects are an important food source for other animals, such as the Aardvark burrows that was seen towards the western side of the pan. Insects are also mostly dependent on smaller scale variations and habitats and are unlikely to be disturbed due to activities happening in Hakskeen Pan. As activities on Hakskeen Pan will not result in significant vegetation destruction, minimal impacts are foreseen on insects in the regional sense.

Also, no species within the area are known to be threatened or listed on the global conservancy list (IUCN). All species should be protected by ensuring the EMP makes provision for adequate habitat protection to protect the various micro-habitats of these insects.

Only one group of the Insecta Class is considered within this report due to their importance and ecological significance within ecosystems and is easily impacted due to their sensitive nature. Only one butterflies previously recorded within the area is mentioned within The South African LepiMAP: Atlas of African Lepidoptera.

Please note that these species is not expected to occur on the pan itself, only in the surrounding areas as there are limited to no vegetation on the pan. These species will be dependent on their food source plants, which is mostly trees and shrubs, all located towards the northern and western areas of the Hakskeen Pan.

- **Spiders and scorpions**

No scorpions were encountered during the field survey, but the area is expected to have a high density of spiders and scorpions. The following spiders were encountered during the field survey.:

- Agelenidae (Funnel-web spiders)
- *Theuma schultzei* (Free living ground dwelling spiders)

Baboon and Trapdoor spiders are also known to occur within these areas as well as several medicinally important spiders are known to occur, although not encountered during the field survey:

- *Loxosceles parramae* (Violin spider spp.)
- *Sicarius hahni* (Six-eyed sand spiders)

- **Crustacea**

Branchinella is a crustacean genus in the family Thamnocephalidae. This Fairy shrimp genus is found across many parts of the world, but especially western Australia and southern Africa. The Hakskeen Pan is home to the Fairy shrimps and they are extremely sensitive to pollution and easily affected by habitat destruction.

Several species are threatened by habitat destruction, and *B. latzi* might be extinct. The latter species was formerly found in waterholes at Uluru, but these have become polluted with urine and faeces of hikers, and the shrimp was absent in a recent survey. This should be taken account into the water management on the Hakskeen Pan as to not contaminate the area in such a way that may affect the fairy shrimp populations when the pan is flooded.

As noted above, the Fairy Shrimp is also an important food source to Greater Flamingo when the pan is flooded. Proper pollution management is therefore vitally important, especially with regards to fuels and effluent.

SECTION C: PUBLIC PARTICIPATION

- **ADVERTISEMENT AND NOTICE**

Publication name	Die Gemsbok	
Date published	26 February 2016	
Site notice position	**Latitude**	**Longitude**
	Posters were placed at the entrance to Hakskeen Pan and at the MTN telecommunications base station, as well as at various public locations such as shops, schools, clinics within Philandersbron, Rietfontein, Groot Mier, Klein Mier, Loubos, and Askham. Posters were also placed at the Mier Municipality offices in Rietfontein and at the Molopo Lodge in Askham.	
Date placed	See Appendix E1	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

Please note that public meetings were also held on 08 and 09 March in Philandersbron, Rietfontein, Groot Mier, Klein Mier, Loubos, and Askham. Notifications of the public meetings were included in the notification letters, posters and advertisement. Please refer to Appendix E4 for the attendance registers.

- **DETERMINATION OF APPROPRIATE MEASURES**

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733: Please refer to Appendix E2

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

- **ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES**

Summary of main issues raised by I&APs	Summary of response from EAP
Please refer to Appendix E3 for the initial Public Participation Report	

- **COMMENTS AND RESPONSE REPORT**

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

- **AUTHORITY PARTICIPATION**

Authorities and organs of state identified as key stakeholders: Please refer to Appendix E2

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

- **CONSULTATION WITH OTHER STAKEHOLDERS**

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 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.

