DMT Kai Batla (Pty) Ltd

Basic Assessment for the Proposed Construction of Apron Stands and Expansion of the Bravo Taxiway at King Shaka International Airport, KwaZulu-Natal Province

(DEA REF: 14/12/16/3/3/1/1841)

DRAFT BASIC ASSESSMENT REPORT FOR PUBLIC REVIEW

Prepared for:
Airports Company South Africa SOC Ltd

AIRPORTS COMPANY
SOUTH AFRICA

Prepared by:

DMT Kai Batla (Pty) Ltd

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	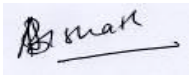

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Has a specialist been consulted to assist with the completion of this section? ~~YES~~ **NO**
~~If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.~~

PROPOSED CONSTRUCTION OF APRON STANDS AND EXPANSION OF THE TAXIWAY AT KING SHAKA INTERNATIONAL AIRPORT

1.1 Project Description

1.1.1. Background

The King Shaka International Airport (hereafter referred to as KSIA) was first conceptualized in the 1970s, however the development was halted due to economic constraints in the country during that time. The development of the KSIA was a means of addressing the limitations being experienced at the now decommissioned Durban International Airport. Between 2004 and 2007 the new airport development was once again revived, with a partnership formed between the Airports Company of South Africa SOC Limited (ACSA) and the Dube TradePort Corporation - both of whom had a common goal of creating an 'aerotropolis' in the north of Durban[1], centred around the Dube Trade Port (DTP) and the KSIA. As such, the construction of the new airport commenced in 2007 and continued until 2009. Flight testing at the airport began in December 2009, and the operation of commercial flights commenced timeously in May 2010 to accommodate the FIFA 2010 Soccer World Cup.

The concept behind the KSIA [and the DTP] was to create a catalyst for the creation of a globally competitive multi-modal trade gateway in Southern Africa. King Shaka International was designed to grow international services in this part of the country, while maintaining its position as a key airport for domestic service. This is evident in the airport having received awards from the Airport Council International as well as the Skytrax airport and airline review organisation[2].

The Applicant

South Africa's airplane terminals were owned and operated by the state until 23 July 1993, when ACSA was formally established. ACSA was formed just over 20 years ago when South Africa's main airports were transferred into a public company through the enactment of the Airports Company Act 44 of 1993. ACSA manages a system of nine airplane terminals in South Africa, including the three principle worldwide entryways of O.R. Tambo International, Cape Town International and KSIA[3]- while processing approximately 36 million passengers per annum. Although ACSA is majority owned by the South African government (through the Department of Transport (DoT)), the company is legally and financially autonomous and operates under commercial law.

The nine air terminals possessed by the Company are significant generators of direct and indirect employment and business opportunities and some are considered the centres of improvement hubs. This is aligned with the idea of the 'aerotropolis', whereby a scope of

[1] The airport is a part of the Dube Tradeport, which includes a trade zone linked to the airport's cargo terminal, facilities to support the airport like nearby offices and transit accommodation for travellers, an integrated agricultural export zone and an Information Technology platform. Source: http://www.dubetradeport.co.za/

[2] https://en.wikipedia.org/wiki/King_Shaka_International_Airport

[3] http://www.airports.co.za/about-us/airports-company/company-profile

assembling, business offices, supplemented by lodgings, retail outlets, recreational buildings and workplaces are clustered around an airplane terminal- is likely to further accelerate the core role of airports. This is particularly true for the international airports like the KSIA[3].

Throughout the years, ACSA has transformed a fragmented, infrastructural parastatal into an engaged, client driven, proficient and monetarily fruitful business, whose air terminals have turned out to be critical achievement elements to Brand South Africa. ACSA continues to play its role as a key driver of South Africa's economy by demonstrating socio-economic and environmental responsibility through its activities and programmes. This is shown in its continued development of the country's airports- such as the proposed activities for the KSIA.

1.1.2. Project Locality

The KSIA is located in La Mercy, KwaZulu-Natal, approximately 35 km north of Durban. The airport falls within the jurisdiction of the eThekwini Municipal Area. eThekwini is the largest city in KwaZulu-Natal and the third-largest city in the country. Its land area is comparatively larger than that of other South African cities and is topographically hilly, with many gorges and ravines.

The airport precinct is bordered by the M43 to the north, the Mdloti River to the south, the R102 to the west, and the N2 freeway to the east (see Figure 1). Neighbouring communities are Mount Moreland to the near south west and Verulam to the far south-west; Tongaat to the west and north; and Umdloti to the south-east. Notable communities further away are Umhlanga to the south and Ballito to the north. The airport is accessible from both the N2 freeway and the alternative R102 road, with the M65 linking the N2 and the R102 with the airport.

1.1.3. Project Description

ACSA has proposed extension works at the KSIA with the construction of additional apron stands and the extension of the Bravo Taxiway (see Figures 2 and 3). The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. Four remote wide-body aircraft stands ('aprons') will be constructed and this will be complemented by the newly extended taxiway. The development will be conducted in a manner that meets the International Civil Aviation Organization (ICAO) Code F standards[4], and the end goal of the project is to increase the airport's overall operational capacity.

[4] The apron restrictions are being constructed in line with part two of the ICAO Aerodrome Reference Code which categorises aircraft types. The part two categorisation is derived from the most restrictive of either the aircraft wingspan or the aircraft outer main gear wheel span (Source: https://www.skybrary.aero/index.php/ICAO_Aerodrome_Reference_Code; 2015).

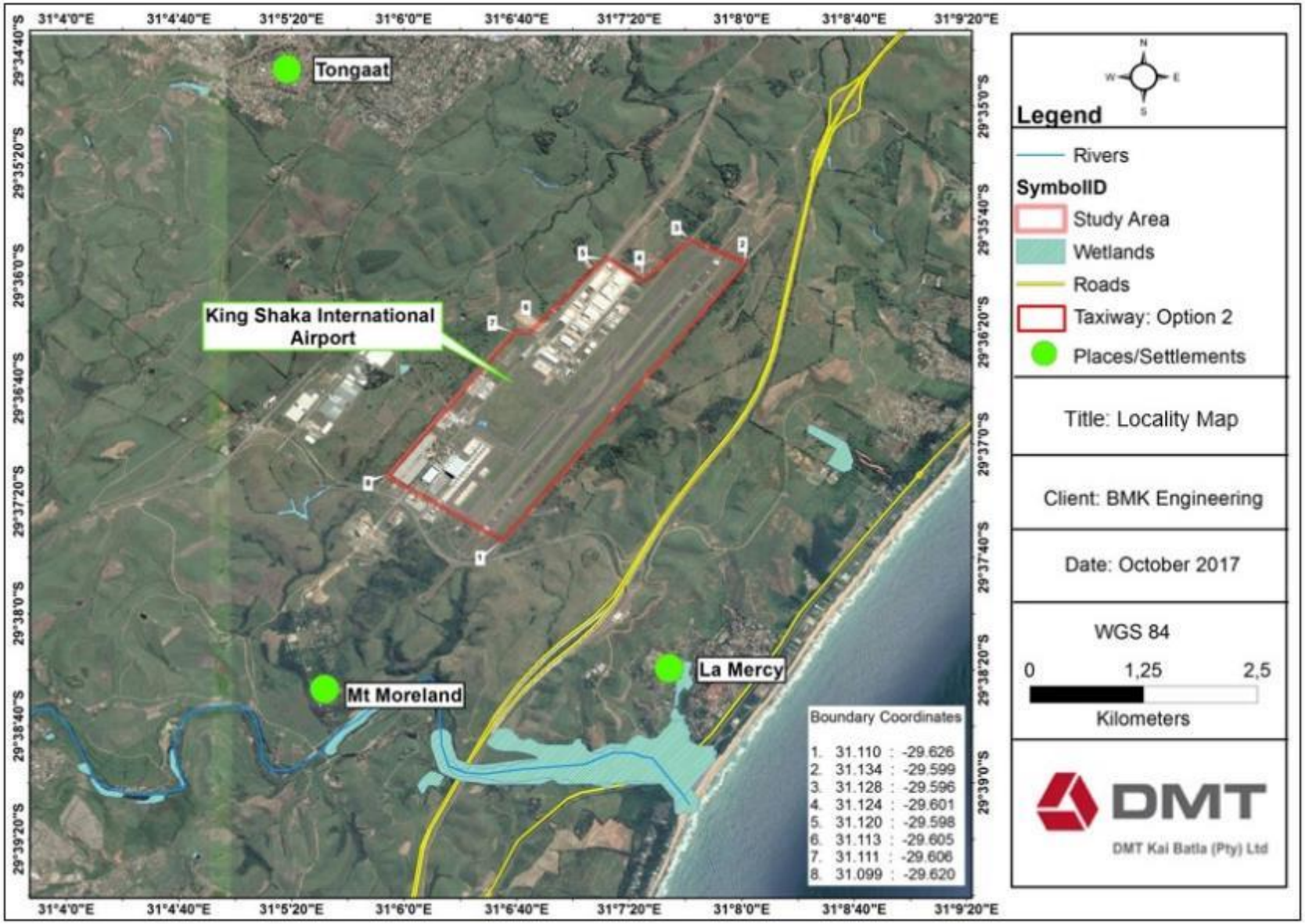

Figure 1: Project locality

Apron Stands

An apron stand is the area of an airport where aircraft are parked, unloaded or loaded, refuelled, or boarded. There are currently four aprons stands at KSIA, namely Alpha, Bravo, Charlie and Delta. The Apron Stands Bravo and Alpha are Code C[5] stands, while Charlie and Delta are Code F stands. The Apron Stands Bravo and Alpha are positioned on the opposite side (east) of the Code C apron taxiway, which provides access to the Alpha and Bravo apron stands (see Figure 2). As it stands, neither of these two aprons can currently accommodate wide-body aircraft. Charlie Apron to the west of the terminal building consists of two, Code F stands, which are MARS-configured[6] to accept Code C aircraft. Charlie stands are contact, nose-in and push-back. The Delta Apron serves the existing cargo terminal and is also suitable for the parking of two wide-body aircraft. These stands are also MARS-configured.

The new stand provision will comprise, four Code F MARS-configured aircraft stands which will be sized for a specific mix of aircraft, including future generation wide-body aircraft.

As part of the planned extension, consideration was given to reconfiguring several of the existing Alpha Apron stands as well as constructing two new apron stands. Ten stand layout options were produced from the various stand type combinations. This was moderated to five option pair combinations (which still comprised the various stand type combinations listed above) for further development/evaluation. Some of the evaluation criteria was based on cost estimates and bulk service layout development.

The following variations on the paired stand type combinations shown in Figure 3 were considered as part of the feasibility study:

1. Contact + 2 Remote (Option A1)
2. 2 Contact + 2 Future Pier Served (Option B1);
3. **2 Remote + 2 Remote (Option C) (preferred);**
4. 2 Remote + 2 Future Pier Served (Option D1); and
5. 2 Future Pier Served + 2 Future Pier Served (Option E).

The five options represented the ‘best’ options selected in terms of pavement extents and operational advantages. In the feasibility studies, it was concluded that constructing four new remote stands would be the most viable option. The proposed remote stand layout is depicted in Figure 4. [7]

[5] The ICAO has certain standards that areas of airports need to meet or adhere too. These standards are referred to as ‘Codes’ (ICAO 2009).

[6] ‘MARS’ is an acronym for maximizing parking space on the tarmac. The Multiple Apron Ramp System (MARS) allows airport planners to make their gates – and, therefore, their aircraft turnarounds – more flexible and efficient. As more airlines acquire the new generation of larger aircraft to keep up with passenger demand, airports have to build gates to accommodate them (http://www.airportsinternational.com/2013/02/manoeuvres-on-mars/13873)

[7] Aprons and taxiways are named A, B, so forth at airports. However, the IACO/Phonetic Alphabet is used, and the areas are assigned the aviation nomenclature for the alphabets, i.e. A-Alpha, B-Bravo, C-Charlie, D-Delta, and so forth (ICAO 2016).

Figure 2: Project focus area (Source: BMK 2017)

Figure 3: Apron stand layout options (Source: BMK 2017)

The layout planning and physical characteristics for aircraft stand development are governed by the standards listed in the ICAO Annex 14 (ICAO, 2016) and supporting ICAO Design Manuals (as seen in Table 1 below):

Table 1: ICAO apron geometric design standards and recommendations (Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum clearance between an aircraft and adjacent building, aircraft on another stand and other objects.	4.5 (7.5m)*	7.5
Slopes on aprons	<1%=	<1%
Max aircraft wingspan	36m	80m
Minimum stand width (MARS-configured Code F)		87.5m
Minimum HOS nose clearance	4.5m	7.5m
Minimum distance from longest aircraft to BOS line[2]	4.5m	4.5m
Service road width (dual direction)	10m (min) 12m (preferred)	
*ACSA requirement at OR Tambo Int'l Airport IATA ADRM (IATA, 2004) 2Not and ICAO requirement		

The MARS configuration will allow for mixed aircraft usage of the Apron stand. The new stands will be power-in (nose in) and (tractor) push-back. The stands are MARS-configured to allow for two Code C aircraft to simultaneously utilise a single Code F (wide-body) stand position.

Furthermore, the following aircraft considerations were made in the stand design and construction planning:

- *Aircraft wingtip clearance:* The ICAO recommended minimum wingtip clearance distance between Code F aircraft is 7.5m. The corresponding ICAO minimum for Code C aircraft on a MARS configured Code F stand is 4.5m, however at OR Tambo International Airport, ACSA has adopted a 7.5m wingtip clearance.

- *Aircraft front of stand clearances:* Head of stand areas should typically allow room for a pushback tractor (tug) to manoeuvre onto the stand and not block traffic on an adjacent service road. The tractor with tow bar connected to the nose wheel gear of the most forward positioned aircraft on a stand should also be able to fit within the stand's footprint. It is proposed that a minimum clearance of 13m from the most forward aircraft's nose gear be allowed (typically 7.5m from the most forward nose position). 13m will allow for a 9m tug + 4m tow bar combination.

- *Aircraft back of stand clearances:* Typically for inspection (and maintenance) purposes, or circulation around an aircraft parked on a stand, space provisions should be made for vehicles to manoeuver around the tail section of a parked aircraft. It is proposed that a distance of 4.5m is considered by ACSA for this purpose (reduced to 2m where space is limited) and will be assumed by BMK in the design unless otherwise directed.

- *Aircraft Mix:* Code F stands will be designed to accommodate four main codes of aircraft: Code F, Code E, Code D and Code C aircraft.

Other aspects that have been considered in the conceptualization of the Apron Stands include:

- *Connecting Taxiway Infrastructure:* New taxiway infrastructure will be required, regardless of which Code F apron stand option is selected for progression. Taxiways will be designed as Code F taxiways, with all physical design characteristics (horizontal and vertical) as per Annex 14 (ICAO, 2016) standards and recommendations – this includes taxiway minimum separation distances.

- *Service Roads:* Head-of-stand and back-of-stand service roads (bi-directional) will be included as part of the stand designs and shall be between 10 and 12m wide- space permitting.

- *GSE Layout:* A portion of the apron stand footprint will be dedicated to Ground Support Equipment (GSE). The GSE equipment type to be accommodated on-stand will be in line with airport/airline operational requirements areas will be marked according to equipment type.

The fully serviced Apron Stand offerings will include (but not be limited to) the following services:

1. Fixed electrical ground power (FEGP);
2. Fuel hydrant pits;
3. Stand number indicator boards (SNIB);
4. Stand Entry Guidance System (SEGS);
5. Floodlights;
6. Fire hydrant (American style or as specified by ACSA);
7. Emergency stop buttons (for SEGS and fuel);
8. Emergency fixed line telephone – to be confirmed;
9. Fuel/oil spill kits – to be confirmed;
10. CCTV – to be confirmed;
11. Baggage interface systems (to be confirmed);
12. Mini substations (serving multiple stands; as required);
13. Pre-conditioned air – to be confirmed;
14. Communications cabinet – to be confirmed; and
15. Back of stand slot drain infrastructure (to convey stormwater runoff into existing pollution control system).

Considering aviation standards and requirements, as well as taking the functionality/operational impact, cost, and environmental viability of the options listed above, **Option C (4 remote stands**) has been selected as the most feasible apron stand design. Option C is therefore being presented as the preferred alternative under application for authorisation.

Bravo Taxiway Extension

The existing airport operates with a single runway. The runway is served by a single, full length parallel taxiway (Taxiway Alpha) and 2 Rapid Exit Taxiways (RETs) – namely taxiways Golf (G) and Hotel (H) (see Figure 4). A complex juncture of taxiway infrastructure links exists in the vicinity of RET Golf and has been identified as a 'hotspot' (defined in the ICAO *Manual on the*

Prevention of Runway Incursions (ICAO, 2007) as an area where potential exists for aircraft collisions (see Figure 4). The extension of the Bravo Taxiway has been proposed to alleviate several operational issues currently being experienced in the airside manoeuvring area at the airport. As part of the feasibility phase, two options were considered, with the options pertaining to the alignment of the link between the main taxiway extension alignment and the existing runway. Whilst there are a number of different permutations, the options presented as part of this study are:

- Option 1: RET Hotel and proposed intersection taxiway combined (positioned at RET); and
- **Option 2: Intersection taxiway positioned north of RET Hotel (preferred).**

Both options provide for a minimum take-off runway available (TORA) distance of 2,100m.

The Bravo Taxiway will provide some inherent benefits, which- amongst others- include:

- Simplification of the hotspot intersection. Aircraft will no longer be able to taxi along Bravo, turn right on to November (Taxiway N) and then left on to Alpha. This will prevent potential collisions with landing aircraft which may vacate the runway using RET Golf.

- The extension of Taxiway Bravo, including a new 90-degree link to the runway, will ensure that pilots of the aircraft at the proposed runway holding position will have increased visibility of landing/approaching aircraft.

- An increased take-off run distance will be afforded from the point where the taxiway joins with the runway, compared with aircraft using RET Hotel for the same purpose – approximately 800m if aircraft line-up compensations are accounted for.

From a cost point of view, Option 2 is more expensive to construct than Option 1. However, from an operational perspective Option 2 is a much simpler solution in terms of intersection geometry, providing a completely independent taxiway link to the runway, unlike that of Option 1, which has an interaction with the existing RET. The potential risk of the intersection becoming a future hotspot is less with Option 2. Therefore, Option 2 is the preferred option under application for authorisation.

The characteristics of the preferred Taxiway design are summariesd in Table 2 below.

Table 2: ICAO Annex 14 taxiway geometric design criteria *(*Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum pavement width	15m	25m
Shoulder width	5m	17.5m
Taxiway strip width	52m	102m
Graded portion of strip	25m	60m
Minimum clearance of outer main wheel to taxiway edge	4.5m	4.5m
Minimum separation distance between taxiway centre line and runway (instrument runways)	168m	190m

Physical Apron Characteristics	Code C	Code F
Maximum longitudinal slope of taxiway pavement	1.5%	1.5%
Maximum change in longitudinal slope of taxiway	1% per 30m	1% per 30m
Maximum transverse slope of taxiway pavement	1.5%	1.5%
Minimum radius of longitudinal vertical curve	3000m	3000m
K-value	K-value 30 30	K-value 30 30

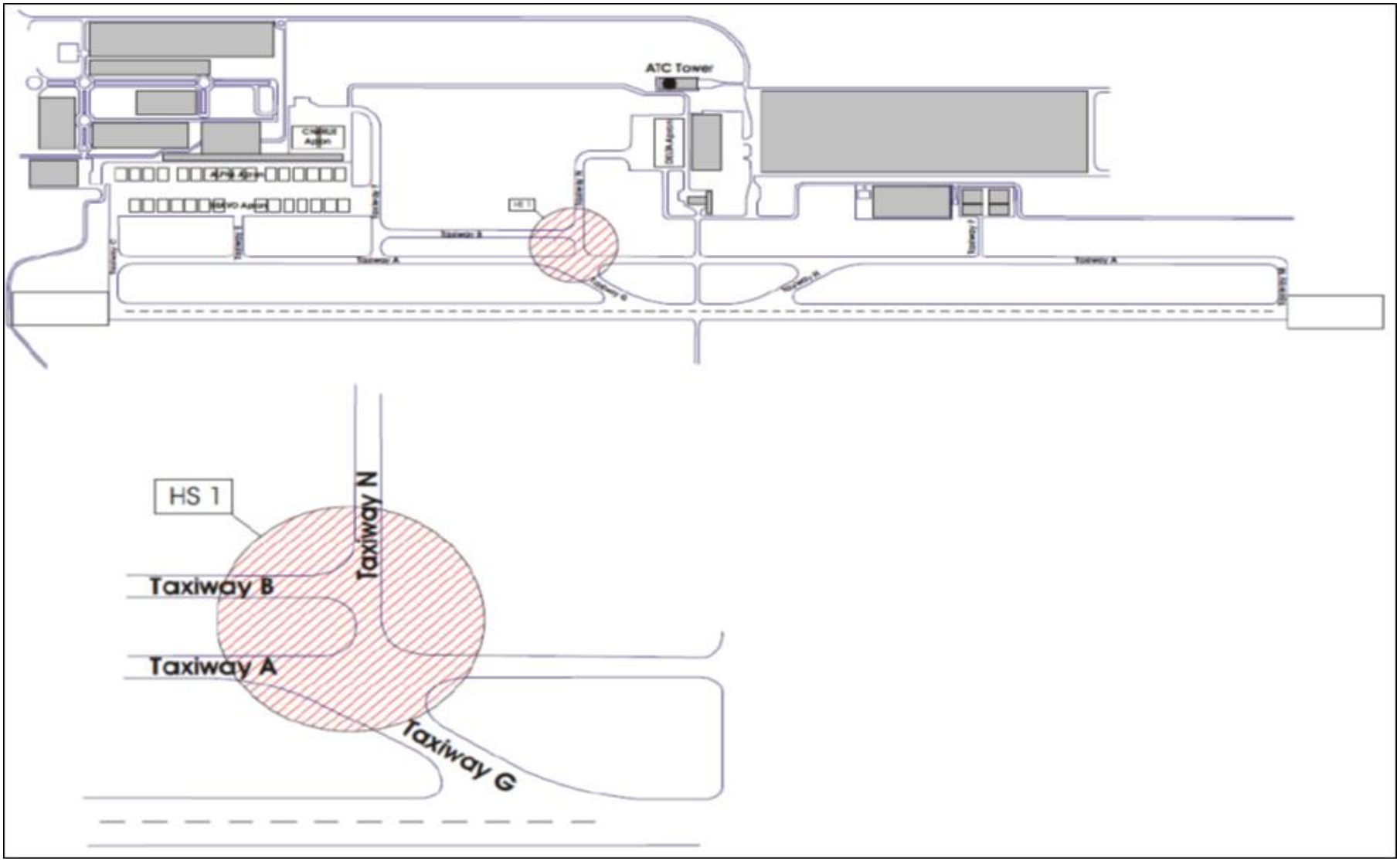

Figure 4: Depiction of the current 'hotspots' on the KSIA runways (Source: BMK 2017)

1.1.4. Construction Works

The construction phase is envisaged to be of a 21-month duration. It is envisaged that the construction operations will be split as follows:

- Construction of the Bravo Taxi Way extension; and
- Remote stand construction.

The effect of the construction activities on the daily operations of the airport will be discussed and agreed upon with the Project Manager, Airside and Landside Management and Operation Officials before commencement of the project.

1.2 Environmental Authorisation Process

The proposed development requires Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (Act 107 of 1998). Activities identified in Government Notice Regulations (GN R) 327 and 325 (Listing Notice 1 and Listing notice 3, respectively) of the EIA Regulations of 2014- as amended in 2017- will be triggered by the proposed project. Thus a Basic Assessment (BA) process is being undertaken to obtain the authorisation. The said activities are as follows:

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

Table 3: Activities triggered by the proposed project

Legislation, triggered activity	Description and application
National Environmental Management Act (Act No 107 of 1998); GNR 327: Listing Notice 1 of the EIA Regulations of 2014- as amended in 2017 Activity 61: The expansion of airports where the development footprint will be increased.	ACSA has proposed the construction of 4 new apron stands to accommodate wide-body aircraft at the KSIA. Part of the development will include the extension of one of the taxiways at the airport.
National Environmental Management Act (Act No 107 of 1998); GNR 325: Listing Notice 3 of the EIA Regulations of 2014- as amended in 2017 Activity 7: The development of aircraft landing strips and runways 1,4 kilometres and shorter, in: d. KwaZulu-Natal vii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	ACSA is proposing the extension of the Bravo Taxiway at the KSIA. The total length of the extension works will be 1300m.
Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. d. KwaZulu-Natal: v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Vegetation will be cleared from the remote stand site. The greatest areas to be cleared will be in Alternatives 1 and 3 (as discussed later in this report) There will also be vegetation clearing in the path of the Bravo Taxiway.

Ultimately, the outcome of the BA Process is to provide the Competent Authority (i.e. the national Department of Environmental Affairs (DEA)), with sufficient information to provide a decision on the Application in terms of granting environmental authorisation in order to avoid or mitigate any detrimental impacts that the activity may inflict on the receiving environment. In respect of this, DMT-Kai Batla (Pty) Ltd has been appointed by the BMK Engineering Consultants on behalf of ACSA, as the Independent Environmental Assessment Practitioner (EAP) to conduct the Basic Assessment process.

1.3 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—*

- *the property on which or location where it is proposed to undertake the activity;*
- *the type of activity to be undertaken;*
- *the design or layout of the activity;*
- *the technology to be used in the activity;*
- *the operational aspects of the activity; and*
- *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.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. 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.

1.3.1 Alternative activity

As the site is planned, zoned for, and has a permit to work as an airport, no other core use or alternative use can be considered. Furthermore, the proposed development is in line with the current land use zoning (i.e. Special Zone 10) and the activity will only serve to continue the site's core operations. The proposal has, however, been made to meet the current demands and envisaged future air carriage demands.

1.3.2 Alternative site

The KSIA is still a relatively new airport with sufficient room for development. As it stands, the airport has not been developed to its ultimate capacity (i.e. optimised). Development on this site has been included in national and provincial plans, and as per the National Airport Development Plan (NDP), it is a state preference to expand on existing airports to ensure that the land on which the port is situated is fully optimised. As such, no alternative site is proposed for assessment on the following basis:

- The proposed site is within the King Shaka Airport and will not constitute the extension of the airport beyond its current boundary.
- The site is in a licensed airport that has been operational for 7 years.
- The proposed expansion of KSIA operations has been documented in the National Airports Development Plan of 2015.
- The site falls under Special Zone 10 and is zoned for airport and associated activities.

1.3.3 Alternative layout

A number of alternative layouts have been considered for the apron and taxiway construction. The in terms of the remote stands, and as stated in the project description, 10 stand option layouts were originally produced from the combination of contact, future pier served and remote stand clusters. This was moderated to five option pair combinations as follows:

1. 2 Contact + 2 Remote (Option A1)
2. 2 Contact + 2 Future Pier Served (Option B1);
3. 2 Remote + 2 Remote (Option C);
4. 2 Remote + 2 Future Pier Served (Option D1); and
5. 2 Future Pier Served + 2 Future Pier Served (Option E).

A multi-criterion assessment (MCA) was conducted to determine the feasibility of the remote, stand layouts options. The criteria were based on operational, cost, and environmental criteria used to assess the best practicable option for the stand layouts. In terms of the environmental aspects, the main considerations for the alternatives were stormwater management requirements as well as the impact on the vegetation unit in which the airport is located. Based on the MCA assessment, the cluster combinations were narrowed down to three alternative layouts for the apron stands, and 2 alternatives for the taxiway extension. These are discussed below.

b) Apron Stands

Alternative 1 (preferred alternative): 2 + 2 Remote Stands <u>(Option C)</u>

Alternative 1 involves the construction of 4 new remote stands on a previously undeveloped portion of land. The stands can be built in isolation without adversely affecting airside operational efficiencies. Tie-in works with existing taxiways can be managed to avoid operational restrictions to the existing taxiway network. The remote stand site is close to the existing Bravo taxiway, which is envisioned to shorten some taxiway link infrastructure when compared to future pier served stand access. Once constructed, it is envisioned that the stands will not be impacted by future airport expansion projects.

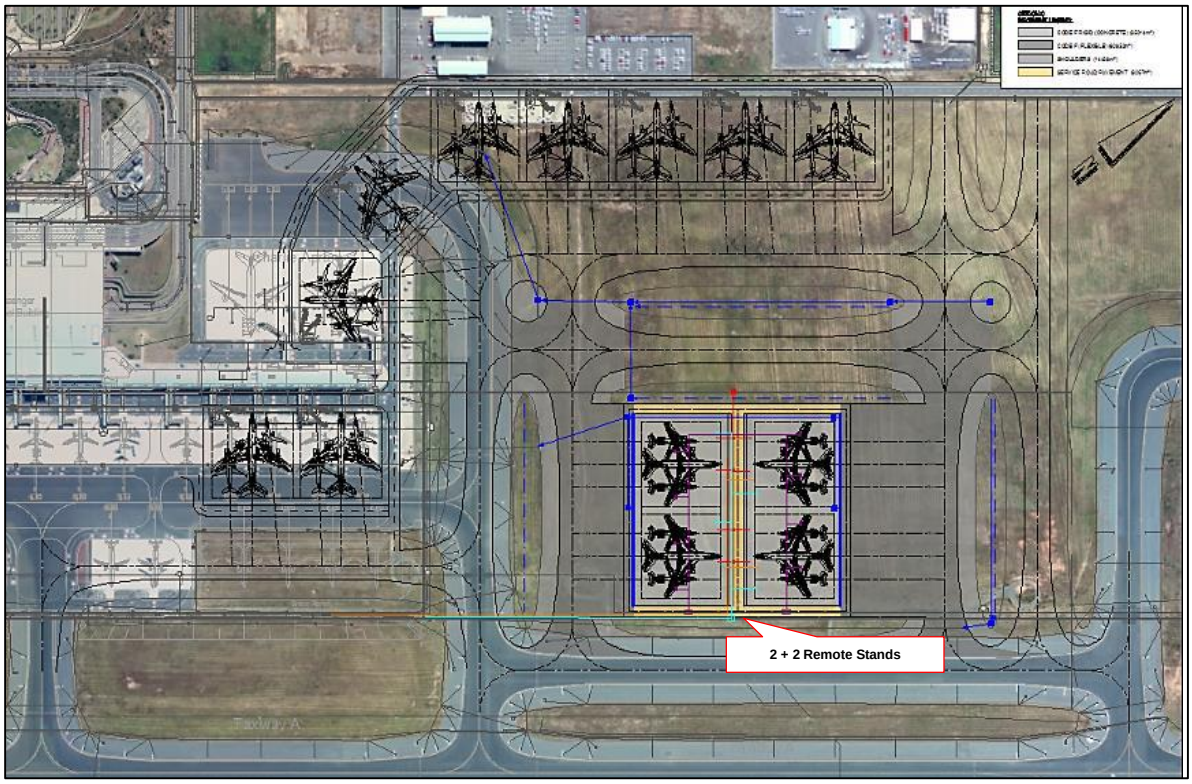

Figure 5: Apron Stand Alternative 1 (preferred alternative): 2 + 2 Remote Stands

The remote stand area is not connected to any of the existing airport buildings and would require extensive bulk earthworks. Given that the vegetation does not support substantial wildlife, the vegetation clearing is not envisaged to have a substantial environmental impact. As for the operational considerations, the remote stands will increase the enplaning and deplaning times due to bussing requirements, resulting in slower aircraft turnaround times when compared to the contact stand option. Service road alignment from the terminal will have to cross two operational taxiway links (which is in the airport's ultimate development plan). This however, could further increase passenger bussing times. Furthermore, given the proposed location of the remote stands, new stormwater management infrastructure will need to be installed here.

The remote stand area is in close proximity to the taxiways and would have sufficient room for airplane manoeuvre. Furthermore, construction in the area will not disturb the current airport operations (as compared to the other alternatives) and is not envisaged to have adverse impacts on airport operations in future developments, as it is a reasonable distance from the passenger terminal buildings. taking into account the cost and operational assessments and based on the environmental considerations applied during the feasibility phase, the **2 Remote + 2 Remote stand option (Option C) has been selected as the preferred layout option.**

Alternative 2: 2 Contact + 2 Remote (Option A1)

This alternative involves combining the remote apron stand type and the Alpha contact stand type (see Figure 6 below). The Alpha contact stand cluster (located adjacent to the terminal buildings) will be reconfigured to allow for wide-bodied aircraft to be stationed here.

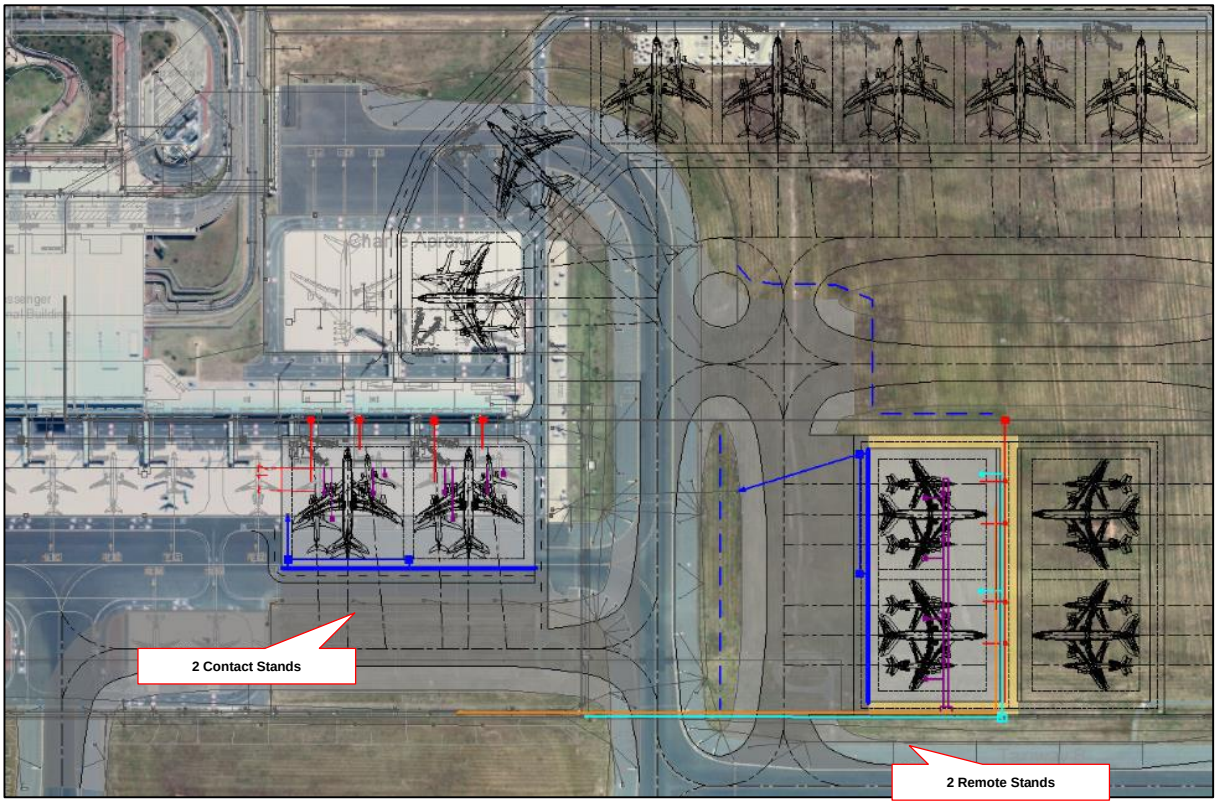

Figure 6: Apron Stand Alternative 2: 2 Contact + 2 Remote (Option A1)

The reconfigured contact stand option is beneficial in that it provides future wide-body contact stand capability to KSIA during future pier extension works. Contact stand capabilities offer reduced enplaning and deplaning times (no requirement to bus passengers) and assist in quicker aircraft turnaround times when compared to remote stands. Once constructed, the stands will not be impacted by future airport expansion projects- this applies to both the contact stand types as well as the remote stand types. Bulk service reconfigurations and new build costs are likely to be less when compared to other stand types (particular Alternative 1) since existing service infrastructure on the apron could be utilised, with minimal requirement for new connecting infrastructure. In terms of the new pavement constructions, there are existing layer works beneath the current aircraft pavements which could be utilised as part of the new pavement layer works.

In this option, the existing Alpha stormwater infrastructure will be expanded on to increase the capacity of the current drainage system in lieu of the envisaged increase in stormwater and runoff capture. The impact of the reconfiguration construction on existing airside efficiencies is greater than that of the remote and future pier stand types as construction will occur on an existing, operational apron. The reconfiguration and taxiway construction works can likely be phased in such a manner that dual access/egress to the existing aprons can be maintained throughout the works. Due to the requirement for new fixed-link bridges into the building, new node constructions, and airbridges, there will likely be some disruption to the terminal building and head of stand service road operations. In addition, when considered in isolation, the reconfiguration works will result in a net decrease in narrow-body stand capacity on Bravo apron due to the Code F taxilane.

According to the feasibility study, these factors have high cost implications, particularly for the required airbridge infrastructure as it is quite costly. Thus the cost implications and the envisaged impact on airside efficiency make Alternative 2 unfavourable.

Apron Stand Alternative 3: 2 Remote + 2 Future Pier Served (Option D1)

Alternative 3 is similar to Alternative 2 in that the proposed Future pier served apron stands are linked to existing airport infrastructure (see Figure 7).

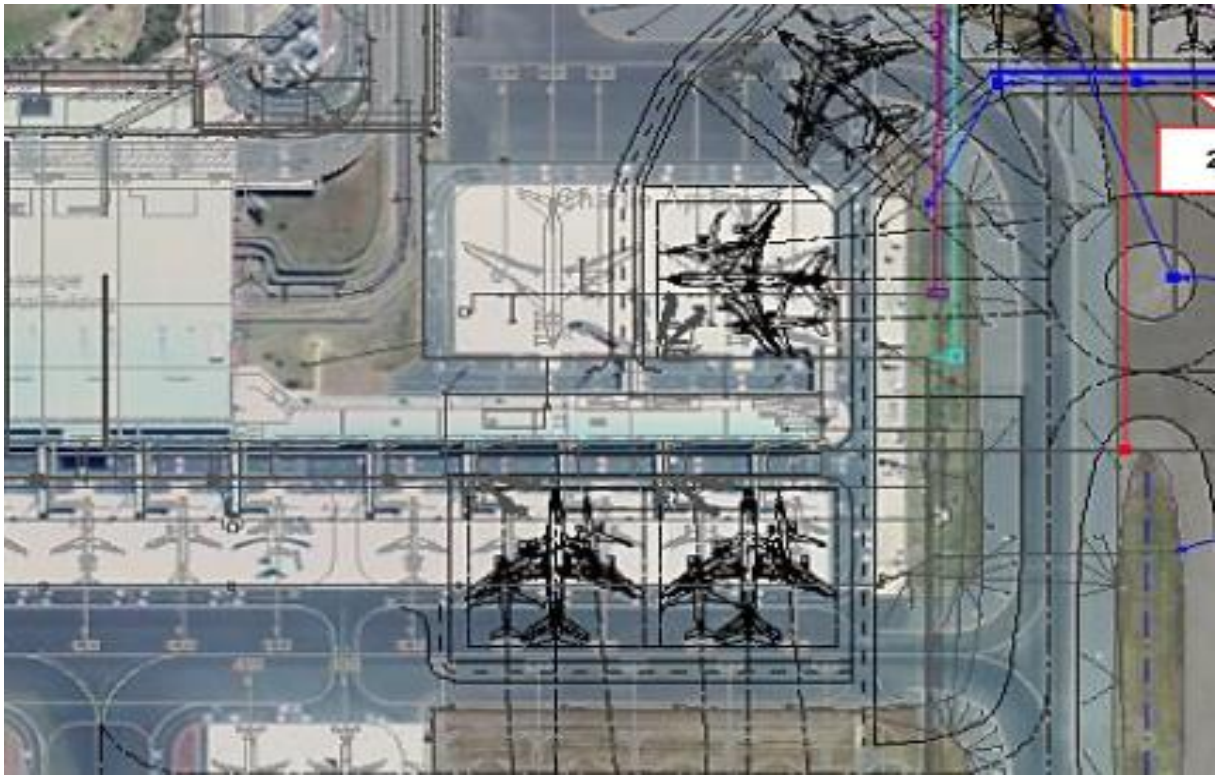

Figure 7: Apron Stand Alternative 3: 2 Remote + 2 Future Pier Served (Option D1)

The current state of this location is similar to that selected for the remote stands and this Alternative has similar construction requirements to Alternative 1- such as the undertaking of bulk earthworks. As is the case with Alternative 1, Alternative 3 stand types can be built in isolation without adversely affecting airside operational efficiencies. Taxiway tie-in works with existing taxiways can be managed to avoid operational restrictions to the existing taxiway network. The future pier served stand types have wide-body contact stand capability with safeguarding for future air bridge connections to limit geometric and stand service reconfigurations. Service road taxiway crossing requirements are less onerous for the future pier served types than for the remote stand types.

However, unlike in Alternative 1, stands will be impacted by future pier extension works, e.g. airbridge installations and terminal building construction works. The future pier severed stand types do not support maintenance of wide-body contact stand capability in the short-medium term since the stands will function as remote stands, i.e. when Charlie apron is decommissioned these stands will not offer contact stand capabilities. In this Alternative, all stand service infrastructure will be newly built. Whilst some existing service routes are in close proximity, others, like the fuel main are further away when compared to the remote stand option. The

requirement for taxiway link infrastructure will most likely be greater for this Alternative when compared to the contact and remote stands. Additionally, due to the remote stand type in this alternative, there will be an increase in enplaning and deplaning times due to bussing requirements, resulting in slower aircraft turnaround times when compared to contact stand option. Based on these factors, Alternative 3 is the least favourable option when compared to Alternatives 1 and 2.

a) Bravo Taxiway Extension and Intersection Development

The extension of the Bravo Taxiway has been proposed to alleviate several operational issues currently being experienced in the airside manoeuvring area at the airport. As part of the feasibility phase, two options were considered, with the options pertaining to the alignment of the link between the main taxiway extension alignment and the existing runway. Whilst there are a number of different permutations, the options presented as part of this study are:

- Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET (see Figure 8)
- Alternative 2: Intersection taxiway positioned north of RET Hotel (Figure 9).

Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)

Alternative 1 positions the proposed intersection taxiway link at the existing RET (Hotel) (See Figures 4 and Figure 8). Two centreline (CL) alignment options are being considered for this Alternative. These are depicted in Figure 9 below.

Figure 8: Bravo Taxiway Alternative 1: Intersection positioned at RET

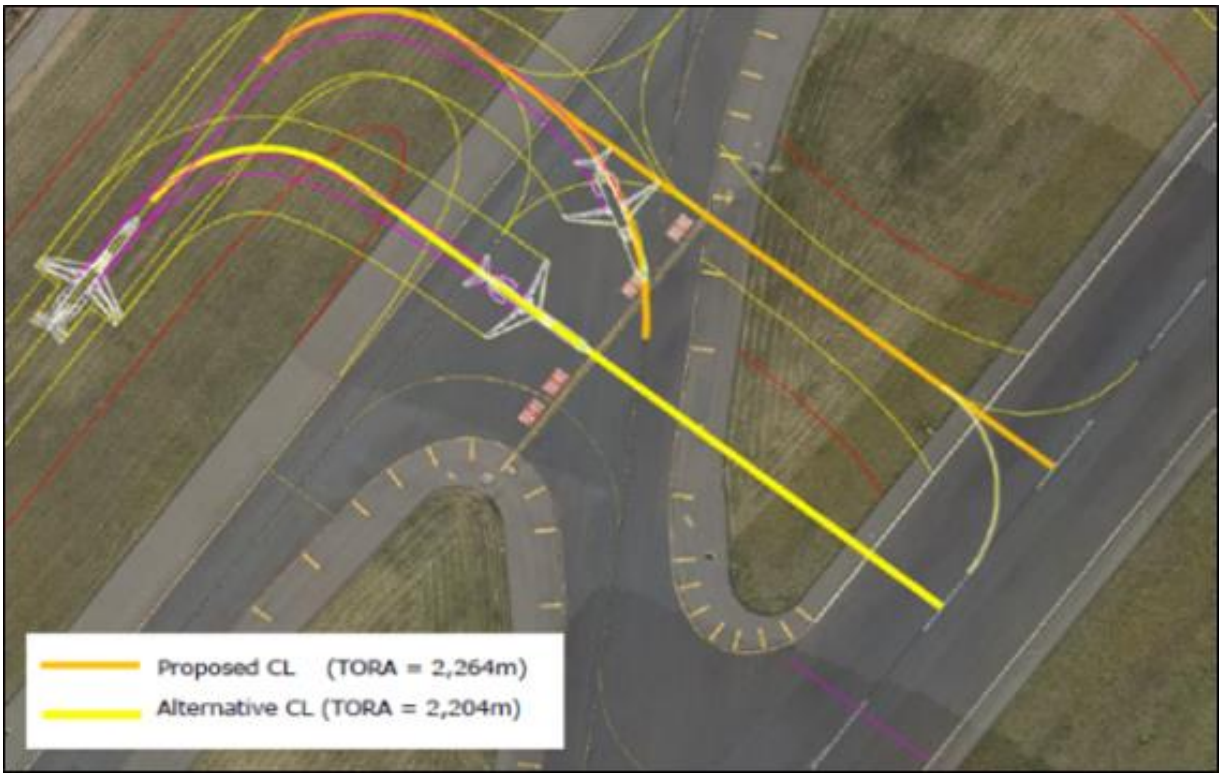

Figure 9: Alternative 1 intersection taxiway at RET: taxiway alignment variations

The orange centreline (Proposed CL, as labelled in the image) is a slightly different variation to the preferred alternate alignment option (Alternative CL shown in yellow). The feasibility study found that both alignments will provide a TORA distance of greater than 2,100m- making them both acceptable. The favoured alignment will allow aircraft a greater length of RET on which to decelerate before making the turn onto the new Bravo taxiway link. The taxiway link becomes more of a separate entity to that of the RET, when compared to the Alternative CL. The latter merges with the RET and can end up complicating the junction.

Conversely, for Code C aircraft using the intersection taxiway for take-off purposes, the two centreline alignment options will position aircraft slightly differently in relation to the existing runway hold marking. The disadvantage of the Proposed CL is that it requires a greater extent of pavement to be constructed when compared to the Alternative CL. However, the 2nd option has a more complex geometry. Whilst the options are fairly similar in most respects, the option which provides for the simpler intersection geometry (i.e. the Proposed CL) is preferred. However, the overall geometry of the Alternative 1 taxiway extension is more complex than that for Alternative 2. Therefore, Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET), is not the preferred option for the taxiway extension.