- **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**

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
	Direct impacts: **Potential impact on freshwater ecosystems** - Impacts of vehicles on the pan - Removal of stones during the clearing of the track - Infilling and raising of area around technical camp - Water provision (pipelines) - Presence of people on the pan - Impact of Bloodhound SSC - Sanitation - Solid waste - Storage of fuels	Low negative Low negative Low negative Low negative Low negative Medium negative Low negative Low negative Low negative	• Vehicles to use existing roads and tracks as far as possible • Where and when vehicles do have to traverse the pan off of the existing tracks: • Vehicles should avoid the softer patches of soil with visible salt cover. • If there are more than one vehicles, the trailing vehicles must avoid following in the lead vehicles tracks • The same tracks must not be used over again • Vehicle movements must be avoided when the pan is wet • Access to the pan by private vehicles must be limited, or even prohibited. It is recommended that spectators be transported to the designated viewing areas with buses. A designated parking area should be established • Visitors and spectators during speed record attempts should be limited to demarcated areas in order to prevent trampling. • Effluent pollution is a serious concern, and the mitigation measures must be adhered to and enforced in the EMP. • The conservancy tanks must be constructed out of heavy concrete or similar water tight materials • These should be of a permanent nature and be used in future for upcoming events.

			• The conservancy tanks must be emptied on a regular basis by a licenced service provider. • The service provider must provide a Method Statement to the ECO • The conservancy tank must be maintained and inspected for cracks etc. on a regular basis by the municipality • Abluting anywhere besides designated ablution facilities must be strictly prohibited. • Sufficient temporary ablution facilities (chemical toilets) must be provided for staff and for spectators/visitors. These must be maintained and emptied on a regular basis. • Waste is to be collected and transported off-site, from where it can be separated, recycles and disposed of on a sanitary landfill. To conduct these actions on Hakskeen Pan is deemed to be too risky, from an environmental impact point of view. • It is foreseen that general solid waste is to be collected on-site in conventional 240 litre wheelie bins, from where it is uploaded on compacter trucks provided with mechanical lifts. This is at both the technical camp and the Speedweek venue. • However, if larger numbers of visitors and spectators generate larger amounts of waste, perhaps the larger dumpster (locally known as “skips”) are appropriate, together with truck and lift that can handle this kind of equipment. • Fuel will be stored in tanker trucks, which will then decant fuel into a smaller bowser which will then fill up the Bloodhound SSC. • Apart from bunds that should be built around the tanker parking area, no other hard structures would be necessary. These bunds are meant to retain fuel, should there be a leak. The bunted area should be large enough to contain the volume of the tank. • It would be preferable that the bunds are built at the very boundary of the pan or even outside of the pan. This would decrease the risk. Hard structures on the pan floor would not be a preferable option. • Drip trays should also be considered during decanting and refuelling of vehicles.

			• All other vehicles (support vehicles, busses etc) used on the site should preferably be refuelled off-site.
	Potential impact on Flora	Low Negative	• A management plan for the control of invasive and exotic plant species needs to be implemented. Specialist advice should be used in this regard. This plan should include pre-treatment, initial treatment and follow-up treatment and should be planned and budgeted for in advance. • A control of access should be implemented for all remaining natural areas to prevent unnecessary destruction of habitats or disturbance of species. It is also vital that no additional fragmentation occurs and that all roads are clearly demarcated and kept to without any exceptions. No vehicles or personnel are permitted outside of these demarcated roads. • The speed events area should be fenced in in order to reduce human and vehicle traffic to areas outside of the demarcated area. • Ensure drivers are informed that off-road travelling is prohibited except where otherwise not practically feasible. • It is vital that if any protected, endemic, rare or vulnerable species occurs on the proposed site that these species should be protected and/or left undisturbed. Only as an exception can these species be relocated to favourable sites with the use of a specialist prior to vegetation removal. • The vegetation removal during the construction phase should be controlled and very specific. • Staff and spectators should be discouraged / prohibited from entering and disturbing the surrounding natural areas. Management systems should be set in place to prevent any form of additional disturbance from occurring, for example fencing of certain areas. • Continuous rehabilitation of the area should be implemented during the operational phase. • Ensure awareness amongst all staff, contractors and visitors to site to not needlessly damage flora and ensure they stay clear from the remaining natural areas as far as possible. • Limit activities (transport etc.) to the smallest area possible. This is to prevent fragmentation that may have irreversible changes to flora communities. It also increases the invasion of exotic/invasive species. • Regularly maintain equipment to reduce risk of hydrocarbon leaks, and have communication channels set up to report incidences and action plans in place to address issues immediately.