Alternative 2: Intersection taxiway positioned north of RET Hotel

Alternative 2 involves creating a taxiway link north of the existing RET (Hotel). This is depicted in Figure 10 below. The geometry in the Alternative taxiway alignment is less complex as compared to the alignment proposals in Alternative 1. The alignment of the Bravo taxiway link for Alternative 2 references the minimum taxiway centreline offset distance from the existing intermediate hold marking (refer to Figure 11). The Alternative 2 offset will enable a wide-body aircraft to hold at the hold position, whilst safely allowing for an aircraft using the Bravo link taxiway to perform an intersection take-off to taxi in front (see Figure 11). The red circle depicts

a wide-body aircraft in holding position. A link from Bravo taxiway to RET Hotel has also been assumed in this option. This will allow a level of flexibility in how the intersections and taxiways in the vicinity are used. The distance between the centerlines of the two links is 168.5m.

Figure 10: Bravo Taxiway Alternative 2: Intersection taxiway positioned north of RET Hotel

Figure 11: Option 2 intersection taxiway north of RET

The geometry of the taxiway alignment, as well as the cost of construction were the ultimate determinants of the preferred alternative for the taxiway layout. As part of the feasibility study, consideration was given to the infrastructure construction costs associated with each option and/or any additional operational considerations, e.g. hotspot creation/avoidance, junction complexity and so forth. Based purely on the pavement construction area, i.e., Alternative 1 was found to be the most cost-effective option as compared to Alternative 2. In terms of the alignment geometry, both Alternatives make provision for the taxiway extension and tie-in point to the existing runway required to the provide a minimum take-off runway available (TORA) distance of 2,100m. However, the geometry of Alternative 1 is more complex than that of Alternative 2. The latter Alternative is a much simpler solution in terms of intersection geometry, providing a completely independent taxiway link to the runway. Furthermore, the potential risk of the intersection becoming a future hotspot is less with Alternative 2, unlike with Alternative 1 as the latter has an interaction with the existing RET. Based on these considerations, Alternative 2 is the preferred option under application for authorisation.

1.3.4 Summary of Alternatives

Table 4: Summary of the alternatives being assessed

Apron Stands	
Alternative 1 (preferred alternative): 2 + 2 Remote Stands	Alternative 1 involves constructing four new remote stands on a previously undeveloped area to the north east of the airport. The remote stands will be in very close proximity to the extended Bravo Taxiway, but a good distance from other existing airport infrastructure.
Alternative 2: 2 Contact + 2 Remote (Option A1	Alternative 2 involves constructing 2 contact stands adjacent to the terminal buildings (in the south western areas of the development footprint), and 2 remote stands located to the east of the contact stand area.
Alternative 3: 2 Remote + 2 Future Pier Served	Alternative 3 has similar stand coupling to Alternative 2. This Alternative involves the construction of 2 future pier served stands (located in the northern area of the development footprint), and well as the two remote stands highlighted in Alternative 2. The contact stands in Alternative 2 stands are likely to be affected by future airport developments as they are in closer proximity to the Charlie Apron, which ACSA plans on decommissioning as part of the greater development plans for the airport.
Bravo Taxiway	
Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)	Alternative 1 involves the extension of the Bravo Taxiway such that it intersects directly with the RET Hotel. The geometry of this Alternative is complex (as compared to Alternative 2). Additionally, there is a higher risk of the intersection becoming a future hotspot in this Alternative.
Alternative 2: Intersection taxiway positioned north of RET Hotel (Preferred)	Alternative 2 involves the positioning of the taxiway intersection to the north of the RET Hotel. This preferred alignment is much simpler solution in terms of intersection geometry. This provides a completely independent taxiway link to the runway and creates a decreased risk of the RET Hotel intersection becoming a hotspot in future.

1.3.5 No go Alternative

The No Go alternative entails no change to the existing apron stand configuration and taxiway alignment- the latter of which will remain in its current position. This means that the number of the wide-body aircraft being accommodated by the apron stands will remain as is. The no-go alternative also means that the RET intersection will remain a hotspot on the taxiway-runway interaction. However, the No Go alternative is not synonymous with the baseline or *status quo,* since a number of developments are permitted and/or may occur in within the KSIA as set out in the development plans discussed under Sections 1.9 and 1.10. The No-Go alternative assumes that the current demand profile remains the same and does not take into consideration the projected increases in air travel and economic development in the area. As such, the no-go alternative is not preferred.

1.4 Physical size of the activity

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

Table 5: Physical footprint of the alternatives

Alternative:	Size of the activity:
Apron Stands	
Alternative A1[8] (preferred)	Code F Rigid (Concrete): 35 014 m² Code F (Flexible): 60 952 m² Pavement Shoulders: 14 429 m² Service Road Pavement: 6 267 m²
Alternative A2	Code F Rigid (Concrete): 35 031 m² Code F (Flexible): 53 477 m² Pavement Shoulders: 17 521 m² Service Road Pavement: 4 349 m²
Alternative A3	Code F Rigid (Concrete): 35 031 m² Code F (Flexible): 43 579 m² Pavement Shoulders: 10 940 m² Service Road Pavement: 10 647 m²
Bravo Taxiway	
Alternative 1	Taxiway Extension: 40 526 m² Pavement Shoulders: 40 768 m²
Alternative 2 (Preferred)	Taxiway Extension: 40 526 m² Pavement Shoulders: 40 768 m²

1.5 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~~

[8] "Alternative A.." refer to activity, process, technology or other alternatives.

Describe the type of access road planned:

The KSIA is easily accessible via N2 national highway, which branches off onto the M65 (Mdloti Road)- leading directly to the airport. To the north, one can access the airport via the R102, and to the east of the airport, access can be made via Sugar Cane Road.

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.

Refer to **Appendix A** for the project maps.

1.6 Maps

a) 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).*

Project maps are all A3 in size and can be found in **Appendix A** of this report.

b) 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.*

Please refer to **Appendix C** for the Layout/ Route Plan.

c) 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 the Department of Water and Sanitation (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.

Please refer to **Appendix A** for the sensitivity map.

1.7 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.

Please refer to **Appendix B** for the site photographs.

1.8 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.

Please refer to **Appendix C** for the facility illustration.

1.9 Activity Motivation

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The proposed development is occurring within the existing KSIA precinct. The KSIA is situated in Special Zone 10, which currently applies only to the airport site (i.e. the Farm La Mercy Airport No. 15124) and the DTP. Special Zone 10 is a split zoning in terms of the eThekwini Municipality Northern Spatial Planning Region (NSPR) scheme, and is not applied elsewhere in the area. As such, the activities involved in the project will have no effect on the current land use rights.			

2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
The KwaZulu-Natal Provincial Spatial Development Framework (2011-2016) has specified developmental needs towards social, community, economic, and infrastructure services towards building sustainable communities. The realization of these needs is part of the implementation of the 2011 KwaZulu-Natal Provincial Growth and Development Strategy (PGDS- 2011, 2016), which is the primary strategy that drives growth and development in the Province. The purpose of the *PGDS* is to provide the province with, "*a reasoned strategic framework for accelerating and sharing economic growth through catalytic and developmental interventions, within a coherent equitable spatial development architecture, putting people first and building sustainable communities, livelihoods and living environments*". In fulfilling this, the PGDS lists strategic objectives according to which the documented plans are meant to be achieved, particular in the transport logistics and freight sectors. The proposed KSIA development is in line with *Strategic Objective 4.1. Development of seaports and airports (PGDS 2016),* which recognises the need to increase the capacity of KSIA in order to make an increased contribution to the international logistics and connectivity competitive advantage of the Province.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The urban edge is the general boundary of a city beyond which no urban development is permitted. Considering that the proposed development is taking place within already developed area, the activity will be in line with eThekwini's urban edge planning.			
(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
The eThekwini Municipality IDP (2017/2018) IDP serves as a tool for transforming local governments towards facilitation and management of development within their areas of jurisdiction, while documenting identified opportunities to create an economically enabling environment within which to grow investment. In terms of spatial development planning, the eThekwini Municipal Spatial Development Framework (MSDF), in conjunction with the IDP, details the KSIA's role in the Municipality's development planning. The KISA falls under the eThekwini Northern Spatial Planning Region (NSPR). The Municipal IDP and SDF iterate the region's role of providing logistics support, significant residential, commercial & service functions. The NSPR is highlighted as a trade and industrial investment centre, with a significant agricultural support function (EMA MSDF 2015/2017). As such, the documents highlight the need to prioritize the appropriate economic responses to the growth area around the KSIA and the DTP. The expansion of the KSIA operations and surrounding areas in the Dube Industrial Development Zone (IDZ) are one such response to the growth in the area. Furthermore, and as detailed in the IDP, SDF/SDPs and other plans, the envisioned development of the KSIA aerotropolis is set to enhance the Province's competitive edge in transportation and freight logistics. This transport and commercial hub will provide an effective platform for forging trade linkages between provinces within the country, neighbouring states and the rest of the world- while encouraging investment on a local and provincial scale. Therefore, the approval of this application would not compromise the integrity of the existing approved and credible Municipal IDP and SDF.			

(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
The project involves the expansion of existing facilities at the KSIA. This is part of the greater structural development of the airport, which is a long-standing vision for Municipality and thus has been documented as such. The EMA IDP (2017) lists the programmes and plans planned for economic and structural development in the municipality. In relation to the airport development, the proposed project would fall under the EMA's *Plan 2: Developing a Prosperous, Diverse Economy and Employment Creation,* whose goal is to develop the economic wealth and promote economic transformation of eThekwini for the material well-being of all its citizens. (EMA 2016, pg. 311-313). The Municipality's ideas on achieving this goal include promoting investment in priority nodes and corridors and facilitating investment into required infrastructure- which is in line with the PSDF goals.			
(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 proposed project is not envisioned to have any negative impact on existing environmental planning. This is given the fact that the airport is surrounded by industrial developments and that the proposed development is unlikely to cause any new, unwarranted damage to the receiving environment. The project is in line with development plans for the region and has taken into account the minimising of impacts that may compromise the receiving environment and initiatives that the Municipality has implemented in terms of environmental management (EMA 2003). Thus, it is not envisaged that the integrity of the existing environmental management priorities for the area will be compromised by the development.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
The Ethekwini Integrated Transport Plan (ITP, 2010) iterates that tracts of land [owned by ACSA] are still vacant and in wait for the development/ expansion of the KSIA. The proposed development is also in line with the KZN Regional Aviation Strategy developed in 2014, which argues for the provincial wide connectivity of the regional airports in KZN to the central hub airport- the latter being KSIA. The rationale for such a strategy and the subsequent development of the regional airports [in Ulundi and Pietermaritzburg for instance] is aimed at realising the potential economic benefits for regional cargo transfer. The optimization of the KSIA as well as the regional airports therefore remains the strategic objective, and the expansion of these airports has the potential to increase regional accessibility and improve logistics in the province as iterated in other plans mentioned here.			
3. 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
As stated above, the KISA is located within the Dube IDZ. This area's zoning as a Special Zone 10 entails the continued expansion and development of the area towards meeting the goals set out in the IDPs and SDF/SDPs. The land uses embarked on here are largely based at the DTP			

area, and include areas such as the Dube AgriZone, focusing on high-value, niche agricultural and horticultural products, as well as the Dube TradeZone focusing on manufacturing and value-addition primarily for automotive, electronics and fashion garments. The MSDF (2017) highlight's the DTP Corporation's vision of attracting sufficient investment that will boost airfreight to the levels that will allow the KSIA and surroundings to achieve the aerotropolis status.			
4. 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
At national and provincial level, the propose expansion is a strategic economic move, particularly for the transportation of goods in and around South Africa, as well as in and out of the country. The envisioned development of the KSIA aerotropolis is set to enhance the Province's competitive edge in transportation and freight logistics. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipated increase in tourism-based revenue.			
5. 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
ACSA has adequate service capacity to accommodate the proposed development. Stormwater management- as a major service- has been accounted for in the approved airport master stormwater plan.			
6. 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
The expansion of the KSIA has been included in various Municipal plans. The specific expansion specifications have no effect on the Municipality's infrastructure planning as the development of the KSIA is already part of the Municipal plans.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
The project is part of the National Airports Development Plan (2015) which has been formulated to address the gaps between the current airport network and the future desired state. The plan is meant to guide and support the planning and development of individual airports while integrating them into the broader transport and spatial planning context. Expansion of the KSIA is included in these plans and the proposed development is one step towards achieving the Plan's goals.			

8. 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
The proposed apron stand construction and taxiway expansion is a suitable development for the area, considering the airport's location in a tradeport zone. The planned development will further the mandate the increase of the Dube Tradeport's capacity for air travel and cargo transfers- making this proposal suitable for the location's land use.			
9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
The proposed project is in line with the land use in the area and it involves the implementation of what has been planned for the airport. It is therefore, the best practicable environmental option as it will not compromise the integrity of the receiving environment- given that the project area is already quite transformed, i.e. proposed expansion works are within the KSIA precinct.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
Many of the potential negative impacts identified are temporary/short-term (during construction phase), and are outweighed by positive long-term impacts of improved infrastructure for increasing the KSIA's operational capacity. Other than periodic maintenance, there are no activities anticipated for the operational phase that may have a prolonged effect on the development area, particularly ones that have adverse effects on the environment.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
The development at the KSIA is part of the greater plans envisioned for the DTP and Dube IDZ as a whole. In addition, the project is part of the provincial plans (as stated in the KZN Regional Aviation Strategy) for establishing the KSIA as the central hub airport to which the other airports in the province will connect. As stated above, the rationale for such a strategy and the subsequent development of the regional airports is aimed at realising the potential economic benefits for regional cargo transfer in and around the province as well as from other areas nationally and internationally.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
It is not envisioned that the development will infringe on or affect anyone's rights, given that the proposed construction is part of longer-term plans for the airport.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
The project will not compromise the urban edge of the eThekwini Municipality as it will occur within an already developed area.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
Developments in the DTP are part of *SIP 2: Durban-Free State-Gauteng logistics and industrial corridor*. The KSIA is the principal component of the DTP, serving as an international passenger and cargo airport. The airport's proximity to the Durban and Richards Bay harbours is a key			

advantage as a transport and logistics hub. The proposed development will increase the airport's capacity and solidify the SIP 2 mandate for the area.
15. What will the benefits be to society in general and to the local communities? — Please explain
ACSA's mandate from the DoT is to develop the KSIA to its optimal level to meet the projected demand in air travel and cargo transport needs. With the planned development in this Northern Spatial Planning Region (NSPR), it is envisaged that development of the DTP and KSIA will attract investment to the area which is envisaged to have economic benefits for locals in the longer term (e.g. potential job creation in the longer term for the local communities in this region).
16. Any other need and desirability considerations related to the proposed activity? — Please explain
None.
17. How does the project fit into the National Development Plan for 2030? — Please explain
The National Development Plan (NDP) is a plan for South Africa to eliminate poverty and reduce inequality by 2030. One of the development areas listed in the plan is the transport infrastructure sector. PGDS' (as derivatives of the NDP) identify airport-related initiatives as drivers of socio-economic development. For KZN, the development and expansion of the DTP and KSIA is one such project that is aimed at meeting the NDP goals.
18. 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 measures: • The layout that will result in the least environmental impact will be chosen. • The actual and potential impacts of the activity on the environment and socio-economic conditions 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 minimise negative impact, enhance benefits and promoting compliance with the principles of environmental management. • Adequate and appropriate opportunity for stakeholder consultation will be ensured through the public participation process. • The environmental attributes have been considered in the management and decision-making of the activity.
19. 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 are discussed below: • The development is socially, economically and environmentally sustainable in that the proposed project will create job opportunities, therefore helping in meeting some of the social needs. • 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. Although the activity has little to no impact on these, they have been considered, and mitigation measures have been put in place.

- Where waste cannot be avoided, it is minimised and remedied through the implementation and adherence of EMP.
- 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 mitigated.
- The interests, needs and values of all interested and affected parties have been taken into account in any decisions through the Public Participation Process.
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and benefits.

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.

1.10 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:

Constitution of the Republic of South Africa Act No. (106 of 1996

The Constitution is the supreme Law in South Africa. Chapter 2 of the Constitution contains the Bill of Rights including section 24 which provides that:
"Everyone has the right-

(a)to an environment that is not harmful to their health or well-being; and
(b)to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-

i. prevent pollution and ecological degradation;
ii. promote conservation; and
iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Other rights protected by the Constitution relevant to an application for environmental authorisation include the right to administrative justice and to information, and rights, known as "socio-economic rights", such as access to adequate housing and basic services. The right to administrative justice is relevant to applications for environmental authorisations because decisions made by the competent authority in the course of the EIA process (such as the decision to accept a basic assessment report) as well as a final decision on the application fall into the definition of "administrative action"

The Constitution, and the stipulations it sets out on environmental management are the guiding principles on which environmental and development legislation has been conceptualised. The responsibility that the Applicant has to the environment needs to be in line with the Constitution- hence the need to ensure that all potential harm and pollution is highlighted and brought to the attention of the relevant decision makers (in this case, the National Department of Environmental Affairs, (DEA) given that ACSA is a State Owned Company (SOC)).

The National Environmental Management Act (NEMA), (Act No 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations of 2014- as amended in 2017(Government Notice No. R. 324, 325, and 327)

NEMA establishes a set of principles which all authorities have to consider when exercising their powers. This coincides with the role played by developers as per Section 28 of the Act, which requires that "*every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring*". NEMA legislates the requirement to obtain environmental authorisation for certain development proposals or projects in line with the EIA Regulations. The EIA Regulations, made under section 24 of NEMA, are intended to integrate and facilitate environmental impact management with development activities or processes, in line with sustainable development objectives. They provide a method for the investigation, assessment and communication of the potential consequences or impacts of listed activities. The purpose of these Regulations is to ensure that the impacts of activities for which environmental authorisations are necessary are properly assessed; so that the positive environmental impacts are enhanced; the activities which may have an unacceptable, negative effect on the environment are not authorised and those which are suitable for authorisation are approved, with conditions to avoid or mitigate possible detrimental effects.

The proposed project triggers activities in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the EIA activities, as amended in 2017, and is therefore subject to Basic Assessment as the process to be followed in obtaining Environmental Authorisation.

The National Water Act, 1998 (Act No 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) mandates the Minister of Water Affairs to ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Act guides the steps taken towards applications for and obtaining required authorisations in order for certain developments to proceed. This is in relation to developments that- amongst others- occur within water courses; activities that involve the abstraction of water from water courses, and the s well the disposal of water in a watercourse.

ACSA has a responsibility to implement measures to prevent pollution of any water resources during construction and operational activities. To ensure that this responsibility is taken up, ACSA has been in consultation with the DWS on the potential impact on any watercourses and the need for a water use authorisation. The DWS has reviewed the documentation submitted by ACSA during these consultations, and have addressed written communication to ACSA confirming that there is no need for a Water Use Licence Application (WULA). This is based on the DWS's belief that any potential wetland as well as water quality, habitat and biota will not be impacted on by the activity. (Please refer to Appendix E6 for the minutes of the consultation meeting, as well as Appendix I for the DWS confirmation letter).

National Environmental Management: Biodiversity (NEM: BA) Act 10 of 2004

NEM: BA provides for the management and conservation of South Africa's biodiversity, as well as the protection of species and ecosystems. The Act stipulates the need for and publication of bioregional plans as the listing of ecosystems and species which are considered threatened or in need of protection. Some of the key policies and regulations promulgated under the Act are

the Threatened or Protected Species Regulations (2007), Guidelines for the determination of bioregions and the preparation and publication of bioregional plans (2009) and a National List of Ecosystems that are Threatened and in Need of Protection (2011). A published bioregional plan is a spatial plan documenting terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning. In the Act, these locales are referred to as Critical Biodiversity Areas (CBA) and guidelines on the protection of these areas is included in bioregional plans. These are subsequently used to inform EIAs and land-use planning.

The project area is underlain by KwaZulu-Natal Coastal Belt grassland, which is an endangered vegetation unit. The area also falls within a CBA, and the proposed activities will involve substantive clearing of vegetation. A s such, care must be taken to prevent any adverse impacts on the local biodiversity in accordance with NEM: BA.

National Heritage Resources Act (Act 25 of 1999); KwaZulu-Natal Heritage Act, (Act No. 4 of 2008)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (NHRA), which is enforced nationally bt the South African National Heritage Resources Agency (SAHRA). In KwaZulu-Natal, SAHRA has delegated this authority to KwaZulu-Natal Provincial Heritage Authority (Amafa/Heritage KwaZulu-Natal). In terms of the Act, historically important features such as graves, trees, archaeological artefacts/sites and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. Section 38 of the NHRA requires that any person who intends to undertake certain categories of development must notify SAHRA and/or AMAFA at the very earliest stage of initiating such a development and must furnish details of the location, nature and extent of the proposed development. Section 38 also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that, if such an assessment is deemed adequate, a separate Heritage Impact Assessment (HIA) is not required.

Based on knowledge of the site, heritage or cultural artefacts do not occur in the development footprint. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and the KZN Provincial Heritage Authority (i.e. KZN AMAFA) be notified in order for an investigation and evaluation of the find(s) to take place.

Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The OHS Act provides for the health and safety of persons at work and for the health and safety of persons indirectly associated with the daily construction site activities; the protection of persons other than persons at work; and protects against hazards to health and safety arising out of or in connection with the activities of persons at work.

This Act will be enforced during the construction and it serves to mitigate any potentially negative impacts the proposed project may have on any of the labour force and on the surrounding communities.

Noise Regulations under the Environment Conservation Act (ECA) (Act 73 of 1989); SANS 10103-2008

Noise is regulated in terms of the Noise Control Regulations of the Environmental Conservation Act (Act No. 73 of 1989 - ECA). Legislative responsibility for the Noise Control Regulations is devolved to the provinces and implemented at a local level by municipalities. In terms of airport-related noise, the noise generated within the airport is guided by *SANS 10117: Calculation and prediction of aircraft noise around airports for land use purposes. This standard embraces the internationally acceptable approach of using land-use planning as an integral tool in mitigating the impact of aircraft noise from airports.* Furthermore, *the construction phase is likely to result in noise generation but of a temporary nature. The noise level is anticipated to be within the levels stipulated for the Special 10 land use zone and in line with SANS 10103-2008. This standard governs "measurement and rating of environmental noise with respect to annoyance and to speech communication".*

National Environmental Management: Air Quality Act (Act No 39 of 2004)

The Air Quality Act governs the standard of air quality and sets out the requirements to be met in terms of maintaining certain air quality levels. A key aspect of the NEM: AQA is the establishment of national ambient air quality standards. The Act provides for the identification of priority pollutants (sulphur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter (PM), ozone (O_3), lead and benzene (C_6H_6)) and the setting of ambient standards with respect to these pollutants. These standards are based on international best practice and provide the goals for air quality management and the yardstick by which the effectiveness of air quality management is measured.

The proposed Project does not trigger activities listed in terms of NEM: AQA, as the ACSA is already in possession of the necessary air emissions authorisations for the airport.

National Airports Development Plan, 2015; White Paper on National Civil Aviation Policy, 2015

Airport activities in general and aircraft operations in particular could have a major impact on the local environment as a whole. The National Civil Aviation Policy (NCAP) is focused more on the metropolitan and urban areas to facilitate the integration of the airport into its built environment and to ensure optimal utilisation of the development opportunities which the airport presents. Chapter 7 of the NCAP addresses the interaction between an airport and its environment and vice versa, and attempts to deal with all the aspects of land-use, which are not directly related to the operation of the airport. The airport environment in broad terms refers to the vicinity or area of influence of an airport. As such, the area of influence of an airport includes the airside as well as the landside of the airport. It also includes the geographic areas surrounding the airport, which are directly or indirectly affected by the airport or airport operation and vice versa. It therefore follows that the policy under this theme includes integrated development planning, land use on and around the airport and local emergency - and bulk municipal services, and development of the airport precinct and surrounding areas. Chapter 12 particularly deals with the environmental impact of aircraft operations. This impact includes noise and air pollution as well as human-induced climate change.

The National Airports Development Plan (NADP) has been initiated on the basis of the NCAP as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key stakeholders.

The KSIA expansion plans listed in this plan are as follows:

- The development of an additional 450 bays to car hire parking
- Construction of an additional 1000 bays to multi-storey parking
- ***Extension of the Bravo taxiway (this project)***

Airports Company Act 44 of 1993

The act provides for the overseeing ACSA's economic regulation. The Act falls under the auspices of the Department of Transport (DoT) and the regulation of ACSA's activities in relation to this, is designated to an independent statutory body (the Regulating Committee). ACSA's key mandates include:

- Promoting the safe, efficient, economical and profitable operation of ACSA airports and
- Encouraging timely improvement of facilities at ACSA airports so as to satisfy anticipated demand.

ACSA is regulated by the Regulating Committee stipulated in this Act through the prescription of service standards at airports and the limiting of airport charges.

Civil Aviation Act 13 of 2009

The Civil Aviation Act 13 of 2009, under the administration of the DoT, provides for the regulation and control of aviation in South Africa, the establishment of a South African Civil Aviation Authority (SACAA) with aviation safety and security oversight functions and gives effect to certain international aviation conventions, such as those standards and recommended practices of the International Civil Aviation Organisation (ICAO). The Minister of Transport is responsible with setting the regulations for the licensing, the inspection or management of aerodromes, including the technical, operational, safety and environmental management and protection standards in respect of airports in accordance with Section 155(1) of the Act as well as in accordance with the stipulations of the Airports Company Act, and other designated airports.

The Act to governs the aviation operations at the at the KSIA and is aimed at ensuring that the airport's activities are in line with international standards for aerodrome operations.

KwaZulu-Natal Provincial Growth and Development Strategy (PGDS) 1997; Provincial Economic Development Strategy (2006)

The provincial planning framework is provided by the KwaZulu-Natal Provincial Growth and Development Strategy (PGDS, 1997- as revised) and the Provincial Economic Development Strategy (2006). The most recent revision of the PGDS was undertaken in 2016 and is purposed to:

- Be the primary growth and development strategy for KwaZulu-Natal to 2035;

- Mobilise and synchronise strategic plans and investment priorities in all spheres of government, and development partners in order to achieve the desired growth and development goals,
    - Spatially contextualise and prioritise interventions so as to achieve greater spatial equity;
    - Guide clearly defined institutional arrangements that ensure decisive and effective leadership, robust management, thorough implementation and ongoing inclusive reviews of the growth and development plan.

The PGDS recognises the potential that KwaZulu-Natal possess as a transport and freight logistics hub- both locally and internationally. In line with this, the Strategy highlights the underutilisation of the DTP and KSIA, as well as the need to increase the capacity of this economic centre. As such, the proposed development is in line with the PGDS by contributing to the Strategy's international logistics development goals as well as contributing to the envisaged connectivity competitive advantage of the Province.

Ethekwini Municipality Integrated Development Plan (IDP) (2017/18 – 2021/2022) and eThekwini Municipality Spatial Development Framework Review 2016-2017 (SDF)

The IDP displays the EMA's efforts in the provision of quality and affordable basic services, providing a safe and clean environment while also creating a favourable environment for local economic and social development. It provides strategic guidance for the location and nature of future development in the Municipality. The Municipal Spatial Development Framework (SDF) sets out the objectives for the desired spatial form of the municipal area. It provides strategic guidance for the location and nature of future development in the Metro. It contains a strategic assessment of the environmental impact of the SDF and identifies programs and projects for the development of land within the municipality.

The development and expansion of the KSIA operations are included in the Municipality's growth objectives listed in these documents. These is discussed further in Section 1.19.

1.11 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?	577 m^3	

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

The waste to be produced during the construction phase (e.g. concrete, off cuts, bitumen bits, cement bags etc.) is typical of construction projects of this nature. The soil and rock material which is removed from the trenches during construction will, if deemed suitable, be used as backfill during rehabilitation. Waste material that cannot be used as backfill will be used in rehabilitation processes or disposed of at the nearest registered landfill site.

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

Waste produced will be disposed of at the Durban Solid Waste (DSW) landfill site which is the nearest licensed waste disposal site to the project area. Waste water management is conducted according to the Storm Water Management Plan compiled by the Ilembe EPC JV (2009).

Will the activity produce solid waste during its operational phase?

~~YES~~	**NO**
	~~m^3~~

~~If YES, what estimated quantity will be produced per month?~~
~~How will the solid waste be disposed of (describe)?~~

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

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

~~*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?~~

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:

Waste water and sewage effluent are disposed of and treated at the onsite Waste Water Treatment Works (WWTW). The waste water management system currently in place makes consideration for the re-use of waste water in the greater airport precinct-where such re-use is possible.

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:

The activities to be undertaken in the construction phase will only release emissions related to exhausts form construction vehicles and machinery, and dust generated during construction. The emission levels are not envisaged to surpass thresholds that would require an Air Emissions License (AEL), nor does the applicant need to consult with the competent authority to determine the necessity to change this application into a Scoping and EIA.

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 generation of noise is limited to the construction phase. The movements of construction trucks, machinery and other construction activities will generate noise during the construction phase. However, the noise will be of a temporary, localised nature and will last only during the construction activities/phase of the project. The noise level is anticipated not to exceed the levels stipulated by SANS 10103-2008 for the construction phase. In terms of airport-related noise during operations, the noise generated within the airport is guided by *SANS 10117: Calculation and prediction of aircraft noise around airports for land use purposes.* This standard embraces the internationally acceptable approach of using land-use planning as an integral tool in mitigating the impact of aircraft noise from airports.

1.12 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~~

~~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?	YES	**NO**

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

ACSA has been in consultation with the KZN regional DWS regarding the need for a Water Use Licence for this development. The DWS has confirmed that the Licence is not required. Written proof of this is found in Appendix I.

1.13 Energy Efficiency

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

The scope of work will be structured in a way that, where possible, the use of labour intensive methods will be employed. Not only will it serve the local community but it also saves the use of electrical, mechanical equipment that requires substantial energy output. In terms of machinery, energy efficient machinery, such as pneumatic rollers will be utilised during construction.

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

Generators will be used in areas where there are no connections to the airport's energy grid.

2 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.~~

2.1 Property description/physical address

Province	KwaZulu-Natal
District Municipality	eThekwini Municipal Area
Local Municipality	eThekwini Municipal Area- Durban District
Ward Number(s)	58
Farm name and number	La Mercy Airport 15124
Portion number	5,6,7,8,9,10 and 11.
SG Code	N0FU0000000015124005 N0FU0000000015124006 N0FU0000000015124007 N0FU0000000015124008 N0FU0000000015124009 N0FU0000000015124010 N0FU0000000015124011

~~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:	Special Zone 10 is currently applied to the KSIA site (i.e. the Farm La Mercy Airport No. 15124) and Dube TradePort (DTP) site. This site has a split zoning in terms of the North Scheme, namely Special Zone 10 (which is not applied elsewhere in Durban).

~~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**

2.2 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~~

2.3 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**	**X**
2.2 Plateau	**X**	**2.5 Open valley**	**X**	~~2.8 Dune~~	
~~2.3 Side slope of hill/mountain~~		~~2.6 Plain~~		~~2.9 Seafront~~	
~~2.10 At sea~~					

The KSIA is at an elevation of approximately 97 m above mean seal level (amsl). The general area around the airport is characterized by rolling hills interspersed with minor drainage lines. The catchment boundary between the Umdloti Catchment to the south and the Tongaat Catchment to the north roughly bisects the area in an east-west direction. The surrounding areas are characterised by highly dissected undulating coastal plains, covered to a great extent with sugarcane, vegetation, wetlands and watercourses.

2.4 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.

The site is underlain by Vryheid Formation geology, which forms part of the Karoo Basin Sequence of the Ecca Group (see Figure 12. The Ecca Group generally consist of dark-grey, carbonaceous mudrock with lamination and complete to high weathering (SACS 1980)[9].

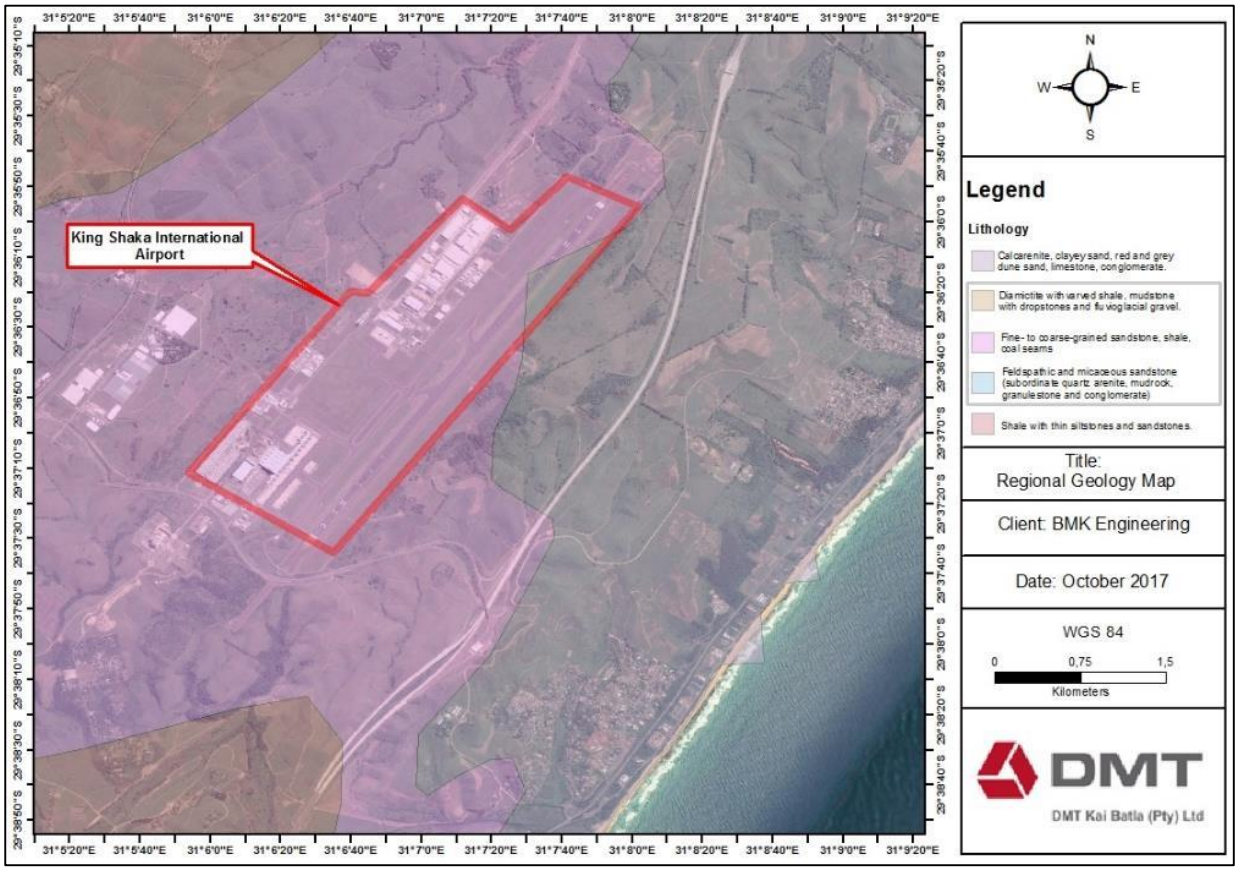

Figure 12: Map depicting the regional geology

The Vryheid formation is one of the 3 clastic sediment sequences into which the north Karoo Basin is divided[10]. The Vryheid formation and its sedimentary rock is largely comprised of fine-coarse grained sandstone, shale and coal seems. There are occasional with dolerite intrusions of the Karoo sequence underlying the site. site. The dolerites appear to be mainly in the form of dykes, which are generally aligned southwest-northeast. A major dolerite intrusion occurs along the contact between the Vryheid and Pietermaritzburg Formations immediately to the west of the site, while a faulted contact between these two formations is apparent in the south eastern portion of the site (INR 2007[11]).

[9] Sacs (South African Committee for Stratigraphy) 1980. Stratigraphy of South Africa, Part 1 (Comp. L.E. Kent). *Lithostratigraphy of the Republic of South Africa, South West Africa/Namibia, and the Republics of Bophuthatswana, Transkei and Venda*. Handbook of the Geological Survey of South Africa, 8.

[11] Institute of Natural Resources (2007). *Dube TradePort Environmental Impact Report July 2007*, Chapter 17 Geohydrology

The geology in the region is dominated by clayey sub-soils which are moisture sensitive and known to heave when wet. When wetted, it may need to be spoiled during earthworks. This type of soils is impassable during and after rainfall events in particular (SEF 2013)[12].

2.5 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.*

The area in which the airport is situated was primarily covered by vegetation of the KwaZulu-Natal Coastal Belt grassland as seen in the vegetation map (Figure 13) *(Mucina Rutherford 2006).* This vegetation type is characterized by dissected undulating coastal plains. Currently, the region is influenced by vast sugarcane fields. The vegetation unit of is highly transformed due to cultivation, urban sprawl and general development. Patches of secondary scrub do however remain, particularly after the construction of the KSIA and on-going development in the DTP. In other areas, the remaining remnants of coastal forests and scrub occur where od old sugarcane fields were abandoned and have been invaded by alien invasive plants including *Eucalyptus* species, *Lantana camara Chromolaena odorata, Schinus terebinthifolius, Leucena leucocephala. and Pinus species.* It is envisaged that the abandonment of the cane fields will allow for further invasive by these same species- should replacement develops not occur. A such, the management of the KSIA site needs to take into account that there is a high potential for the invasive species to establish themselves in cleared ground particularly (INR 2007[13]; SEF 2013[14]).

In the KSIA specifically, extensive vegetation clearing occurred in preparation for the airport. A vast portion of the area has been revegetated as part of the initial rehabilitation of the land. The remaining ground is covered by airport buildings and tarred surface used in the airport operations.

[12] Strategic Environmental Focus (Pty) Ltd (2013). Draft Environmental Impact Assessment Report Proposed Dube Tradeport Trade Zone 2 Located Between Tongaat and The King Shaka International Airport In Kwazulu-Natal, SEF Project Code: 504597.
[13] Institute of Natural Resources (2007). *Dube TradePort Environmental Impact Report July 2007*, Chapter 10 Flora and Fauna.

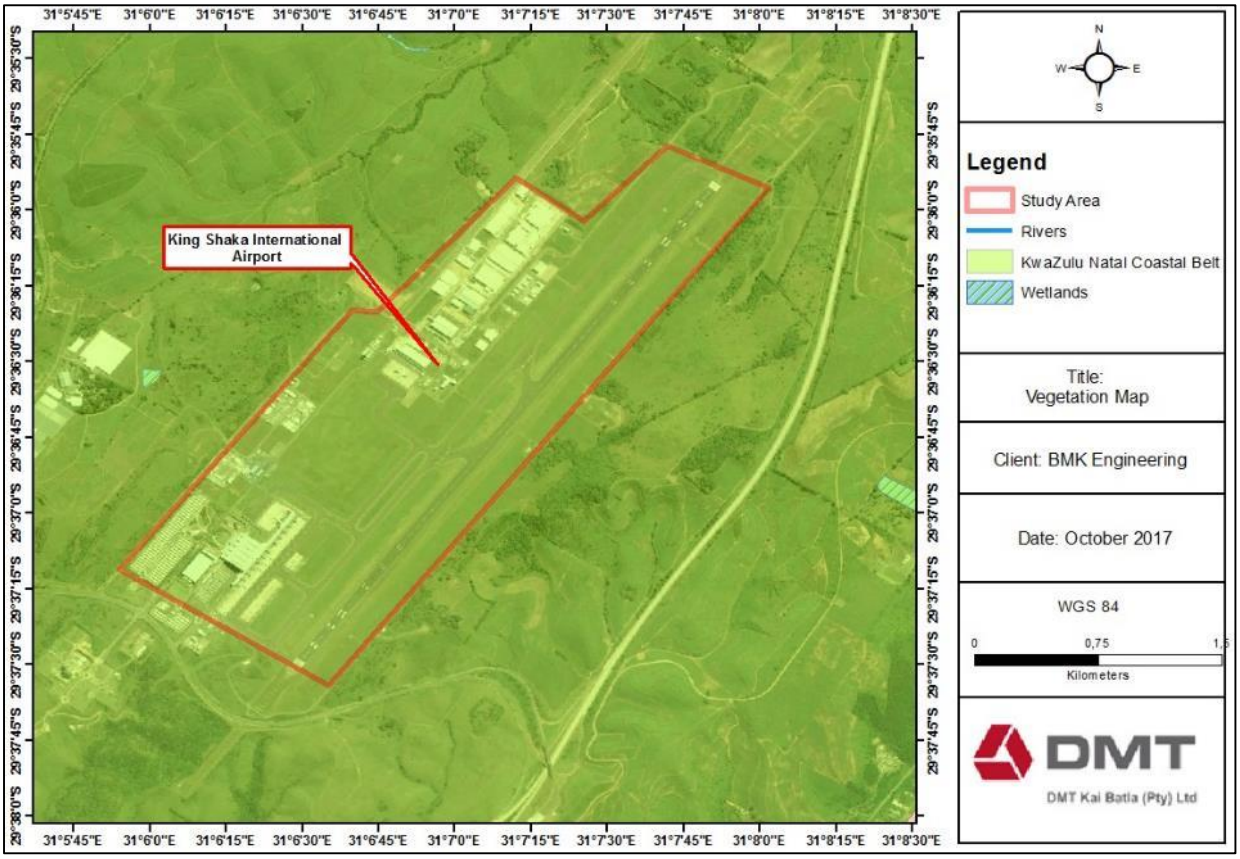

Figure 13: Map depicting the dominant vegetation type in the project area

2.6 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	~~YES~~	**NO**	~~UNSURE~~
Artificial Wetland	~~YES~~	**NO**	~~UNSURE~~
Estuarine / Lagoonal wetland	~~YES~~	**NO**	~~UNSURE~~

The KISA falls into quaternary catchments U30B of the Mvoti to uMzimkhulu Water Management Area (WMA No. 11) and U30B Tongaati River Catchment of of the KwaZulu-Natal Foreland Hydrological Region (DWAF, 2008) (see Figure 14). Quaternary catchment U30B is drained primarily by the perennial uMdloti River, which drains in a south-easterly direction towards the South-Indian Ocean. The quaternary catchment forms part of the Mvoti to uMzimkhulu Water Management Area (WMA) (Eco-Pulse 2017). Under U30D, water runoff from the study area feeds into the upper tributaries of the Hlawe River which drains in a north-easterly direction into the Tongaati River (located to the north of the airport), into the Indian Ocean. According to Freshwater Ecosystem Priority Areas (FEPAs) for the country, rivers and wetlands within this region are not considered to be Freshwater Ecosystem Priority Areas (SANBI, 2011)- which is largely as a result of the agricultural and industrial transformation the area has been subject to.

Sensitivity mapping done using the SANBI BGIS 2017 data highlighted the occurrence of a historical wetland in the proposed development area (please refer to the sensitivity in Appendix A). Based on site observations made by DMT-KB on one of its site visits, it was confirmed that this wetland however is no longer functional as it is dried up and lacks visible evidence of aquatic life or processes. This has been attributed to the destruction suffered by the wetlands during the initial airport construction. As such, the proposed development is not envisaged to have adverse impact on any of the water resources in the area. DWS are of the opinion that the project does not call for a Water Use Licence (WUL) given that the project is occurring within an already developed area, and that there is existing infrastructure between the wetland and the proposed site. The DWS believes that the drivers of any potential wetlands (surface, interflow and groundwater flow) as well as the water quality, habitat (physical structure and vegetation) and biota will not be impacted on the proposed activities. As such, the DWS has given ACSA written confirmation negating the need for a WUL application. Please refer to Appendix I for a copy of the letter from the DWS.

2.7 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~~
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)~~

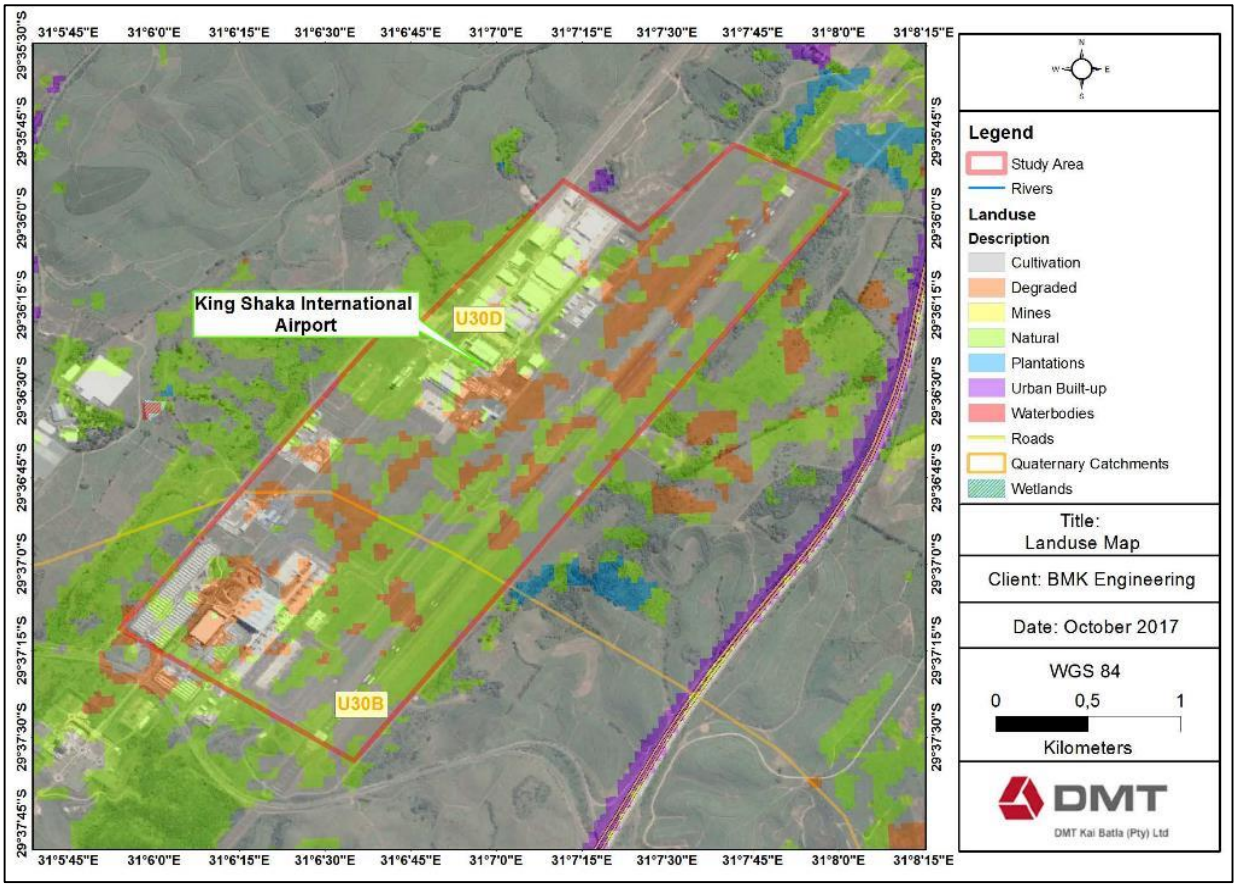

Figure 14: Land use map

The proposed development involves the expansion of current operations at KSIA. The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. As such, the proposed development will not impact negatively on the current operations as development is being proposed as to meet the growing demand in what the airport offers.