			• Ensure adequate domestic waste bins are supplied and that domestic waste is removed by a reputable contractor. Adhere to the waste management plan. • A management plan for control of invasive/exotic plant species needs to be implemented. This will be ongoing from the start of the development until the end of the decommissioning phase. • Rehabilitation plan should be implemented. This includes the process of replanting of vegetation. Rehabilitation plans should be compiled with the use of a specialist and the correct seeding techniques and mixtures should be applied. • Close monitoring of plant communities to ensure that ecology is restored and self-sustaining. The monitoring of the flora should be conducted every six months during rehabilitation by an environmental practitioner until a suitably qualified specialist deems the monitoring to no longer be necessary. A report should be written and stored to be made available and should be available at all times.
	Potential impact on Fauna	Low-Medium Negative	• A management plan for the control of invasive and exotic plant species needs to be implemented. Specialist advice should be used in this regard, refer to the vegetation study as to invasive identified on-site. Priority species should be identified first, in this case, the category invaders, and a management plant should be established for each of the priority species. This plan should include pre-treatment, initial treatment and follow-up treatment and should be planned and budgeted for in advance. • A control of access should be implemented for all remaining natural areas to prevent unnecessary destruction of habitats or disturbance of species. Human and vehicles movement should stay out of the dunes as well. It is also vital that no additional fragmentation occurs and that all roads are clearly demarcated and kept to a minimum without any exceptions. No vehicles or personnel are permitted outside of these demarcated roads. • Maintenance of roads should be implemented. It is vital that if any endemic, rare or vulnerable species occurs on the proposed site or encountered that these species should be protected and/or left undisturbed. Only as an exception can these species be

			relocated to favourable sites with the use of a specialist prior to vegetation and habitat removal. Threatened species are not allowed to be disturbed in any way. • Priority species, such as the protected birds, specifically nests if encountered should be identified first and a management plan should be established for each of the priority species. Control access within demarcated zones and strictly implement it. This may prevent bush encroachment or desertification of the outcrops of the pan from occurring. • Maintenance of roads should be implemented. This includes soil humps to reduce speed or speed limit indication. It is recommended that no activity be on the pan after rains and until the soil has completely dried out. This will prevent the water contamination, compaction and prevent major erosion (caused by human activities and vehicles). • Continuous rehabilitation and clean-up of the area should be implemented during the operational phase. • Ensure awareness amongst all staff, contractors and visitors to site to not needlessly damage vegetation or hinder animals encountered and ensure they stay clear from the remaining natural areas as far as possible. • Limit activities (transport etc.) to the smallest area possible. This is to prevent fragmentation that may have irreversible changes to faunal communities. It also increases the invasion of alien/foreign species. • To minimize potential impacts to animal species, animals (wildlife and domestic animals) may under no circumstances be handled, removed, killed or interfered with by the Contractor, his employees, his Sub-Contractors or his Sub-Contractors' employees. • Activities on site must comply with the regulations of the Animal Protection Act 1962 (Act No. 71 of 1962). Workers should also be advised on the penalties associated with the needless destruction of wildlife, as set out in this act. • Ensure that an acceptable aesthetic scenario is created post closure. This will be reached through adequate rehabilitation practices by restoring damaged and degraded habitat areas. • When closure is considered successful and rehabilitation complete, unnecessary fences should be lifted to restore larger

			foraging areas, especially for larger mammalian species within the area.
	Potential Impacts on Socio-economic aspects - Creation of employment and business opportunities during the event planning and preparation phase - Benefits to local tourism sector associated with planning and preparation phase - Creation of employment and business opportunities during the construction phase and socio-economic benefits and opportunities for local residents and the economy of the area associated with a reliable water supply - Cellular coverage for visitors to Bloodhound and other events on Hakskeen Pan and local community in the Mier area. These benefits include improved communication, access to emergency services and opportunities to access to the internet in local schools and households - Potential impacts on family structures and social networks associated with the presence of workers (construction phase) - Creation of on and off-site employment and business opportunities associated with the hosting of the Bloodhound event - Creation of opportunities for the hospitality and tourism sector associated with hosting the Bloodhound event over a three month period	High – Positive Low – Positive Low – Positive Low – Positive Low – Negative High – Positive High – Positive High – Positive	• Where possible, the proponent should implement a 'locals first' policy for construction jobs, specifically semi and low-skilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks; • The proponent should consider the establishment of a Monitoring Forum (MF) for the key components associated with the preparation of site for the Bloodhound event. The MF should be established before these activities commence and should include key stakeholders, including representatives from Bloodhound, local community, local municipality and provincial government. The role of the MF would be to monitor the establishment phase and the implementation of the recommended mitigation measures. The MF should also be briefed on the potential risks to the local community associated with construction workers; • The proponent and the appointed contractors should, in consultation with representatives from the MF, develop a Code of Conduct for the establishment phase. The code should identify what types of behaviour and activities by workers are not permitted, specifically non-local workers. Workers that breach the code of good conduct should be dismissed. All dismissals must comply with the South African labour legislation; • The proponent and the contractor should implement an HIV/AIDS awareness programme for all workers at the outset of the establishment phase; • The movement of workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis; • Where possible, the contractor should make necessary arrangements to enable workers from outside the area to return home over weekends. This would reduce the risk posed by non-local workers to local family structures and social networks; • The contractor should make the necessary arrangements for ensuring that