As stated under Section 2.5, portions of the airport and the surroundings s covered by vegetation and natural areas (see Figure 16 below). In addition to this, there is substantial agricultural activity making up the dominant land use type in areas such surrounding KSIA, where a large portion of the landscape has been transformed and is currently used for the production of sugarcane.

In terms of the industrial land uses, the area towards the north of the KSIA is a light industrial area, that supports the general aviation and airside/cargo terminal needs of the airport and the DTP. As seen in the map below, the natural areas have been fragmented and degraded. This is in particular reference to the degraded areas depicted within the airport boundary as well as the land to the east and north of the airport.

The proposed development will have no impact on these identified land uses as it is confined to a small area within the greater KSIA boundary.

~~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:~~

~~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:~~

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**

The presence of the Critical Biodiversity Area (CBA) is addressed under **Section 2.10.** The sensitivity map depicting the CBA is included in **Appendix A**

2.8 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~~	

Based on knowledge of the site and the extensive construction work that took place when the airport was developed, heritage or cultural artefacts do not occur within the airport perimeter. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and the KZN Provincial Heritage Authority (i.e. KZN AMAFA) be notified in order for an investigation and evaluation of the find(s) to take place.

~~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:~~

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.~~

2.9 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 employment status of citizens in the eThekwini Municipality is depicted in the graph below. These are statistics taken from the 2011 Census.

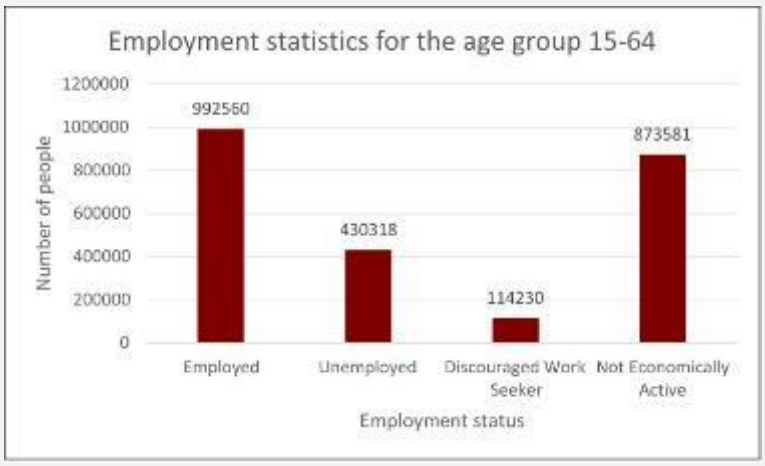

Figure 15: Employment status of eThekwini Municipality as at the 2011 Census (Source: StatsSA)

As at the review of the Municipal IDP, the unemployment status of the Municipality appears to have improved in the years after 2011. Figure 16 juxtaposes the status of the 2015-2016 employment levels with other metropolitans in South Africa. This graph indicates that eThekwini had the 2nd lowest unemployment recorded in the 2015-2016 period. However, the image also shows that unemployment growth was the 2nd highest as compared to the other metros (with an approximate increase of. 3.2%).

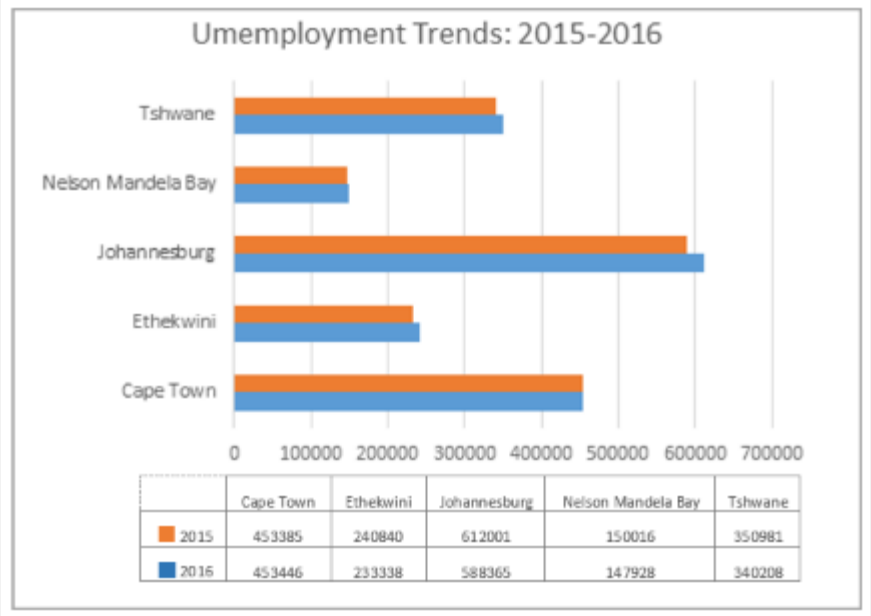

Figure 16: Unemployment Trends (Source: Global Insight, 2017)

Economic profile of local municipality:

The eThekwini region is the economic powerhouse of KwaZulu-Natal and also makes a significant contribution to the South African economy. It is a vital link between the regional

economies of Pietermaritzburg (and onwards to Gauteng) and Richards Bay, and ranks as the second largest economic centre with the second most significant industrial region in South Africa.

eThekwini is home to Africa's first multimodal logistics platform inclusive of an international passenger airport (i.e. the DTP and KSIA); Africa's busiest port, and a global conferencing, sporting and tourist destination. It is also a substantial administrative centre, providing key public services within the Metropolitan area as well as to the wider region. It is both a centre for low cost production, as well as a key logistics hub in the national economy and is home to 10% of employment opportunities in South Africa (EMA IDP 2017/2018).

As at the 2017/2017 IDP review, eThekwini's economy was dominated by tertiary industries that include the finance, manufacturing, community services, trade, transport (14%) and construction sectors. The contribution of these sectors in depicted in the graph below.

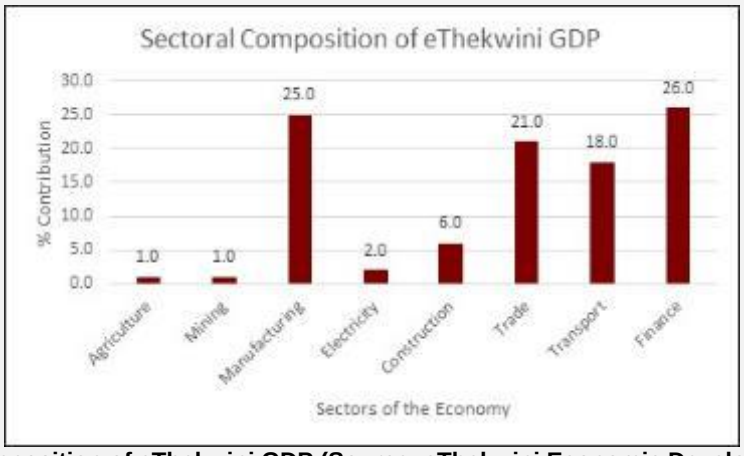

Figure 17: Composition of eThekwini GDP (Source: eThekwini Economic Development Unit)

The eThekwini IDP (2017/2018) highlights the following as key Issues relating to the economy in eThekwini:

1. Persistently high unemployment;
2. 41,8% of population subject to conditions associated with poverty;
3. Need for greater diversity in the economy.
4. Declining resource base and the impacts of climate change
5. Inability to meet timeous demand for strategic infrastructure and other services
6. Urbanisation – the movement of people from the rural to urban areas may lead to overcrowding, food shortages and impact on the infrastructure's carrying capacity.
7. Low foreign direct investment (FDI) and business expansion

The development of the DTP (including the development of the KSIA) is meant to address some of these economic shortfalls- particularly the increase in FDI and the development of the regions outside of the city so as to fortify economic activity in those areas.

Level of education:

As at the 2011 Census, the level of education in the Municipality was as follows:

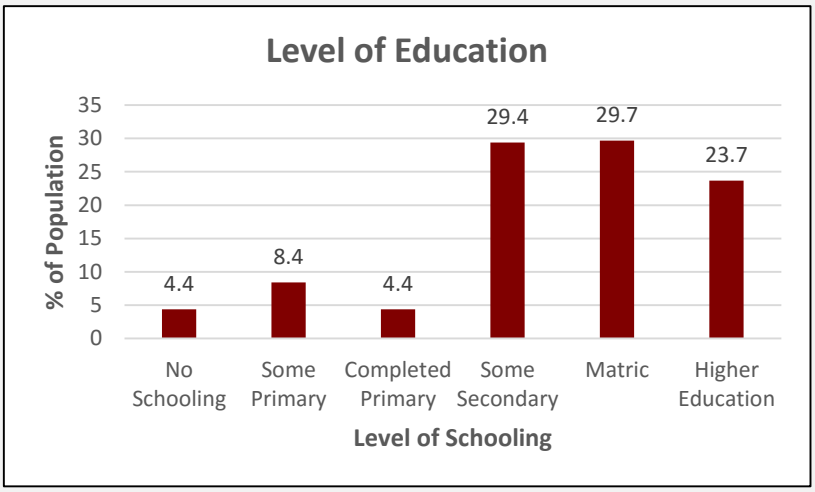

Figure 18: Chart depicting the level of Education in La Mercy (Source: StatsSA 2011)

As stated in the IDP (2017/2018). at least 35% of the population aged 20 and older in the eThekwini Northern Spatial Planning Region (NSPR- in which the project area falls), have a matric certificate or higher education qualification (EMA 2017). In La Mercy alone the number of citizens with a secondary education and further is quite high, with almost 39% of the population having at least some secondary education (StatsSA 2011). To address the shortfalls around education, the municipality has formulated initiatives to address the education levels within its jurisdiction, particularly in the less developed areas. This is seen in the Municipality providing training externally via the ABET and maths, science and technology (MST) programmes to schools. The objective of these programs is mainly to improve MST teaching and learning in order to prepare young people for successful entry into the working world in general and technological careers in particular. The graphical representation of these statistics indicates the spatial inequality in educational attainment: i.e. – the well-developed core of the Municipality has a higher level of education while the townships and rural areas have lower levels (EMA IDP 2017/2018).

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	**R 260,000,000.00**
What is the expected yearly income that will be generated by or as a result of the activity?	**N/A** as this is a capacity project.
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?	**+/- 50**
What is the expected value of the employment opportunities during the development and construction phase?	**R 10,500,000.00**
What percentage of this will accrue to previously disadvantaged individuals?	**100%**

How many permanent new employment opportunities will be created during the operational phase of the activity?	**0,** as this is a capacity project.
What is the expected current value of the employment opportunities during the first 10 years?	
What percentage of this will accrue to previously disadvantaged individuals?	**N/A.**

2.10 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)	According to the Provincial biodiversity planning, the area earmarked for the apron stand and taxiway development falls within Critical Biodiversity Areas CBAs (as seen in the sensitivity map in Appendix A). CBAs are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in such systematic biodiversity plans. The key driver of the identified CBA category is the locality of the area within the KwaZulu-Natal Coastal Belt Grassland (which has been classified as an 'Endangered' vegetation unit). According to the flora and fauna study conducted for the initial airport development[15], the site and the adjoining Mount Moreland area is a significant biodiversity area due to the presence of several conservation-important invertebrates and conservation-important plant species in the area. Several of these species are have been proven to occur in this area and subsequently listed as part of the 'KwaZulu-Natal coastal' hotspot (EKZN[16]W, 2010).

[15] Institute of Natural Resources (2007). *Dube TradePort Environmental Impact Report July 2007*, Chapter 10 Flora and Fauna.
[16] EKZNW, 2010. Terrestrial Systematic Conservation Plan: Minimum Selection Surface (MINSET). Unpublished GIS Coverage [tscp_minset_dist_2010_wll.zip], Biodiversity Conservation Planning Division, Ezemvelo KZN Wildlife, P. O. Box 13053, Cascades, Pietermaritzburg, 3202.

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	**5%**	The natural vegetation and habitat expected to occur in the area has been highly transformed. However, some natural ground cover is present on the peripheries and surroundings of the airport (refer to the land use map). In addition, there will be extensive vegetation clearance which is also a contributor to the 'natural' area being only a small percentage of the total affected habitat.
Near Natural (includes areas with low to moderate level of alien invasive plants)	**10%**	Alien invasive plants have been recorded prior to the development of the airport, and in specialist assessments conducted for other developments in the DTP and in the vicinity of the KSIA (SEF 2013). Some of the more dominant alien species include *Chromolaena odorata, Lantana camara, Schinus terebinthifolius, Leucena leucocephala* and *Eucalyptus* species.
Degraded (includes areas heavily invaded by alien plants)	**20%**	The land use map depicts the degradation of the area in which the airport is located. A lot of this is as a result of the development that the area has been subject to over the years. The development has changed the characteristics of the natural vegetation and habitats in the area; the proliferation of alien and invasive plant has also been exacerbated by the ground clearing and clearing of indigenous vegetation in preparation for construction works and sugar cane farming.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	**65%**	The vegetation in the area has undergone extensive transformation, even prior to the expropriation of the initial airport development. The remaining vegetation/natural landcover can be subdivided into grassland, secondary shrub, wooded areas, and secondary woodland. Secondary Scrub occurs throughout the study area where old sugarcane fields and other highly disturbed sites have been abandoned and been invaded by exotic shrubs and tree species. these plants form impenetrable thickets and are species poor with few indigenous species. This vegetation however, is largely found outside of the KSIA boundary.

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.

Table 6: Type of ecosystem 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**

The greater KSIA is situated within the KwaZulu-Natal Coastal belt grassland, which has been classified as “Endangered”. In terms of the aquatic ecosystems, there are no functional ecosystems on site and no envisaged impacts on any surrounding waterbodies.

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

The study area is located in the KwaZulu-Natal Coastal Belt Grassland (as seen in Figure 12). The KwaZulu-Natal Coastal Belt is restricted to the KwaZulu-Natal and Eastern Cape's eastern drift line. It extends from the edge of Mozambique through Durban completing just upper east of East London and is depicted by significantly broke down undulating shoreline fronts which were-to an extent- secured by different kinds of subtropical woods. Currently, the KwaZulu-Natal Coastal Belt is influenced by an astounding assortment of vast sugarcane fields, timber estates and cabin progressions, with assistant Aristida prairies, hedges and fixes of beach front thornveld- half of which has been transformed due to cultivation, urban sprawl and general development. According to SANBI (2011), the KwaZulu Natal Coastal Belt vegetation type is considered Endangered Grassland and has a conservation target status of 25 (Bertolli & Kinvig 2014).

The KwaZulu-Natal Coastal Belt is considered a complex of primary species-rich grasslands and subtropical forests. Common vegetation species found in the vegetation type include the following (Bertolli & Kinvig 2014):

- Low shrubs: *Clutia pulchella, Gnidia kraussiana, Phyllanthus glaucophyllus, Tephrosia polystachya.*
- Woody climbers: *Abrus laevigatus, Asparagus racemosus, Smilax anceps.*
- Graminoids: *Aristida junciformis subsp. galpinii (d), Digitaria eriantha (d), Panicum maximum (d), Themeda trian-dra (d), Alloteropsis semialata subsp. eckloniana, Cymbopogon caesius, C. nardus, Eragrostis curvula, Eulalia villosa, Hyparrhenia filipendula, Melinis repens.*
- Geophytic Herbs: *Bulbine asphodeloides, Disa polygonoides, Hypoxis filiformis, Ledebouria floribunda, Pachycarpus asperifolius, Schizocarphus nervosus, Tritonia disticha.*

- Herbs: *Berkheya speciosa subsp. speciosa (d), Cyanotis speciosa (d), Senecio glaberrimus (d), Alepidea longifolia, Centella glabrata, Cephalaria oblongifolia, Chamaecrista mimosoides, Conostomium natalense, Crotalaria lanceolata, Dissotis canescens, Eriosema squarrosum, Gerbera ambigua, Hebenstretia comosa, Helichrysum cymosum subsp. cymosum, H. pallidum,and Hibiscus.*

Grassland is the most extensive vegetation unit still found in the project area. In the landcover and vegetation specialist study conducted for the initial KSIA construction (C.J.H. Hines, with G.R. Nichols 2007), it was found that the grassland component of the landcover was not very diverse in terms of the vegetation species it contained. This was attributed to the highly disturbed nature of the habitat which the grassland occupies. Hines and Nicols study found that there was still a high representation of indigenous species presented here. These species include *Albizia adianthifolia, Bridelia micrantha, Psychotria capensis, Grewia occidentalis, Clerodendrum glabrum* and *Rhus chirindensis.*

The remaining vegetation described here is largely found in the areas surrounding the KSIA and DTP. In terms of the area proposed for the apron stand construction and taxiway expansion, it is not envisaged that the planned vegetation clearing contribute adversely to the already highly disturbed vegetation consider. It is important to note however, that the vegetation clearing should be guided the principles of the National Environmental Management Act (Act No. 107 of 1998- as amended), and in alignment with the National Environmental Management: Biodiversity Act (Act No. 10 of 2004).

Water Resources

As stated in Section 2.6, the KISA falls into quaternary catchments U30B- catchment U30B of the Mvoti to uMzimkhulu Water Management Area (WMA No. 11) and U30B Tongaati River Catchment of the KwaZulu-Natal Foreland Hydrological Region (DWAF, 2008) (see the hydrology map, Figure 14) The areas surrounding the KSIA have wetland habitats (see the sensitivity map and hydrology maps). The wetlands in the region have been subject to extensive habitat transformation caused by cultivation and human development/activities, which has resulted in decreased habitat diversity, reduced species richness and loss of habitat capable of supporting flora and fauna of conservation importance. Despite there being a relatively high regional demand for these services, the wetlands in their current degraded/transformed state lack the specific characteristics suited for attenuating and regulating flows as a consequence of artificial drainage, concentration of flows and removal of indigenous vegetation (SEF 2013, Eco-Pulse 2017).

According to the wetland study conducted in the initial development of the KSIA in 2007[17], the wetland system in the greater DTP area of the site at that time had a relatively low level of functionality. The infilling of wetlands in the initial development has also contributed to the low functionality levels of the wetland system currently experienced in the area. This was further verified on the site visit conducted by DMT-KB, where it was

[17] Cowden, C & D. Kotze (2007). *An assessment of the wetlands potentially affected by the proposed Dube TradePort, La Mercy (Draft*). Land Resources International, University of KwaZulu-Natal. Report compiled for: Institute of Natural Resources.

observed that there are no longer any functional wetlands or natural seepage areas in the airport and in the proposed development footprint specifically.

To ensure that the correct procedure is followed in terms of protecting water resources, ACSA has been in consultation with the KZN regional DWS regarding the need for a water use authorisation for the proposed development. As stated above, the DWS are of the opinion that the project does not call for a WULA, given that the project is occurring within an already developed area. The DWS believes that the drivers of any potential wetlands (surface, interflow and groundwater flow) as well as the water quality, habitat (physical structure and vegetation) and biota will not be impacted on the proposed activities. As such, the DWS has given ACSA written confirmation negating the need for a WUL application. Please refer to Appendix I for a copy of the letter from the DWS.

3 SECTION C: PUBLIC PARTICIPATION

The Public Participation Process (PPP) forms a vital component of the EIA process. The sections below illustrate the activities that took place during PPP.

3.1 Objectives of the Public Participation

Following the requirements for public participation in terms of the NEMA, objectives of the PPP include providing sufficient and accessible information to enable stakeholders to:

- Identify issues of concern;
- Contribute to local knowledge and experience; and
- Ensure that their comments, issues of concern and suggestions are correctly captured, addressed and considered in the BA process and BAR.

3.2 Legislative Framework

In terms of Section 24 (4) of the Act and Regulation 41 (b) of the NEMA Regulations (2014), the Applicant is required to consult with, and notify in writing, all landowners or lawful occupiers and any other Interested & Affected Parties (I&APs) of the proposed development and potential impacts arising therefrom. In order to ensure compliance with the NEMA Regulations, the following activities have been undertaken to date:

- Identification of Stakeholders I&APs;
- Development and on-going updating of an I&AP database;
- Advertising the notification of application for environmental authorisation through the Basic Assessment process in a regional/ local newspaper;
- Placement of site notices;
- Email distribution of BIDs to I&APs; and
- Placement of the Draft BAR and EMPr in a public venue for public review and comment.

3.3 Site Visit

A site visit was undertaken on 2 June 2017. The aim of the site visits was to familiarise the DMT-KB team with the project area and identify additional I&APs to update the database.

3.4 Determination of Appropriate Measures

A database of I&APs for the proposed application was developed and updated during the PPP. I&APs were identified at national, provincial, district and local levels. Other I&APs surrounding the project site were also identified and added to the database and the general public was invited through advertisements and the distributed BID documents to register as I&APs on the database (please refer to Appendix E5 for a list of I&APs identified to date).

Authorities and organs of state identified as key stakeholders are listed as follows:

Table 7: Key stakeholders identified in terms of Regulation 41(2)(b) of GN 982 (as amended)

Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Salome Mambane	Department of Environmental Affairs	SMambane@environment.gov.za
Toinette van der Merwe	Department of Environmental Affairs	TVanDerMerwe@environment.gov.za
Mavis Padayachee	KZN Department of Economic Development, Tourism and Environmental Affairs	Mavis.Padayachee@kznedtea.gov.za
Hassina Aboobaker Environmental officer: Specialised Production, Water Quality Management	Department of Water and Sanitation	hassinaa@dwa.gov.za
Judy Reddy	KZN National Department of Transport	Judy.Reddy@Kzntransport.gov.za
Thobekile Nzimande	KZN Department of Transport, Community Safety and Liaison	thobekile.nzimande@kzntransport.gov.za
Thomas Mathibela	KZN Tourism	thomas@zulu.org.za
Ndabo Khoza: CEO	Durban Tourism	ndabo@zulu.org.za
Pat Luckin	KZN Department of Cooperative Governance and Traditional Affairs	pat.luckin@kzncogta.gov.za
Sibongile Nzimande (confirmed): HOD	KZN Department of Arts Culture Sports and Recreation	nzimandes@kzndac.gov.za OR nkwanyanas@kzndac.gov.za
Weziwe Tshabalala	Amafa Kwa-Zulu Natal	archaeology@amafapmb.co.za and bernadetp@amafapmb.co.za
Yugeshni Govender	Department of Environmental Affairs & Rural Development	yugeshni.govender@dae.kzntl.gov.za
Phindile Bhungani	Department of Agriculture, Forestry and Fisheries (DAFF)	Phindileb@daff.gov.za
Thami Manyathi	Ethekwini Municipality	Thami.Manyathi@Durban.gov.za
Diane Van Rensburg:	Ethekwini Municipality	Diane.VanRensburg@durban.gov.za
Hamish Erskine	Dube TradePort Corporation	hamish@dubetradeport.co.za
Siva Narainsamy	Tongaat Civic Association /Tongaat Ratepayers' Ass: President	tongaatcivicassociation@gmail.com
Marilyn Govender	South African Sugar Association	marilyn.govender@sasa.org.za
Gabriel Aubrey	S A Cane Growers Association	agabriel@canegrowers.co.za
Tongaat Hulett Developments	Nonhlanhla Khoza	nonhlanhla.khoza@thdev.co.za
Paul Ramlal	La Mercy Ratepayers Association: Chairman	paulramlal@optinetsa.co.za
Angie Wilken	Mount Moreland Ratepayers Association and Mount Moreland Conservancy	angie@mountmoreland.com; angie @barnswallow.co.za
R Siedle	La Mercy Airport Environmental Forum	zalbroker@wol.co.za
Fonda Lewis	Institute of Natural Resources	inr@ukzn.ac.za
Dominic Wieners	KZN Wildlife	wienersd@kznwildlife.com

Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
Carolyn Schwegman	Wildlife and Environment Society of South Africa (WESSA)	afromatz@telkomsa.net

Proof of written notification sent to stakeholders is included in **Appendix E4.**

3.5 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

Please refer to **Appendix E6** for the I&APs database and correspondence from stakeholders.

3.6 Written Notification

Advertisements

An advertisement was placed in 1 national and 1 regional newspaper (i.e. The Daily News) on (13 November 2017) to advertise the ACSA's intention to apply for environmental authorisation. The advertisement served to notify the public about the EA application, provided the description and location of the proposed activities, the availability of the Draft BAR for review and comment and the 30-day public review period, and details on the environmental consultants to contact for the BID and further information on the proposed project.

Please refer to **Appendix E1** for the newspaper advert tearsheet, and **Appendix E2.**

Site Notices

A2-sized site notices containing the same information as the advertisements were put up around the proposed project area on 10 November 2017. A total of 3 site notices were erected. Please refer to Table 8 for a list of where site notices were placed and to **Appendix E1.1** for photographic evidence.

Table 8: Site notice placement and newspaper advert publication

Publication name	The Daily News
Date published	13 November 2017
Site Notice Placement	• KSIA: Opposite Mugg & Bean • KSIA: Screening point to airside • KSIA: Adjacent to ATNS elevator
Date placed	10 November 2017

Please refer to **Appendix E1** for proof of the advert publication and Site notice placement.

Background Information Document

A Background Information Document (BID) was compiled in English and distributed to all identified I&APs, which included local businesses in the area, existing I&APs on the database, local authorities and non-governmental organisations. The BID briefly described the proposed project and explained the EIA process and provided the following information:

- Purpose of the BID;
- Appointed EAP;
- Project Description including proposed project activities;
- Basic Assessment and Public Participation process;
- Contact details of the EAP for I&APs to register and send through written issues, concerns or queries; and
- Map of the proposed project area.

Please refer to **Appendix E4** for a copy of this BID.

3.7 Draft Reports for Public Review

The Draft BAR and EMPr were emailed to identified stakeholders where they were informed of the commenting period: when it commenced and the conclusion thereof. Additionally, a copy of the Draft BAR and EMPr were placed at the Tongaat South Library for the public to review. The public has between 6 November and 6 December 2017 to provide comment on the draft reports.

3.8 Issues Raised by Interested and Affected Parties

Summary of main issues raised by I&APs	Summary of response from EAP
No comments have been received on the Draft BAR yet. Once the PPP is complete, the EAP will ensure that all comments are captured and included in the Final BAR.	

3.9 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.

The comments and response report will be included in the Final BAR.

4 SECTION D: IMPACT ASSESSMENT

4.1 Impact assessment methodology

This section provides the detailed methodology used for the assessment of the significance of potential environmental impacts in the EIA. This methodology allows for the identified potential impacts to be analysed in a systematic manner, with significance rating (from insignificant to very high) assigned to each potential impact. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The criteria used to determine impact consequence include extent, intensity and duration of the impact and are presented in Table 9 below.

Table 9: Criteria used to determine the consequence of the impact

Rating	Definition of Rating	Score
A. *Extent– the area in which the impact will be experienced*		
Local	Confined to project or study area or part thereof (e.g. site)	1
Regional	The region, which may be defined in various ways, e.g. cadastral, catchment, topographic	2
(Inter) national	Nationally or beyond	3
B. *Intensity– the magnitude or size of the impact*		
Low	Site-specific and wider natural and / or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and / or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and / or social functions or processes are severely altered	3
C. *Duration– the time frame for which the impact will be experienced*		
Short-term	For the duration of project activities / up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years	3

The combined score of these three criteria corresponds to a consequence rating, as set out in Table 10 below. (Note that the lowest possible consequence score is 3).

Table 10: Method used to determine the consequence score

***Combined Score* (A+B+C)**	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Once the consequence is derived, the probability of the impact occurring is considered, using the probability classifications presented in Table 11 below.

Table 11: Probability classification

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

The overall significance of impacts is determined by considering consequence and probability using the rating system prescribed in Table 12.

Table 12: Impact significance rating

		Probability			
		Improbable	Possible	Probable	Definite
Consequence	Very Low	**INSIGNIFICANT**	**INSIGNIFICANT**	**VERY LOW**	**VERY LOW**
	Low	**VERY LOW**	**VERY LOW**	**LOW**	**LOW**
	Medium	**LOW**	**LOW**	**MEDIUM**	**MEDIUM**
	High	**MEDIUM**	**MEDIUM**	**HIGH**	**HIGH**
	Very High	**HIGH**	**HIGH**	**VERY HIGH**	**VERY HIGH**

Different types of impacts were also considered in the impact ratings, as listed in Box 4-1.

Box 4-1: Types of Impact

Direct – impacts that result from the direct interaction between a project activity and the receiving environment (e.g. dust generation which affects air quality).

Indirect – impacts that result from other (non-project) activities but which are facilitated as a result of the project or impacts that occur as a result of subsequent interaction of direct project impacts within the environment (e.g. reduced water supply that affects crop production and subsequently impacts on subsistence-based livelihoods).

Cumulative – impacts that act together with current or future potential impacts of other activities or proposed activities in the area / region that affect the same resources and / or receptors (e.g. combined effects of waste water discharges from more than one project into the same water resource, which may be acceptable individually, but cumulatively result in a reduction in water quality quality).

There is no statutory definition of 'significance' and its determination is therefore necessarily partially subjective. Criteria for assessing the significance of impacts arise from the following key elements:

- Status of compliance with relevant local legislation, policies and plans, any relevant or industry policies, environmental standards or guidelines and internationally accepted best practice;
- The consequence of the change to the biophysical or socio-economic environment (e.g. loss of habitats, decrease in water quality) expressed, wherever practicable, in quantitative terms. For socio-economic impacts, the consequence must be viewed from the perspective of those affected, by taking into account the likely perceived importance of the impact and the ability of people to manage and adapt to the change;

- The nature of the impact receptor (physical, biological, or human). Where the receptor is physical (e.g. a water resource) its quality, sensitivity to change and importance must be considered. Where the receptor is biological, its importance (e.g. its local, regional, national or international importance) and its sensitivity to the impact must be considered. For a human receptor, the sensitivity of the household, community or wider societal group must be considered along with their ability to adapt to and manage the effects of the impact; and
- The probability that the identified impact will occur. This is estimated based upon experience and / or evidence that such an outcome has previously occurred.

The impact significance rating also reflects the need for mitigation. While low significance impacts may not require specific mitigation measures, high significance negative impacts demand that adequate measures be put in place, to reduce the residual significance (impact significance rating, after mitigation), as described below in Box 4-2.

Box 4-2: Definitions of Impact Significance

Insignificant: the potential impact is negligible and no mitigation measures or environmental management is required.
Very Low & Low: no specific mitigation measures required, beyond normal environmental good practices.
Medium - High: specific mitigation measures should be devised, to reduce the impact significance to an acceptable level. If mitigation is not possible, compensation measures should be considered.
Very High: specific mitigation measures should be identified and implemented, to reduce the impact significance to an acceptable level. If such mitigation is not possible, very high significance negative impacts should be considered in the project's authorisation process.

Note that impact significance will be rated in the prescribed way both without and with the effective implementation of the recommended mitigation measure.

4.2 Environmental Impact Assessment

Table 13 below lists the potential impacts resulting from the construction and operational phases of the proposed project. The following alternatives are under consideration in this impact assessment:

Apron Stands

- Alternative 1 (preferred alternative): 2 + 2 Remote Stands
- Alternative 2: 2 Contact + 2 Remote (Option A1
- Alternative 3: 2 Remote + 2 Future Pier Served

Bravo Taxiway

- Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)
- Alternative 2 (preferred alternative): Intersection taxiway positioned north of RET Hotel

4.3 Impact Assessment

Table 13: Impact Assessment

Activity	Impact summary	Significance	Proposed mitigation
Apron Stand Alternative 1 (preferred alternative): 2 + 2 Remote Stands			
Design Phase	*None.*		
Construction Phase	*Direct impacts*		
	Vegetation Clearing (-ve) The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. This vegetation will be cleared in preparation for bulk earthworks.	Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	Extensive earth works (-ve) The remote stand area will require extensive earthworks given that it is a greenfield.	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents. • Excavations to adequately barricaded and labelled. ○ This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area.
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.	Low	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.

Activity	Impact summary	Significance	Proposed mitigation
	Disruption to existing critical service infrastructure (-ve) Remote stands can be built in isolation without adversely affecting airside operational efficiencies. Therefore, it is not anticipated that construction of this stand type will have a significant impact on the existing airport infrastructure.	Very Low	• The construction schedule should be adhered to ensure that construction occurs timeously. • The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities should be restricted to hours that will cause the least disruption.
	Indirect impacts		
	Soil and groundwater contamination (-ve) Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.	Low	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes • No stockpiles should exceed 2 m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.

Activity	Impact summary	Significance	Proposed mitigation
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.	Low	• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles.

Activity	Impact summary	Significance	Proposed mitigation
	would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the area, neighbouring communities and activities, contractors as well as local ecology.		• Trucks transporting any form of soil or waste should be covered with a canvas.
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy. •
	Impact on surface water drainage (-ve) The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site.	Low	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; and • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills. • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.
	Health and safety (-ve)	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses

Activity	Impact summary	Significance	Proposed mitigation
	The construction activities may pose a threat to safety of the surrounding industrial activities and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction		• Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets.

Activity	Impact summary	Significance	Proposed mitigation
			• Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.
	Cumulative impacts		
	Alien vegetation encroachment (-ve) There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.	Very Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.
Operational Phase	***Direct impacts***		
	Increased operational capacity (+ve) The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipated increase in cargo transport needs and an anticipated increase in tourism-based revenue.	Very High	No mitigation proposed.
	Minimised disruption to airport infrastructure (+ve) Once constructed, the stands will not disrupt other infrastructure or be impacted by future airport expansion projects and they are not envisioned to cause disturbance or disruption to other airport infrastructure.	Low	No mitigation proposed.
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.	Low	No mitigation proposed.
	Indirect Impacts		
	None		
	Cumulative impacts		

Activity	Impact summary	Significance	Proposed mitigation
	Increased investment and stimulation of the economy (+ve) The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ (please refer to the BAR, Section 1.9: Activity Motivation)	High	Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD. • Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.
Apron Stand Alternative 2: 2 Contact + 2 Remote			
Construction Phase	***Direct impacts***		
	Vegetation Clearing (-ve) The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains.	Very Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal /

Activity	Impact summary	Significance	Proposed mitigation
	The intensity of this impact is lower than for the Preferred Alternative.		destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	Extensive earth works (-ve) The remote stand area will require extensive earthworks given that it is a greenfield. Furthermore, extensive earthworks will be required for the contact stands, where existing infrastructure needs to be considered.	Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents. • Excavations to adequately barricaded and labelled. ○ This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area.
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion. The intensity of this impact is not as severe given that only two stands will be from the remote stand cluster.	Very Low	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.
	Disruption to existing critical service infrastructure (-ve) Due to the requirement for new fixed-link bridges into the building, new node constructions, and airbridges, there will likely be some disruption to terminal building and head of stand service road operations. The impact of the reconfiguration construction on existing airside efficiencies is greater than that of the remote and future pier stands types as construction will occur on an existing, operational apron.	Medium	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction schedule should be adhered to ensure that construction occurs timeously. • The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption.

Activity	Impact summary	Significance	Proposed mitigation
	Disruption to airport terminals (-ve) There will be substantial to the terminal operations with the construction/reconfiguration of the contact stands. This is given their adjacent location to the terminals compared to the remote stand cluster.	Medium	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities • All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise.
	Indirect impacts		
	Soil and groundwater contamination (-ve) Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.	Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes. • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons and airport staff of the construction activities.

Activity	Impact summary	Significance	Proposed mitigation
			• The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.	Medium	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons and airport staff of the construction activities. • All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.

Activity	Impact summary	Significance	Proposed mitigation
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the airport, particularly to the contact areas adjacent to the terminal buildings.	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy.
	Impact on surface water drainage (-ve) The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site.	Low	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills.

Activity	Impact summary	Significance	Proposed mitigation
			• Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding industrial activities and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses • Clear signage needs to be put up to make and keep the surrounding industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted.

Activity	Impact summary	Significance	Proposed mitigation
			• Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.
	Cumulative impacts		
	Alien vegetation encroachment (-ve) There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.	Very Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.
Operational Phase	***Direct impacts***		
	Increased operational capacity (+ve) The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipated increase in cargo transport needs and an anticipated increase in tourism-based revenue.	Very High	No mitigation proposed.
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.	Low	No mitigation proposed.
	Future capacity as an apron stand (-ve) When considered in isolation, the reconfiguration works will result in a net decrease in narrow-body stand capacity on Bravo apron due to the Code F taxilane.	Very Low	No measures have been recommended as this impact cannot be mitigated. The assessment of this impact was covered in greater detail in the Feasibility Phase. However, the impact is greater for the contact and future pier served cluster as compared to the remote stand

Activity	Impact summary	Significance	Proposed mitigation
	Minimised disruption to airport infrastructure (+ve) Once constructed, the stands will not be impacted by future airport expansion projects and they are not envisioned to cause disturbance or disruption to other airport infrastructure. This applies to both the remote and contact stand types.	Low	No mitigation proposed.
	Indirect impacts		
	None		
	Cumulative impacts		
	Increased investment and stimulation of the economy (+ve) The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ.	High	Maintain ongoing communication with appropriate business forums to optimise opportunities for local businesses to participate in and benefit from the Project.
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement he hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Low	• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD • Ensure that the KSIA Air Quality Management Plan (AQMP, 2016) is implemented in accordance with the KSIA ROD. • Ensure the measure listed in the OEMPR are implemented.

Activity	Impact summary	Significance	Proposed mitigation
Apron Stand Alternative 3: 2 Remote + 2 Future Pier Served			
Construction Phase	***Direct impacts***		
	Vegetation Clearing (-ve) The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains.	Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	Extensive earth works (-ve) The remote stand area will require extensive earthworks given that it is a greenfield.	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents. • Excavations to adequately barricaded and labelled. • This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area.
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion. The intensity of this impact is not as severe given that only two stands will be from the remote stand cluster.	Low	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.
	Disruption to existing critical service infrastructure (-ve)	Low	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities.

Activity	Impact summary	Significance	Proposed mitigation
	Due to the requirement for new fixed-link bridges into the building, new node constructions, and airbridges, there will likely be some disruption to airport buildings and head of stand service road operations. However, the intensity of Alternative 3 is less than for Alternative 2.		• The construction schedule should be adhered to ensure that construction occurs timeously. • The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption.
	Indirect		
	Soil and groundwater contamination (-ve) Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fueling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.	Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes. • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.

Activity	Impact summary	Significance	Proposed mitigation
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.	Medium	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities • All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away.

Activity	Impact summary	Significance	Proposed mitigation
	trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the airport, particularly to the contact areas adjacent to the terminal buildings.		• The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy.
	Impact on surface water drainage (-ve) The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site.	Low	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills. • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.
	Health and safety (-ve)	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses

Activity	Impact summary	Significance	Proposed mitigation
	The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction		• Clear signage needs to be put up to make and keep the surrounding industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets.

Activity	Impact summary	Significance	Proposed mitigation
			• Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.
	Cumulative impacts		
	Alien vegetation encroachment (-ve) There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.		• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.
Operational Phase	***Direct impacts***		
	Increased operational capacity (+ve) The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipated increase in cargo transport needs and an anticipated increase in tourism-based revenue.	Very High	No mitigation proposed.
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.	Low	No mitigation proposed.
	Future operational capacity of apron stand (-ve) As per the future development of the airport, the Future Pier Served stands will not offer contact stand capabilities when the Charlie apron is decommissioned.	Medium	No measures have been recommended as this impact cannot be mitigated. The assessment of this impact was covered in greater detail in the Feasibility Phase.
	Indirect impacts		
	None		
	Cumulative impacts		

Activity	Impact summary	Significance	Proposed mitigation
	Increased investment and stimulation of the economy (+ve) The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ.	High	Maintain ongoing communication with appropriate business forums to optimise opportunities for local businesses to participate in and benefit from the Project. .
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Very Low	• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD • Ensure that the KSIA Air Quality Management Plan (AQMP, 2016) is implemented in accordance with the KSIA ROD. • Ensure the measure listed in the OEMPR are implemented.
Bravo Taxiway Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)			
Construction phase	***Direct Impacts***		
	Vegetation Clearing (-ve) The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains.	Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation.

Activity	Impact summary	Significance	Proposed mitigation
	This vegetation will be cleared in preparation for bulk earthworks.		• Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.	Low	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil. •
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.
	Limited access to contact stands (-ve) The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.	Low	• Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA. • Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.
	Disruption to existing operations (-ve) The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.	Low	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction schedule should be adhered to ensure that construction occurs timeously.

Activity	Impact summary	Significance	Proposed mitigation
			• The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption. • Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA. • Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.
	Indirect Impacts		
	Soil and groundwater contamination (-ve) Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.	Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes. • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.

Activity	Impact summary	Significance	Proposed mitigation
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.	Medium	• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away.

Activity	Impact summary	Significance	Proposed mitigation
	would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the area, neighbouring communities and activities, contractors as well as local ecology.		• The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy. •
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses. • Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site,	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein.

Activity	Impact summary	Significance	Proposed mitigation
	sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.		• Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.
	Cumulative Impacts		
	Alien vegetation encroachment (-ve) There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.	Very Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.
Operational Phase	**Direct Impacts**		
	Improved operations (+ve) The extended taxiway connects the runway to the aprons. The extended taxiway will alleviate the operational issues currently being experienced in the airside manoeuvring area at the airport and will create more efficient room for aircraft manoeuvre.	Medium	No measures proposed.
	Improved alignment geometry at taxiway junction (-ve)	Medium	No mitigation proposed.

Activity	Impact summary	Significance	Proposed mitigation
	The updated taxiway alignment (in conjunction with the land extension) will allow for a smother operation of the runway. However, the geometry of the Alternative 1 taxiway intersection is complex based on its interaction with the existing RET.		
	Indirect Impacts		
	None		
	Cumulative Impacts		
	Increased investment and stimulation of the economy (+ve) The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ	High	Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.
	Continued incident risk at RET 'hotspot' (-ve) There is the potential creation of an incident hotspot near the RET hotel.	Medium	No measures proposed. This impact has been accounted for in ACSA's planning.
	Impact on Groundwater Quality (-ve) Run-off from the runway and taxiway may be slightly different to natural rainwater due to accumulation of tyre compounds on the surface. although this is already the case for the existing lanes, with an increase in taxiway length and capacity there may be a higher concentration of compounds in stormwater run-off. if not adequately managed, this could potentially impact on groundwater quality.	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface.

Activity	Impact summary	Significance	Proposed mitigation
			• Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD. • Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.
Bravo Taxiway Alternative 2 (Preferred): Intersection taxiway positioned north of RET Hotel			
Construction Phase	***Direct Impacts***		
	Vegetation Clearing (-ve) The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. This vegetation will be cleared in preparation for bulk earthworks.	Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In	Low	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled.

Activity	Impact summary	Significance	Proposed mitigation
	addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.		• Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.
	Disruption to existing operations. The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.	Low	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction schedule should be adhered to ensure that construction occurs timeously. • The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption. • Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA. • Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.
	Limited access to contact stands (-ve)	Low	• Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA.

Activity	Impact summary	Significance	Proposed mitigation
	The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.		• Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.
	Indirect Impacts		
	Soil and groundwater contamination (-ve) Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.	Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring businesses • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate	Medium	• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order

Activity	Impact summary	Significance	Proposed mitigation
	noise which may be a nuisance impact to surrounding receptors.		• Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.

Activity	Impact summary	Significance	Proposed mitigation
	area, neighbouring communities and activities, contractors as well as local ecology.		
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy. •
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses • Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste).

Activity	Impact summary	Significance	Proposed mitigation
			• Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.
	Cumulative impacts		
	Alien vegetation encroachment (-ve) There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities.	Very Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.
Operational Phase	***Direct Impacts***		
	Improved operations (+ve) The extended taxiway connects the runway to the aprons. The extended taxiway will alleviate the operational issues currently being experienced in the airside manoeuvring area at the airport and will create more efficient room for aircraft manoeuvre.	Medium	No measures proposed.
	Improved alignment geometry at taxiway junction (+ve) The extended taxiway and its alignment will make the runway operate more efficiently. The Alternative 2 intersection geometry is simpler	Medium	No mitigation proposed.

Activity	Impact summary	Significance	Proposed mitigation
	and will provide a completely independent taxiway link, unlike Alternative 1.		
	Indirect impacts		
	None		
	Cumulative Impacts		
	Increased investment and stimulation of the economy (+ve) The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ.	High	Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.
	Continued incident risk at RET 'hotspot' (-ve) There is the potential creation of an incident hotspot near the RET hotel. However, the risk is less with Option 2.	Low	No measures proposed.
	Impact on Groundwater Quality (-ve) Run-off from the runway and taxiway may be slightly different to natural rainwater due to accumulation of tyre compounds on the surface. although this is already the case for the existing lanes, with an increase in taxiway length and capacity there may be a higher concentration of compounds in stormwater run-off. if not adequately managed, this could potentially impact on groundwater quality.	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces in the airfield. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.	Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. • The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.

Activity	Impact summary	Significance	Proposed mitigation
			• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD. • Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.
No-go option			
	No disturbance to current airport infrastructure (+ve) The airport infrastructure will remain as is and operations will continue as per the norm.	Medium	No mitigation proposed.
	Decreased operational capacity (-ve) The envisioned growth for the KSIA will not be realised and the airport will not meet the demand for air travel and cargo transfer on a local and national scale.	High	No mitigation proposed.
	Loss of potential investment opportunities (-ve) The no-go area would negate the investment opportunities that may come as a result of an airport with a greater operational capacity. This is for both passenger and cargo travel.	High	No mitigation proposed.

4.4 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 before and 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.