	- Establish Hakskeen Pan as an international high speed venue and raise profile of Northern Cape and South Africa - Potential impacts on family structures and social networks associated with the presence of workers and visitors (operational phase) - Potential loss of livestock, crops and houses, damage to farm infrastructure and threat to human life associated with increased risk of grass fires - Potential disruption and safety impacts associated with movement of event vehicles along the R360 - Legacy benefits for the Mier area and Northern Cape associated with the Bloodhound project and establishment of Hakskeen Pan as an international high speed venue	Low – Negative Low – Negative Low – Negative High - Positive	all nonlocal construction workers are transported back to their place of residence once the establishment phase is completed. This would reduce the risk posed by non-local construction workers to local family structures and social networks; • Non-local workers should be accommodated on the site. • Bloodhound should investigate the option of establishing a Monitoring Forum (MF) that includes local farmers and develop a Code of Conduct for workers. Should such a MF be required it should be established prior to commencement of the establishment phase. The Code of Conduct should be signed by Bloodhound, local farmers, the community and contractors before the establishment phase commences and the contractors move onto site; • The Code of Conduct should identify what types of behaviour and activities by workers are not permitted. The contractors appointed by Bloodhound should also ensure that all workers are informed at the outset of the establishment phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms; • Workers who breach the code of good conduct should be dismissed. All dismissals must comply with the South African labour legislation; • Bloodhound should enter into an agreement with the affected landowners whereby Bloodhound will compensate for damages to farm property and disruptions to farming activities. This includes losses associated with stock theft and damage to property etc. This agreement should be finalised before the commencement of the establishment phase; • The movement of workers on and off the site should be closely managed and monitored by contractors appointed by Bloodhound. In this regard the contractors should be responsible for ensuring that workers respect the rights of local farmers and do not pose safety and security threat to them and their families; • The Environmental Management Plan (EMP) for the construction phase must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested;

			• Bloodhound should ensure that open fires on the site for cooking or heating are not permitted except in designated areas. Open fires should not be established in the vicinity of the grassed dunes to the east of the pan; • No smoking should be permitted on the site, except in designated areas; • Bloodhound should ensure that construction related activities that pose a potential fire risk are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include clearing working areas and avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy winter months; • Bloodhound should provide adequate fire fighting equipment on-site; • Bloodhound should provide fire-fighting training to selected construction staff; • As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors should compensate farmers for any damage caused to their farms. The contractor should also compensate the fire fighting costs borne by farmers and local authorities. • High speed testing on the R360 should be put on hold during for a four to five month period leading up to and during the hosting of the Bloodhound event; • The movement of heavy vehicles should be confined to daylight hours; • The movement of heavy vehicles should take between Monday and Friday so as to avoid weekends when tourists and members of the community are more likely to be using the R 360. • All vehicles must be road-worthy and drivers must be qualified, made aware of the potential road safety issues, and need for strict speed limits. The potential risks associated with construction workers can be mitigated. The aspects that should be covered include: • Implement a training and skills development programmes for locals at least 3 months prior to the event in order to maximise employment opportunities for local community members from Mier; • Where possible, the Bloodhound and the Northern Cape Government should

			implement a 'locals first' policy for work opportunities, specifically semi and lowskilled job categories. This will reduce the potential impact that this category of worker could have on local family and social networks; • Bloodhound and the Northern Cape Government proponent should consider the establishment of a Monitoring Forum (MF) for the key components associated with the hosting of the Bloodhound event. The MF should be established before these activities commence and should include key stakeholders, including representatives from Bloodhound, local community, local municipality and provincial government. • The role of the MF would be to monitor the establishment phase and the implementation of the recommended mitigation measures. The MF should also be briefed on the potential risks to the local community associated with workers and visitors; • Bloodhound and the Northern Cape Government and the appointed service providers should, in consultation with representatives from the MF, develop a Code of Conduct for the event hosting phase. The code should identify what types of behaviour and activities by workers are not permitted, specifically non-local workers. Workers that breach the code of good conduct should be dismissed. All dismissals must comply with the South African labour legislation; • Bloodhound and the Northern Cape Government should implement an HIV/AIDS awareness programme for members from the local community and all workers involved in hosting the event; • The movement of workers on and off the site should be closely managed and monitored by the service providers. In this regard the service providers should be responsible for making the necessary arrangements for transporting all non-local workers to and from site on a daily basis; • The contractor should make the necessary arrangements for ensuring that all nonlocal workers are transported back to their place of residence once the event is over. This would reduce the risk posed by non-local construction workers to local family structures and social networks;

			• Non-local workers should be accommodated on the site where possible. • Visitors should be informed of potential fire risks; • No open fires and or smoking should be permitted, except in designated areas; • Bloodhound should provide adequate fire fighting equipment on-site. This equipment should be made available to fight fires on adjacent farms if and when required; • Bloodhound should provide fire-fighting training to selected staff. These staff should be made available to assist farmers to fight fires on adjacent farms if and when required; • In the advent of a fire being caused by event related activities on the site, Bloodhound should compensate farmers for any damage caused to their farms. • Bloodhound should also compensate the fire fighting costs borne by farmers and local authorities. The potential risks associated with the movement of vehicles can be risks can be reduced. The aspects that should be covered include: • Bloodhound and the Provincial Traffic Authorities should develop and implement a traffic management programme for the 3-4 month event period. This should include implementing a high visibility programme and speed control measures along the R360; • High speed testing on the R360 should be put on hold during for a four to five month period leading up to and during the hosting of the Bloodhound event; • The movement of heavy service vehicles should be confined to daylight hours. The recommendations contained in the BHIDS (2013) study should be implemented. In addition, the option of combining the Bloodhound Museum / Visitor Centre with the Khomani San Museum and Craft Centre should be investigated. School tours for local schools in the DKLM should also be organised during the first 2 months of the Bloodhound event when there are expected to be less visitors on the site. With regard to establishing a local Mier based service provider that can provide catering, camping, cleaning, ablution, logistics and other services for large events held on the pan and the surrounding area, the option of a

			local, privately owned SMME or a Community Trust type option should be explored and discussed with representatives from the Northern Cape Provincial Government, DKLM and the Mier community. As indicated above, a well-run and managed Community Trust option is more likely to create an opportunity to generate funds for community initiatives as opposed to privately owned SMME. <u>Enhancement measures of positive impacts</u> In order to enhance local employment and business opportunities associated with the activities associated with the hosting of the Bloodhound event the following measures should be implemented: **Employment** • Implement a training and skills development programmes for locals at least 3 months prior to the event in order to maximise employment opportunities for local community members from Mier; • Where reasonable and practical the local service providers that meet required Broad Based Black Economic Empowerment (BBBEE) criteria should be appointed; • Where and reasonably practical a 'locals first' policy, especially for semi and lowskilled job categories should be implemented. However, due to the low skills levels in the area, the majority of skilled positions are likely to be filled by people from outside the area; • Representatives from Bloodhound and the Northern Cape Government should meet with representatives from the DKLM and key organisations in the area, such as the Upington Chamber of Commerce, to identify local service providers and establish database for the project; • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible. • Also, as indicated above, a car wash service should be provided by the local community in the proposed parking area located to the north of the R360. **Business** • The Northern Cape Provincial Government should develop a database of local companies, specifically Broad Based Black Economic Empowerment (BBBEE) companies, which qualify as potential service providers (e.g. catering