Table 14: Apron Stand Impact Summary

	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation
Potential impacts	**Alternative 1 (Preferred Alternative): 2 + 2 Remote**		**Alternative 2: 2 Contact + 2 Remote**		**Alternative 3: 2 Remote + 2 Future Pier Served**	
DESIGN PHASE						
None						
CONSTRUCTION PHASE						
Vegetation Clearing (-ve)	Medium	Low	Low	Very Low	Medium	Low
Extensive earth works (-ve)	Medium	Low	Low	Very Low	Medium	Low
Soil disturbance (-ve)	Medium	Low	Very Low	Very Low	Medium	Low
Disruption to existing critical service infrastructure (-ve)	Low	Very Low	Medium	Low	Low	Very Low
Disruption to airport terminals (-ve)	Low	Very Low	Medium	Low	Low	Low Very
Soil and groundwater contam-ination (-ve)	Low	Very Low	Low	Very Low	Low	Very Low
Visual/Aesthetic Impact (-ve)	Medium	Low	Medium	Low	Medium	Low
Noise impacts (-ve)	Low	Very Low	Medium	Low	Medium	Low
Traffic Disruption (-ve)	Medium	Low	Medium	Low	Medium	Low
Dust Generation(-ve)	Medium	Low	Medium	Low	Medium	Low
Job creation (+ve)	Medium	Medium	Medium	Medium	Medium	Medium
Impact on surface water drainage (-ve)	Low	Very Low	Low	Very Low	Low	Very Low

	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation
Potential impacts	**Alternative 1 (Preferred Alternative): 2 + 2 Remote**		**Alternative 2: 2 Contact + 2 Remote**		**Alternative 3: 2 Remote + 2 Future Pier Served**	
Health and safety (-ve)	Medium	Low	Medium	Low	Medium	Low
Waste (-ve)	Medium	Low	Medium	Low	Medium	Low
Alien vegetation encroachment (-ve)	Low	Very Low	Low	Very Low	Low	Very Low
OPERATIONAL PHASE						
Increased operational capacity (+ve)	Very High	Very High	Very High	Very High	Very High	Very High
Proximity to Bravo taxiway (+ve)	Medium	Medium	Low	Low	Low	Low
Future capacity as an apron stand (-ve)	-	-	Low	Low	Medium	Medium
Minimised disruption to airport infrastructure (+ve)	Low	Low	Low	Low	-	-
Increased investment and stimulation of the economy (+ve)	High	High	High	High	High	High
Impact on surface water drainage (-ve)	Low	Very Low	Low	Very Low	Low	Very Low
Health effects of increased air pollution (-ve)	Low	Very Low	Low	Very Low	Low	Very Low

Table 15: Bravo Taxiway Impact Summary

	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation
Potential impacts	**Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)**		**Alternative 2 (Preferred Alternative): Intersection taxiway positioned north of RET Hotel**	
DESIGN PHASE				

Potential impacts	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation
	Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)		Alternative 2 (Preferred Alternative): Intersection taxiway positioned north of RET Hotel	
None				
CONSTRUCTION PHASE				
Vegetation Clearing (-ve)	Low	Very Low	Very Low	Very Low
Soil disturbance (-ve)	Low	Very Low	Low	Very Low
Disturbance to groundwater recharge (-ve)	Low	Very Low	Low	Very Low
Limited access to contact stands (-ve)	Very Low	Insignificant	Very Low	Insignificant
Soil and groundwater contamination (-ve)	Low	Very Low	Low	Very Low
Visual/Aesthetic Impact (-ve)	Medium	Low	Medium	Low
Noise impacts (-ve)	Medium	Low	Medium	Low
Traffic Disruption (-ve)	Medium	Low	Medium	Low
Dust Generation(-ve)	Medium	Low	Medium	Low
Job creation (+ve)	Medium	Medium	Medium	Medium
Health and safety (-ve)	Medium	Low	Medium	Low
Waste (-ve)	Medium	Low	Medium	Low
Alien vegetation encroachment (-ve)	Low	Very Low	Low	Very Low
OPERATIONAL PHASE				
Improved operations (+ve)	Medium	Medium	High	High
Improved alignment geometry at taxiway junction (-ve: Alternative 1; +ve: Alternative 2)	Medium	Medium	Medium	Medium
Increased Investment and Stimulation of the economy (+ve)	High	High	High	High
Continued incident risk at RET 'hotspot' (-ve)	Medium	Medium	Low	Low

	Pre-mitigation	Post-Mitigation	Pre-mitigation	Post-Mitigation
Potential impacts	**Alternative 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)**		**Alternative 2 (Preferred Alternative): Intersection taxiway positioned north of RET Hotel**	
Impact on Groundwater Quality (-ve)	Low	Very Low	Low	Very Low
Disturbance to groundwater recharge (-ve)	Very Low	Insignificant	Very Low	Insignificant
Health effects of increased air pollution (-ve)	Low	Very Low	Low	Very Low

Table 16: No-go Impact Summary

	Pre-mitigation	Post-Mitigation
Potential impacts		
No disturbance to current airport infrastructure (+ve)	Medium	Medium
Decreased operational capacity (-ve)	High	High
Loss of potential investment opportunities (-ve)	High	High

Very Low & Low Significance Impacts

Based on the information presented in Tables 14 and 15, negative impacts with a generally low significance rating are those typically experienced in construction projects for all alternatives considered. These include vegetation clearing topsoil disturbance, stockpiling and alien vegetation encroachment. These were rated as being of very low significance post-mitigation as it is anticipated that their extent will be limited to the physical footprint of the development area. This also applies to waste impacts as it is expected that construction personnel will be given sufficient awareness training as to how to handle different forms of waste during the construction phase. In terms of alien vegetation encroachment, the impact may become insignificant with the implementation of appropriate control and management measures and with the appointment of a suitably qualified person to manage the impact. These impacts are typical of construction activities and as such can easily be managed through the implementation of the mitigation measures contained in the Environmental Management Programme (EMPr) in **Appendix G**.

Potential impacts such as soil and groundwater contamination and impact on surface water drainage need to be closely monitored and the appropriate stormwater and surface water drainage system needs to be monitored for efficacy in handling these impacts during construction. In terms of disruption to existing critical service infrastructure, this is expected to be higher for the contact stand as it is in closer proximity to a busier section of the airport. However, the recommended measures will go a long way to ensuring that operations airport operations experience the least possible disruption.

Minimised disruption to airport infrastructure has been identified as a positive impact for Alternatives 1 and 2. This is based on their location in relation to the Charlie apron stands, which are to be decommissioned as part of the greater airport master plan. In terms of Alternative 3, it is envisaged that with the future decommissioning of the Charlie apron stands, will no longer serve as contact stands, which is likely to see the plane turnaround time increase at these stands. Furthermore, Alternative 1's location away from other airport buildings make noise and dust impacts less significant. These impacts are envisaged to be of a lesser nuisance given that there are no major structures in the immediate surroundings of the remote stand area- making this Alternative more favourable.

The positive impacts of the Bravo taxiway extension will also see a more efficient connection between the apron stands and the run way. This is largely attributed to the geometry of the taxiway-RET hotel intersection. However, there is also high potential for this intersection becoming a "hotspot" over time, particular for Alternative 1, thus making Alternative 2 (**Intersection taxiway positioned north of RET Hotel) the preferred alternative for the extension of the Bravo Taxi way**.

Medium Significance Impacts

No negative impacts with medium significance were identified for Alternatives 1 and 2. The future capacity of the contact and future pier served apron stands are envisioned to decrease to an extent with the decommissioning of Charlie apron stands as mentioned above. This impact has been rated as being of medium significance for Alternative 3. This is given the fact that the stands will no longer operate as contact stands as the airport precinct continues to develop.

Another impact of medium positive significance is job creation. Although temporary (i.e. for the construction phase only), the 50 odd jobs that will be created for unskilled labourers will be a welcome relief for some of the locals. This will contribute to eThekwini's plans for job creation in this part of the Municipality.

High to Very High Significance Impacts

Positive Impacts of the highest significance are associated with the operational phase for both the apron stands and the Bravo Taxiway. The impact of highest significance is the increased operational capacity, which is the prime motivation behind this project. One other key positive impact is the potential increase in investment and stimulation of the economy. This is line with the local and national stakeholders' vision for the airport as a hub for cargo and passenger travel, as well as an economic stimulant.

Conversely, negative impacts of high significance stem from the No-go alternative. These are decreased operational capacity and the loss of potential investment opportunities. The first impact is related to the KSIA not meeting projected cargo and passenger travel requirements in future. As discussed in the project motivation section, the economic activity around the KSIA is expected to grow in the coming years and the airport requires the necessary capacity to accommodate this growth. Should the current operational capacity at the KSIA be maintained, it is highly likely that the intended investment into the travel hub would be directed to other areas around the province. As such, the no-go option is not a favourable alternative.

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The overall impact assessment shows that the identified [negative] impacts are not of a great significance and can be mitigated and managed by implementing recommended measures. This is largely based on the project being transformed by the initial KSIA construction. In terms of the positive impacts, these are of a greater significance for the preferred alternatives for both the apron stands as well as the Bravo Taxiway. Furthermore, (although not part of this assessment), the costs involved in implementing the preferred alternatives are justified when considering the longer term benefits and capacity that will be achieved through implementing the two alternatives. The key appoints to consider in terms of the alternatives relate to the efficacy of the options, as follows:

- Alternative 1 for the Apron stand which is the remote stand will cause the least disruption to other infrastructure during construction. and these stands will not be impacted on by future airport developments.

- Alternative 2 of the Bravo Taxiway will allow better connection between the runways and apron stands. This alternative will allow a more simplified RET hotel intersection, which will intern decrease the hotspot risks currently being experienced, and that is likely to persist with the alignment geometry of Alternative 1.

Given the outcomes of the impact assessment, apron stand Alternative 1 (2 +2 remote stands), and Bravo Taxiway Alternative 2 (Intersection north of the RET hotel) would be the most practicable option for the proposed development.

5 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.

This Report has identified and assessed the potential impacts associated with the two alternative layouts of the apron stands and Bravo Taxiway at the KSIA. Based on the outcomes of the impact assessment, the project will result in some unavoidable environmental impacts during construction but this is not a fatal flaw. None of these negative impacts are considered unacceptably significant and all can be managed to acceptable levels through the effective implementation of the recommended mitigation measures.

The project has been planned in such a way that the landscape will not be greatly altered considering that it mostly involves building onto existing infrastructure. A number of mitigation and monitoring measures have been identified which would allow for the minimisation and management of potential environmental impacts associated with the proposed development. These have been incorporated into **Appendix G.**

General Recommendations

The following actions are recommended:

1. Implementing the EMPr to guide construction and operational activities to provide a framework for the on-going assessment of environmental performance.
2. Having construction take place in the drier months and adhering strictly to the construction schedule in order to minimize the duration of impacts.
3. Implement appropriate stormwater management measures as per the airports approved Storm Water Management Plan.
4. Maximising the employment of local people and the procurement of local resources during the construction phase to ensure maximum benefit to the provincial/local economy.

Based on the assumption that the KSIA is committed to ensuring that the facilities are constructed and effectively maintained, DMT-KB believes that through effective implementation of the stipulated mitigation measures, the adverse impacts can be reduced and managed. Ultimately, however, the DEA will need to consider whether the project's benefits outweigh the potential negative impacts.

From the impact assessment, it is evident that prior to mitigation, negative impacts associated with the proposed development are of a generally medium to low significance, while the positive impacts are generally of a higher significance. The latter is in particular reference to Alternative 1 (preferred) whose positive impacts outweigh those associated with Alternative 2

and Alternative 3. Based on the information given in this report, it is the opinion of the EAP that the Application for **Alternative 1 of the remotes stands (i.e. 2 + 2 remote stands) and Alternative 2 of the Bravo Taxiway extension (i.e. Intersection taxiway positioned north of RET Hotel),** should be granted a positive decision on Environmental Authorisation, provided the essential and recommended mitigation measures as defined in this report are implemented.

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.

Samantha Moodley

NAME OF EAP

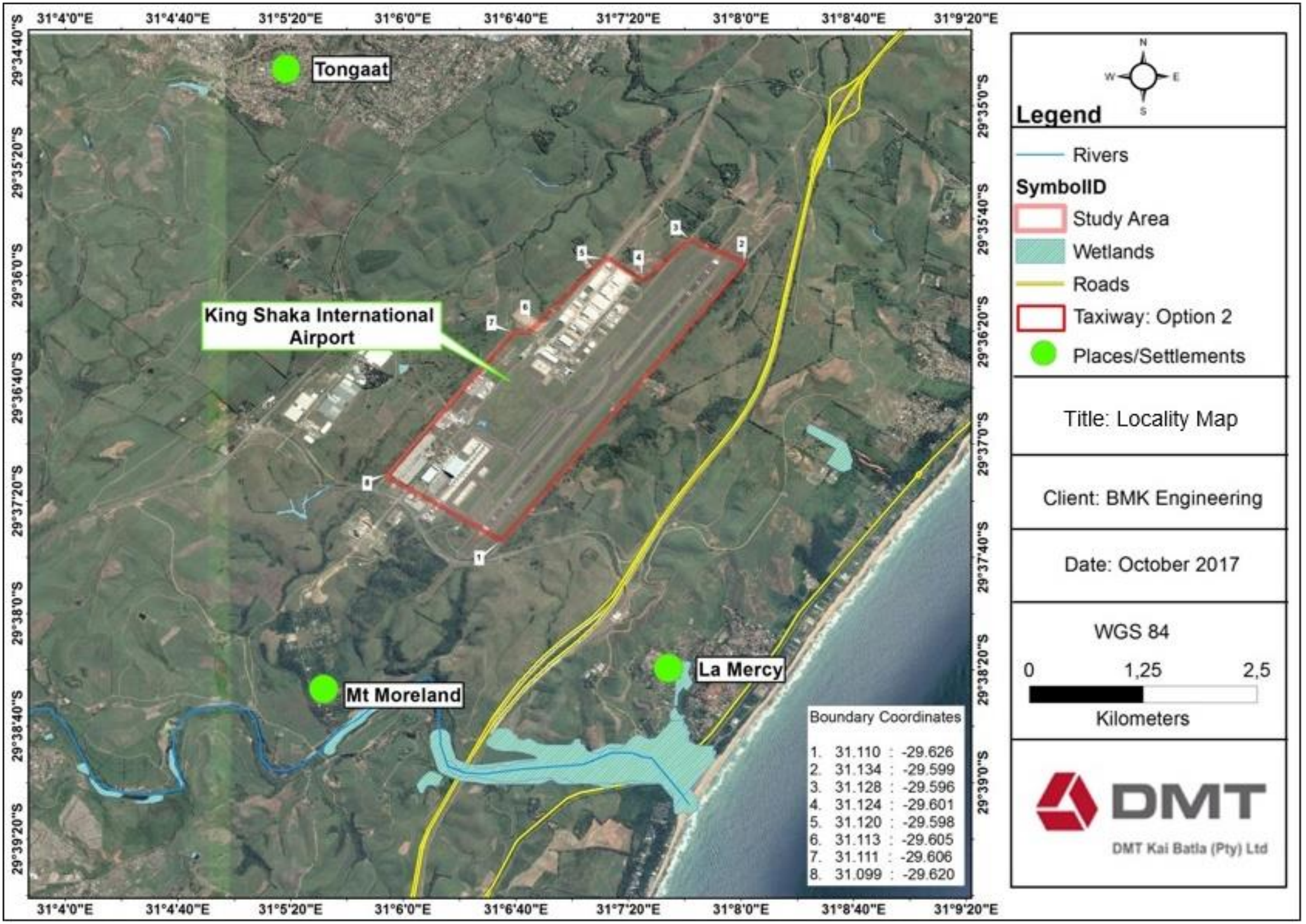
SIGNATURE OF EAP

12 November 2017

DATE

6 APPENDICES

APPENDIX A: MAPS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31°4'40"E
31°5'20"E
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31°6'40"E
31°7'20"E
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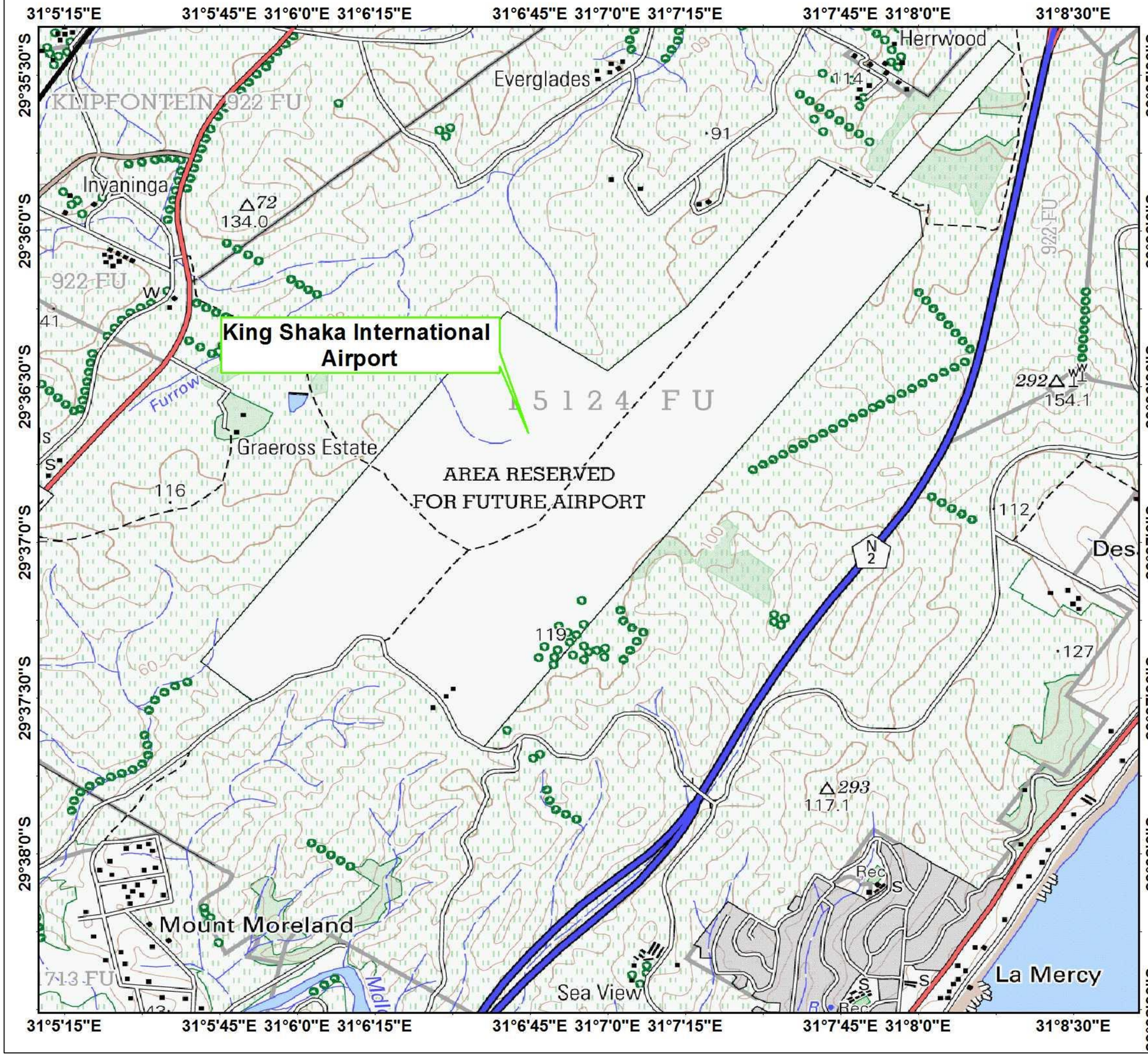
31°8'40"E
31°9'20"E
29°34'40"S
29°35'20"S
29°36'0"S
29°36'40"S
29°37'20"S
29°38'0"S
29°38'40"S
29°39'20"S
29°35'0"S
29°35'40"S
29°36'20"S
29°37'0"S
29°37'40"S
29°38'20"S
29°39'0"S
Tongaat
King Shaka International Airport
Mt Moreland
La Mercy
1
2
3
4
5
6
7
Boundary Coordinates
1. 31.110 : -29.626
2. 31.134 : -29.599
3. 31.128 : -29.596
4. 31.124 : -29.601
5. 31.120 : -29.598
6. 31.113 : -29.605
7. 31.111 : -29.606
8. 31.099 : -29.620
N
W
E
S
Legend
Rivers
SymbolID
Study Area
Wetlands
Roads
Taxiway: Option 2
Places/Settlements
Title: Locality Map
Client: BMK Engineering
Date: October 2017
WGS 84
0
1,25
2,5
Kilometers
DMT
DMT Kai Batla (Pty) Ltd



N

W E

S

LEGEND

- Farm Boundaries
- Water Bodies
- Arterial Road
- National Road
- Railways
- Rivers

Title: Topographical Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,75 1,5

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

N

W E

S

Legend

Lithology

- Calcarenite, clayey sand, red and grey dune sand, limestone, conglomerate.
- Diamictite with varved shale, mudstone with dropstones and fluvioglacial gravel.
- Fine- to coarse-grained sandstone, shale, coal seams
- Feldspathic and micaceous sandstone (subordinate quartz arenite, mudrock, granulestone and conglomerate)
- Shale with thin siltstones and sandstones.