			companies, waste collection companies, security companies, transport companies etc.) before the end of February 2017. These companies should be notified of the services required and be invited to bid for Bloodhound related work; • The Northern Cape Provincial Government, in consultation with the DKLM, representatives from the Mier community and key organisations in the area, such as the Upington Chamber of Commerce, should identify strategies aimed at maximising the potential benefits for local companies associated with the project. This includes providing information on potential opportunities, such as catering, shuttle services, security etc. • The Northern Cape Provincial Government should provide local SMMEs and or members of the Mier community with training and financial assistance to enable them to benefit from the provision of services, such as catering, cleaning etc. The financial assistance may include funding to purchase catering and cleaning equipment etc.; • The Northern Cape Provincial Government should explore opportunities for mentoring and joint ventures with local SMMEs from Mier in order to maximise local benefits and enhance the legacy potential of the Bloodhound event. The key recommendations contained in the Bloodhound Integrated Development Strategy (BHIDS) prepared by Urban Econ in 2013 should be implemented. In addition, the following issues need to be addressed in order to enhance the visitor experience to the area: • Provide additional and more cost effective flights to Upington from Johannesburg and Cape Town; • Increase the number of rental cars at Upington Airport; • Establish a Bloodhound Information Desk at Upington Airport to provide visitors with information on the event, including, times, distances, transport options, location of petrol stations and shops, tourist related activities, accommodation, eating out options, etc.; • Brief local accommodation sector on standard quality and service requirements, specifically for overseas visitors, such as free wi-fi etc.

			The Upington Chamber of Commerce also indicated that local accommodation providers should be encouraged not to overly inflate their rates to take advantage of the influx of visitors to the area as this would impact negatively on visitor experiences, which in turn would reflect poorly on the tourism sector as a whole. The facilities and services at the site that would enhance visitor experience include: • Clean, safe, secure and well serviced accommodation; • Clean, well equipped ablution and shower facilities; • Media / Computer Centre where visitors can check e-mails, down load and print document etc.; • Free wi-fi and cell phone charging facilities; • Food market with a wide range of food options, including catering for vegetarians. The opportunity should be used to highlight local, traditional foods from the area and the Northern Cape; • Small convenience shop where basis necessities can be purchased; • Child care facility; • Mobile electronic banking facilities; • Well established craft market area; • Opportunity to hire mountain bikes so that people can ride around the area and Hakskeen Pan; • Safe, controlled parking area; • Shuttle services from the parking and accommodation area to the track and the hospitality areas. Live entertainment (music, stand-up comedy, dancing etc) has also been identified as key visitor service. It is recommended that the entertainment area should be modelled on the Fan Park Concept that was used during the 2010 World Soccer Cup on South Africa. This would include equipping the area will large TV screens and high quality sound equipment which would enable visitors to watch the Bloodhound tests live. The opportunity should be used to highlight local, traditional music and dances. Hosting of the Bloodhound event represents an enhancement measure in itself. However, in order to maximise the benefits of the event the recommendations contained in the BHIDS report by Urban Econ (2013) are implemented, specifically with regard to enhancing tourist related opportunities. This includes:

			• Implementing awareness raising campaign; • Up-dating tourism websites.
	The loss of cultural or historic aspects during construction - Impacts at the proposed development: All pan and pan-side localities - Impacts at the proposed development: Grave site	Very Low – Neutral Very Low - Negative	• Manage development in the dune area and salvage Stone Age material which could be used in a tourist information panel. • Provision for on-going heritage monitoring in a project environmental management plan which also provides guidelines on what to do in the event of any major heritage feature being encountered during any phase of development or operation. • Avoid impact on the grave site identified in this study. • Impacting the grave to be avoided. No go area. • Provision for on-going heritage monitoring in a project environmental management plan which also provides guidelines on what to do in the event of any major heritage feature being encountered during any phase of development or operation. • Avoid impact on the grave site identified in this study. • If any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during construction they must immediately be reported to SAHRA and must not be disturbed further until the necessary approval has been obtained from SAHRA. • Should any human remains/burial or archaeological material be disturbed, exposed or uncovered during construction, these should immediately be reported to the South African Heritage Resources Agency. The ECO and Engineer are also to be informed.
	Noise Impact	Low - Negative	No testing done at night
	Visual Impact	Very – Low - Negative	
	Indirect impacts:		
	Cumulative impacts:		

Alternative 2			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
Alternative 3			
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
	Direct impacts:		
	Indirect impacts:		
	Cumulative impacts:		
No-go option			
	Direct impacts: The no-development option would result in a lost opportunity for the Mier area and the Upington and the local economy	High - negative	The Bloodhound event represents an enhancement measure.
	Indirect impacts:		
	Cumulative impacts:		

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

- **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 A (preferred alternative)

The following is a summary of the potential impacts, and their ratings after mitigation, and probability of occurrence:

Construction phase.

Freshwater ecosystems

- Impact of vehicles on the pan **– Low Negative**
- Removal of stones during the clearing of the Bloodhound SSC track - **Low Negative**
- Infilling and raising the area for the technical camp - **Low Negative**
- Water provision (Additional pipelines) - **Low Negative**
- Presence of people on the pan - **Low Negative**

Impact on Flora - **Low Negative**

Impact on Fauna – **Low - Medium Negative**

Socio-economic aspects

- Creation of employment and business opportunities (event planning and preparation) **– High Positive.**
- Benefits to local tourism sector – **Low Positive**
- Creation of employment and business opportunities (reliable water supply) - **Low Positive**
- Cellular coverage - **Low Positive**
- Family structures and social networks associated with the presence of workers - **Low Negative**
- Safety and security risk posed by presence of workers - **Low Negative**
- Losses associated with increased incidence of grass fires - **Low Negative**
- Disruption and safety impacts associated with movement of vehicles - **Low Negative**

Potential impacts on cultural - heritage resources

- Impacts at the proposed development: All pan and pan-side localities – **Very Low – Neutral**
- Impacts at the proposed development: Grave site - **Very Low – Negative**

Noise impact - **Negligible**

Visual impact – **Very Low Negative**

Operational Phase

Freshwater ecosystems

- Impact of the Bloodhound SSC – **Medium Negative**
- Sanitation **– Low Negative**
- Solid waste leachate - **Low Negative**
- Storage of Fuels - **Low Negative**

Impact on Flora - **Low Negative**

Impact on Fauna – **Medium Negative**

Socio-economic aspects

- Creation of on and off-site employment and business opportunities **– High Positive**
- Creation of opportunities for the hospitality and tourism sector **– High Positive**
- Establish Hakskeen Pan as an international high speed venue and raise profile of Northern Cape and South Africa - **High Positive**
- Potential impacts on family structures and social networks **– Low Negative**
- Losses associated with increased incidence of grass fires - **Low Negative**
- Disruption and safety impacts associated with movement of vehicles - **Low Negative**

- Legacy benefits for the Mier area and Northern Cape - **High Positive**

Potential impacts on cultural - heritage resources – **No impacts expected**

Noise impact - **Low Negative**

Visual impact – **No impact expected**

Decommissioning

Impact on Flora - **Low Negative**

Impact on Fauna – **Low Medium Negative**

Alternative B

Alternative C

No-go alternative (compulsory)

This would mean that no-development would take place and the proposed site will remain as is. The Speed Events including the Bloodhound SSC project could not continue.

Although this option would result in no potential negative environmental impacts, the significant social benefits from implementing the activity would not be achieved.

The no-go option would only have been recommended if it were found that the proposed activities on this site or in this area might potentially cause substantial detrimental harm to Hakskeen Pan and the surrounding environment.

According to the Socio-economic Assessment (**Appendix D2**), the employment and business opportunities associated with hosting the Bloodhound event, the benefits for the local and regional hospitality and tourism sector, the unique opportunity for establishing Hakskeen Pan as one of the best high speed testing areas in the world and the international exposure of the Mier area and the Northern Cape Province, together with the legacy benefits would be forgone. The No-Development option would therefore represent a lost opportunity for Upington and the local economy. This would represent a negative social cost. The No-Development option would therefore represent a significant missed opportunity and is therefore not supported.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	~~NO~~

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please 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.

The intention is to develop Hakskeen Pan as a multi-event outdoor arena/stadium type facility which could host future events such as further land speed record attempts, speed testing, concerts and festivals etc. Although the Basic Assessment Report and the Environmental Management Programme have been compiled with focus on the Bloodhound SSC, the general recommendations and mitigation measures outlined in the BAR, specialist reports and the EMP should be adopted by any other future events.

All future events, including Bloodhound SSC, that take place on, or on the edge of, Hakskeen Pan should submit its own unique, event specific Environmental Management Programme to the Competent Authority for approval, before the proposed event/activity can take place. As stated above, the EMP will need to take the general recommendations and mitigation measures outlined in the BAR, specialist reports and the EMP into consideration.

Each event must ensure compliance with the specialist recommendations, Environmental Management Programme (EMP) and appointment of an ECO during the construction, operational and decommissioning phase.

Each event specific Environmental Management Programme should include a Risk Assessment and an event specific restoration, rehabilitation and clean-up plan, as well as a Traffic Management Plan approved by the relevant authority (Department of Transport and Public Works: Northern Cape).

A compliance audit should be undertaken after each event, conducted by an independent Environmental Assessment Practitioner or ECO, before any deposit can be paid back to ensure that all clean up and rehabilitation etc. is satisfactorily dealt with. A copy of the compliance audit must be sent to the Competent Authority (DENC) for record-keeping.

Although the pan itself can withstand considerable disturbance (since the pan generally recovers or "restores" itself after flooding events), of great importance when considering mitigation measures in the EMP is the potential of pollution of the pan and the underground water, especially by hydrocarbons/fuels, effluent, polluted water/waste water, and any other contaminants.

It must also be noted that if any other listed activities in terms of the NEMA EIA Regulations are triggered by future events that are not included in this application (S24G Application and NEMA Application), application for authorisation will need to be obtained first.

Ongoing scientific studies and monitoring should also be encouraged, to assist decision-makers on future events on the pan.

The specialists and the EAP have found no reason to believe that the proposed Bloodhound SSC even, and any other future events, might potentially cause substantial detrimental harm to the environment.

However, there is still a lot that is not known about the ecology Hakskeen Pan. This would require long term studies and monitoring, which would need to inform future decision making on the activities on the pan.

As concluded in the Fresh Water Report (**Appendix D4**), it is not known what effect these habitat disturbances have on especially the survival stages of life forms during the arid phase of the pan. Until conclusive scientific research has been done the impact and risk assessments will remain at a low level of confidence. All of these impacts on the geomorphology together compared to the immense surface area of the pan are insignificant with no material impact.

The precautionary principle comes to mind. On account of the lack of knowledge about the geomorphological impacts and it's possible on habitat and biota decision-makers could agree not to allow to proceed until scientific evidence proves that impacts are negligible. The environmental footprint of the Bloodhound SCC project is small in comparison to the vast expanse of the pan and the existing road and disused roads probably have a much larger impact than the Bloodhound SCC. Against this background new scientific evidence would probably not be adequate to disallow the project.

The Fresh Water Report (**Appendix D4**) also concluded that there is no indication that the Bloodhound SCC should not go ahead on the grounds of possible deleterious impacts on the aquatic environment.

Therefore, considering all the information available, it is not envisaged that this proposed activity will have a significant negative impact on the environment, and the potential positive social impacts (benefits to the community, both local and regional) from implementing the activity, should outweigh any potential negative environmental impacts.

Since the intention is to develop Hakskeen Pan as a multi-event outdoor arena/stadium type facility which could host future events such as further land speed record attempts, speed testing, concerts and festivals etc. large amounts of people/visitors can be expected on, and on the edge of the pan. Unfortunately, it is not known at this stage what the volumes of visitors/spectators will be for the Bloodhound SSC event, and for future events.

According to the Fresh Water Report, it is evident that the soils of the pan possess remarkable self-restoration characteristics. When flooded the fine sediments in suspension re-settle on the surface when the water dries up. The settled sediments cover up, form a crust and harden to heal the "wounds" that have been created by not only the removal of stones, but other human activities on the pan. It is important to note that this is anecdotal and needs to be verified with scientific observation.

However, it shows that the pan could accommodate an almost limitless amount of people. The only limiting factor to the amount of people would be the availability of services, especially water provision, sanitation and effluent removal and solid waste removal. These services could be provided by temporary measures, however, potential contamination of the pan by hydrocarbons/fuels, effluent and polluted water must be considered, and the appropriate mitigation measures adopted.

At this stage, the only limiting factor seems to the availability of sanitation services, according to the Bulk Engineering Services Report. Chemical ablution facilities would be the most appropriate measures, especially in the short term, and especially due to the versatility of this measure (the location and number of toilets can be adapted as per each events requirement). However, since the waste will have to be disposed of at a wastewater treatment facility, and the only wastewater treatment works in the vicinity of Hakskeen Pan is at Rietfontein, which is already overloaded this

option may not be viable, unless the waste is transported over a greater distance to a facility that has capacity, or the capacity at Rietfontein WWTW is increased. Once bulk services are available, a carrying capacity (maximum amount of people) that the pan could accommodate, can be established with further scientific studies and monitoring. Due to the natural restoring characteristic of the pan, it is also preferred that public areas (such as hospitality areas, grand stands and viewing areas be accommodated on the pan surface, and not in the dunes, since the pan restores itself from most disturbances in a relatively short period (after flooding events). However, activities with high pollution potential (fuel depot areas etc.) should be accommodated off the pan surface.		
Is an EMPr attached?	YES	~~NO~~

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information