Title: Regional Geology Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,75 1,5

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

N
W E
S

Legend

- Study Area
- Rivers
- KwaZulu Natal Coastal Belt
- Wetlands

Title:
Vegetation Map

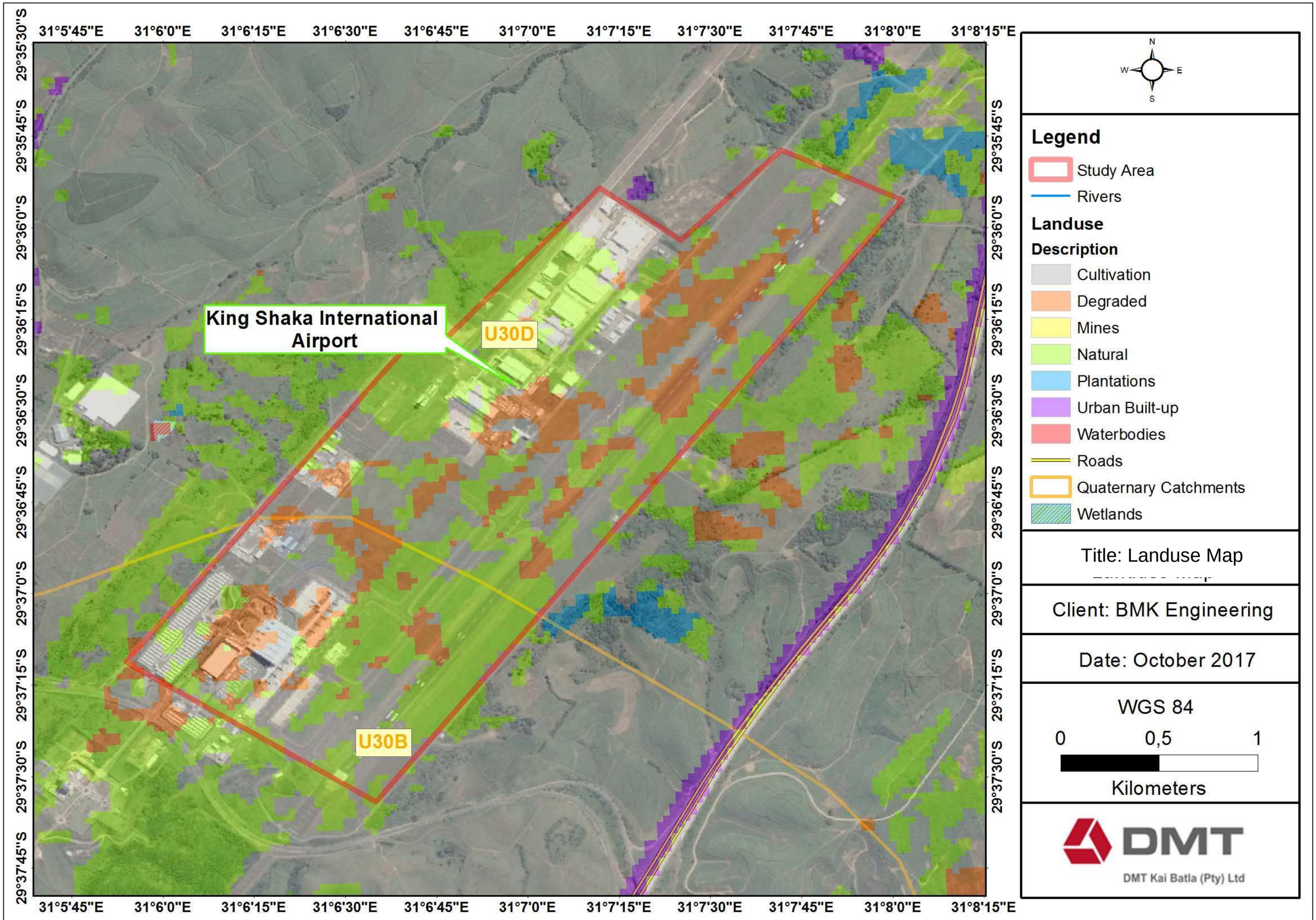
Client: BMK Engineering

Date: October 2017

WGS 84

0 0,5 1
Kilometers

DMT
DMT Kai Batla (Pty) Ltd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31°6'0"E
31°6'15"E
31°6'30"E
31°6'45"E
31°7'0"E
31°7'15"E
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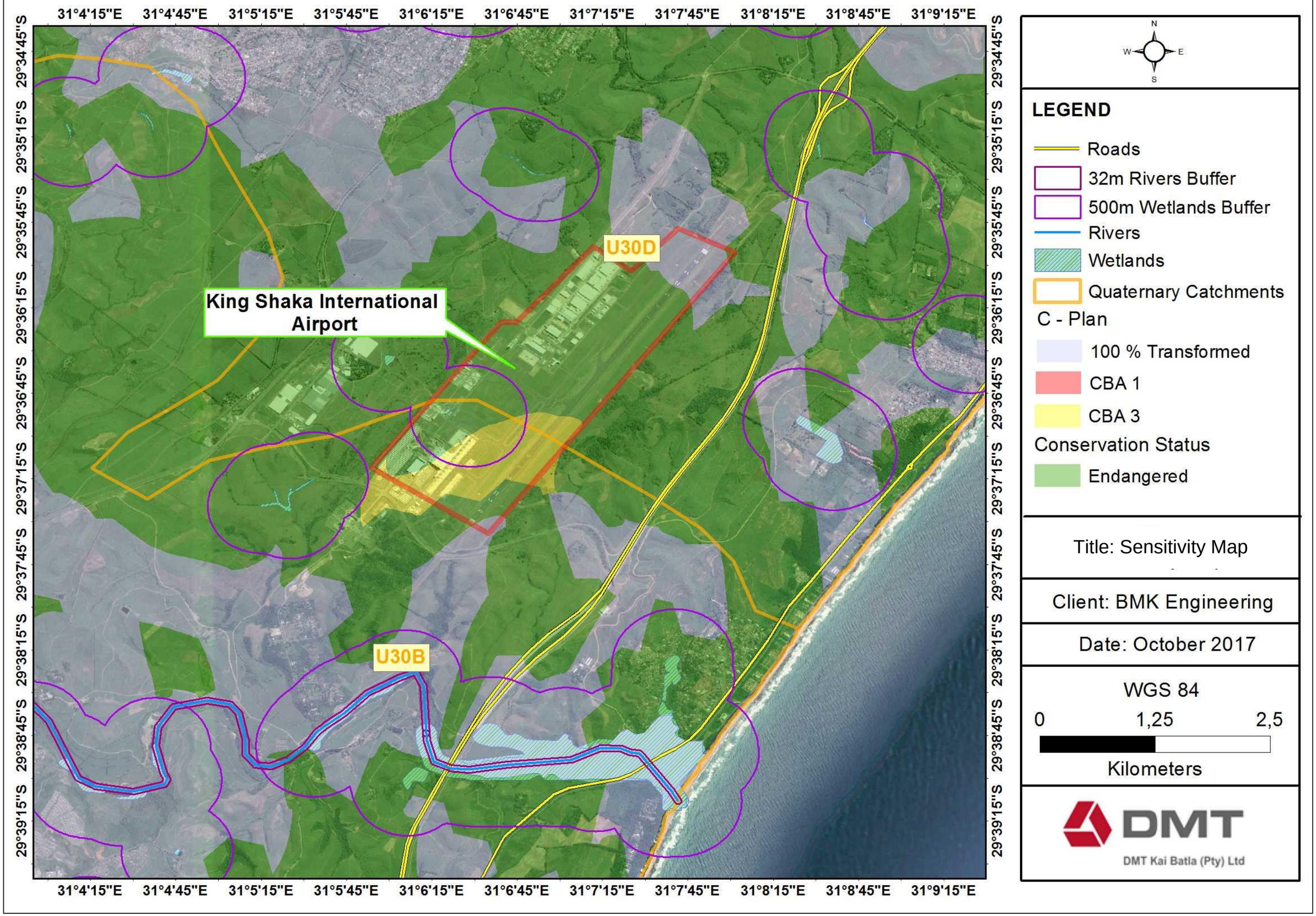
31°7'45"E
31°8'0"E
31°8'15"E
29°35'30"S
29°35'45"S
29°36'0"S
29°36'15"S
29°36'30"S
29°36'45"S
29°37'0"S
29°37'15"S
29°37'30"S
29°37'45"S
King Shaka International Airport
U30D
U30B
N
W
E
S
Legend
Study Area
Rivers
Landuse
Description
Cultivation
Degraded
Mines
Natural
Plantations
Urban Built-up
Waterbodies
Roads
Quaternary Catchments
Wetlands
Title: Landuse Map
Client: BMK Engineering
Date: October 2017
WGS 84
0
0,5
1
Kilometers
DMT
DMT Kai Batla (Pty) Ltd



N
W E
S

LEGEND

- Roads
- 32m Rivers Buffer
- 500m Wetlands Buffer
- Rivers
- Wetlands
- Quaternary Catchments

C - Plan

- 100 % Transformed
- CBA 1
- CBA 3

Conservation Status

- Endangered

Title: Sensitivity Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 1,25 2,5

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

APPENDIX B: PHOTOGRAPHS

Photo 1: Facing North (N) from Delta Apron, with control tower in view

Photo 2: Facing South West (SW) from Delta Apron with main terminal in background

Photo 3: Facing North West (NW) from existing taxiway bravo, with fire station in background

Photo 4: Facing East (E) from link road off existing taxiway bravo, showing existing taxiway bravo (site of proposed remote concrete apron stand)

Photo 5: Facing South East (SE) from site of proposed remote concrete apron stand, showing existing Taxiway Bravo

Photo 6: Facing North (N) from existing Taxiway Bravo showing control tower in background

Photo 7: Facing North East (NE) from GSE parking, adjacent to existing Taxiway F and existing apron stands

Photo 8: Facing South (S) from GSE parking, adjacent to existing taxiway F and showing apron stands

Photo 9: Facing SW from GSE parking, showing apron stands and terminal

Photo 10: Facing W from GSE parking, showing existing terminal

Photo 11: Facing SW from GSE parking, showing existing alpha apron

Photo 12: Facing W from airside perimeter service road

Photo 13: Facing NE from airside perimeter service road, showing proposed site of remote apron stands

Photo 14: Facing NW from airside perimeter service road

Photo 15: Facing E from airside perimeter service road, showing proposed site of remote apron stands

Photo 16: Facing S from airside perimeter service road, showing proposed site of remote apron stands, with terminals in background

Photo 17: Facing SE from airside perimeter service road, showing proposed site of remote apron stands, with terminals in the background

Photo 18: Facing E from airside perimeter service road, showing proposed site of remote apron stands

Photo 19: Facing SW from airside perimeter service road, showing proposed site of remote apron stands and terminal in background

Photo 20: Facing NW from GSE parking, terminal on left, proposed remote apron stand on right

Photo 21: Facing N from GSE parking showing proposed site of remote apron stands, control tower in background

Photo 22: Stormwater interventions on proposed site of remote apron stands

Photo 23: Stormwater interventions on proposed site of remote apron stands

Photo 24: Stormwater interventions on proposed site of remote apron stands

Photo 25: Facing SW from the proposed site of remote apron stands (between new taxiways foxtrot and india)

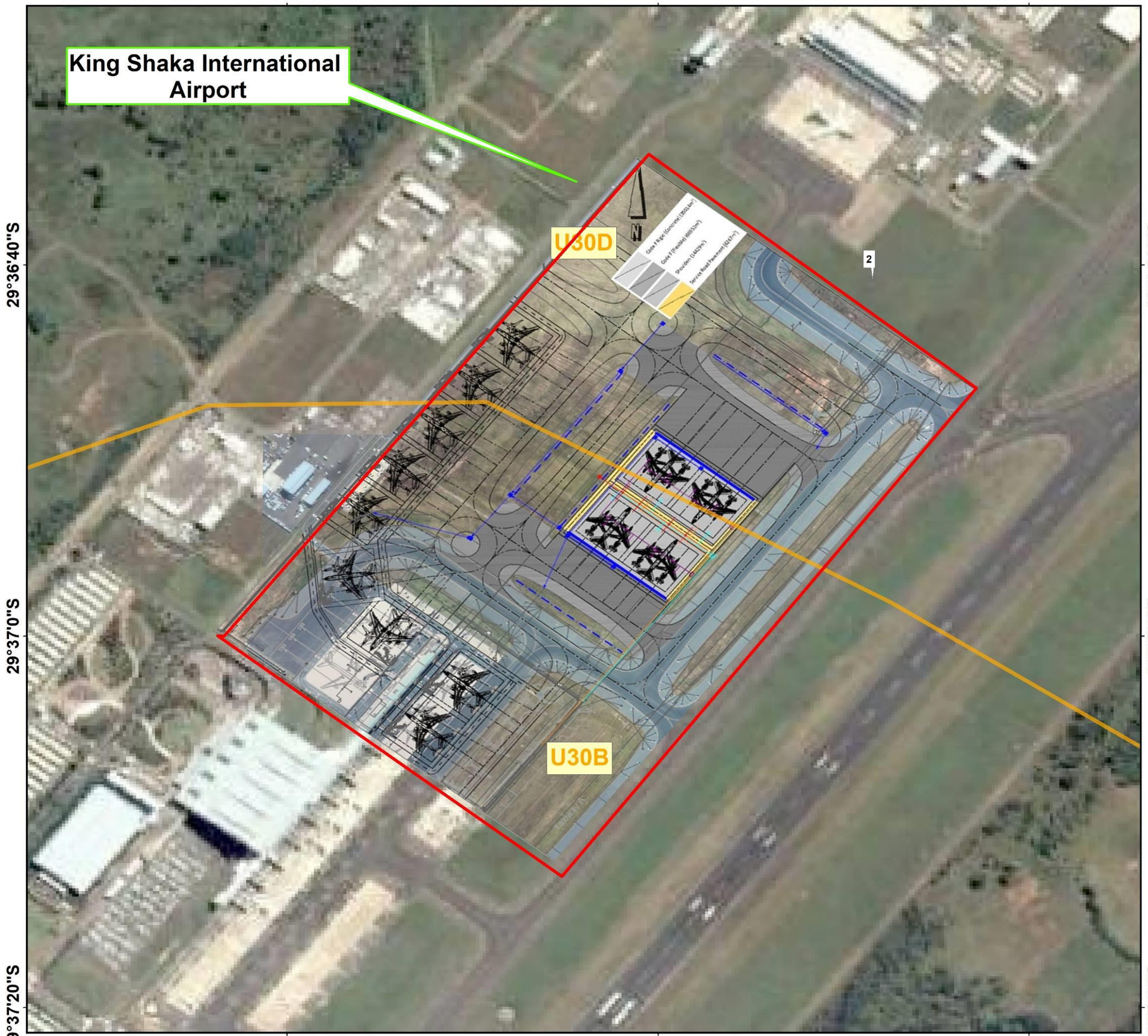
Photo 25: Facing W from the proposed site of remote apron stands (between new Taxiways Foxtrot and India)

Photo 26: Stormwater infrastructure on the proposed site of remote apron stands

Photo 27: Facing E from the proposed site of remote apron stands (between new Taxiways Foxtrot and India), existing Taxiway Bravo in background

Photo 28: Facing SE from the proposed site of remote apron stands (between new Taxiways Foxtrot and India), stormwater infrastructure visible, existing taxiway bravo in background

APPENDIX C: FACILITY ILLUSTRATION



Legend

- Rivers
- Roads
- Quaternary Catchments
- Wetlands
- Apron Stand Alternative 1 (Preferred): 2 & 2 Remote

Title:
Locality Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,225 0,45

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

N
W E
S

Legend

- Rivers
- Roads
- Quaternary Catchments
- Wetlands
- Apron Stand Alternative 2: 2 Contact & 2 Remote

Title:
Locality Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,175 0,35

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

31°6'20"E

31°6'40"E

29°36'40"S

29°37'0"S

N

W E

S

Legend

- Rivers
- Roads
- Quaternary Catchments
- Wetlands
- Apron Stand Alternative 3: 2 Future Pier Served & 2 Remote

Title:
Locality Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,175 0,35

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

N
W E
S

Legend

- Rivers
- Roads
- Quaternary Catchments
- Wetlands
- Bravo Taxiway Alternative 1

Title:
Locality Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,2 0,4

Kilometers

DMT

DMT Kai Batla (Pty) Ltd

N
W E
S

Legend

- Rivers
- Roads
- Quaternary Catchments
- Wetlands
- Bravo Taxiway Alternative 2 (Preferred)

Title:
Locality Map

Client: BMK Engineering

Date: October 2017

WGS 84

0 0,2 0,4

Kilometers

DMT

DMT Kai Batla (Pty) Ltd


LEGEND
Electrical Cable
Electrical Cable Ducts
Street Lighting
IT Combined
Water Reticulation
Fire Water Reticulation
Stormwater Pipes
Sub-surface pipes
SW Berm
Traffic Signals
Telkom Cable Ducts
Alcatel Cable Ducts
Neotel Cable Ducts
BCOCC Cable Ducts
Runway Lighting
Sewer
Fuel Line
ESB Line
Airfield Ground Lighting
Control Tower
Airside/Landside Boundary
Sprinkler Tanks & T1 Substation
Cargo Terminal
Trade Zone
State Protocol Lounge
Fire Station
Catering Facility
Dog Unit
FUTURE BUILDING
Refuse Sorting Facility
Airport Maintenance
GSE Maintenance
Charlie Apron
Alpha Apron
Bravo Apron
NEW TAXIWAY KILO
NEW TAXIWAY INDIA
NEW TAXIWAY FOXTROT
NEW TAXIWAY JULIET
CONCRETE APRON STAND
EXISTING TAXIWAY F
EXISTING TAXIWAY H
EXISTING TAXIWAY BRAVO
NEW TAXIWAY BRAVO
EXISTING TAXIWAY A
EXISTING TAXIWAY G
NEW TAXIWAY H
EXISTING TAXIWAY P
Taxiway A
LIMIT OF CONSTRUCTION
New service road to tie into new Taxiway B
New service road to tie into Existing Taxiway A
New Taxiway India to tie in to existing Taxiway B
New Taxiway Juliet to tie in to existing Taxiway Bravo
New RET road to tie into Existing Taxiway A
New Taxiway B to tie into Existing Taxiway A
New Taxiway B to tie into Existing RUNWAY
RUNWAY
FIRE FIGHTING TRAINING FACILITY
EMERGENCY CRASH GATE 2
DVOR
Airside/Landside Boundary
Old Water Tower

OVERALL LAYOUT

SCALE 1 : 2000

No.	DATE	REVISION	APPROVED	No.	DATE	REVISION	APPROVED

THE ORIGINAL DRAWING BEARING THE ORIGINAL SIGNATURE FOR APPROVAL IS HELD AT THE OFFICES OF BMK CONSULTING ENGINEERS IN DURBAN

DETAIL DESIGN
(Full signature)
Design Leader
For Client

BMK CONSULTING ENGINEERS

Office 218
Richefond Circle
Ridgeside Office Park
Umhlanga

Tel: +27 31 566 1160
Fax: +27 31 566 1732
E-mail: admin@bmkgroup.co.za

KING SHAKA INTERNATIONAL AIRPORT

KEY PLAN

PROJECT

CONSTRUCTION OF APRON STANDS AND BRAVO TAXIWAY AT KING SHAKA INTERNATIONAL AIRPORT

DRAWING TITLE

OVERALL PROPOSED WORKS LAYOUT

Designed by	Drawn by	Checked by
Y.RAMJIT	L.MAGAGULA	P.DHANEE

Approved by Design Leader	Date	Scale	Original Size
		1:2000	A0
Approved by Client	Date	Drawing Date	Revision Status Code
		06/10/2017	T

ACSA Number: AACSANUMBER

Drawing Number (Location - Originator - Discipline - Level - Doc Type - Sequ No / Sheet No): AA - BMK - CIV - EW - DRG - 0001 / 02

Revision: T00

Not Applicable

APPENDIX E: PUBLIC PARTICIPATION

APPENDIX E1
Advertisement

APPENDIX E1.1
Proof of Site Notice Placement

NOTICE OF BASIC ASSESSMENT PROCESS FOR THE PROPOSED CONSTRUCTION OF APRON STANDS AND EXPANSION OF THE BRAVO TAXIWAY AT KING SHAKA INTERNATIONAL AIRPORT IN THE KWAZULU-NATAL PROVINCE (DEA REF: 14/12/16/3/3/1/1841)

Notice is hereby given in terms of Section 24 (4) (v) of the National Environmental Management Act, Act No. 107 of 1996 (NEMA) for activities that require Environmental Authorisation

Project Applicant: Airports Company South Africa (ACSA)

Project Location: The King Shaka International Airport (KSIA) is located in La Mercy, KwaZulu-Natal, approximately 35 km north of Durban. The nearest towns to the airport are Mount Moreland to the near south west and Verulam to the far south-west; Tongaat to the west and north; and Umdloti to the south-east. The airport falls under the jurisdiction of the eThekwini Municipal Area.

Project Description / Activities: ACSA has proposed extension works at the KSIA with the construction of four new apron stands and the extension of one of its taxiways. The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. In order for ACSA to obtain the necessary authorisations, a Basic Assessment process is being undertaken to obtain Environmental Authorisation the proposed project.

PUBLIC CONSULTATION

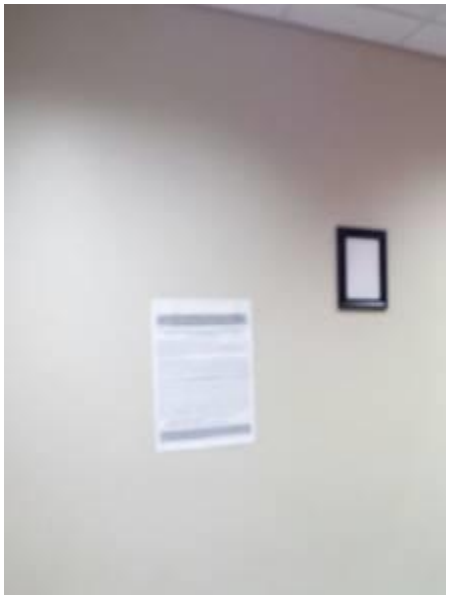
DMT-Kai Batla (Pty) Ltd (DMT-KB) has been appointed as the Independent Environmental Consultants to conduct the public consultation, compilation of the Basic Assessment Report (BAR) and Environmental Management Programme (EMPr) as part of the environmental impact assessment process for the proposed project. All interested & affected parties (I&APs) are invited to participate in this proposed project by forwarding comments or concerns relating to the project to DMT-Kai Batla. To register as an I&AP please submit your name and contact details and your comments in writing to the Consultants by **13 December 2017.** A background information document (BID) can be obtained from DMT-Kai Batla upon request. The Draft BAR and EMPr are available for commenting for a period of 30 days **(13 November – 14 December 2017).** To access these reports, please go to the following:

- **Tongaat South Library: 1 Crest Rd, Watsonia, Tongaat, 4400; or**
- **Follow the Dropbox link below:**

https://www.dropbox.com/home/ACSA%20King%20Shaka%20International%20Airport%20BAR

Those wishing to be part of the public consultation process can register as I&APs and send their comments to Samantha Moodley of DMT-Kai Batla (Pty) Ltd, at: **Tel:** (011) 781 4548; **Fax**: 086 545 2720; **E-mail:** Samantha.Moodley@dmt-group.com; **Postal Address:** PO Box 41955, Craighall, 2024, by **14 December 2017.**

Site notice placed opposite to the Mugg & Bean restaurant



Site notice adjacent to ATNS elevator

Site notice placed at screening point to airside

APPENDIX E1.2
Newspaper Advert

NOTICE OF BASIC ASSESSMENT PROCESS FOR THE PROPOSED CONSTRUCTION OF APRON STANDS AND EXPANSION OF THE BRAVO TAXIWAY AT KING SHAKA INTERNATIONAL AIRPORT IN THE KWAZULU-NATAL PROVINCE (DEA REF: 14/12/16/3/3/1/1841)

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Project Description / Activities: ACSA has proposed extension works at the KSIA with the construction of four new apron stands and the extension of one of its taxiways. The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. In order for ACSA to obtain the necessary authorisations, a Basic Assessment process is being undertaken to obtain Environmental Authorisation the proposed project.

PUBLIC CONSULTATION

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- **Follow the Dropbox link below:**

https://www.dropbox.com/home/ACSA%20King%20Shaka%20International%20Airport%20BAR

Those wishing to be part of the public consultation process can register as I&APs and send their comments to Samantha Moodley of DMT-Kai Batla (Pty) Ltd, at: **Tel:** (011) 781 4548; **Fax**: 086 545 2720; **E-mail:** Samantha.Moodley@dmt-group.com; **Postal Address:** PO Box 41955, Craighall, 2024, by **14 December 2017.**

The proof of advert will be included in the Final BAR.

APPENDIX E3
Comments and Responses

No comments have been received on the project to date. Comments received from I&APs during the public review of the Draft BAR will be included in a Comments and Responses Report that will be submitted with the Final BAR.

APPENDIX E4
Background Information Document

AIRPORTS COMPANY SOUTH AFRICA

DMT Kai Batla (Pty) Ltd

Background Information Document

Basic Assessment Process for the Proposed Construction of Apron Stands and Expansion of the Taxiway at King Shaka International Airport

PURPOSE OF THE DOCUMENT

The purpose of the Background Information Document (BID) is to provide information to assist stakeholders in participating in the environmental authorisation process for the proposed project. This BID has been developed to:

- Share information about the proposed project;
- Present the Basic Assessment (BA) process that will be followed to obtain environmental authorisation (EA) according to NEMA;
- Provide more details about the Public Participation Process (PPP)

BACKGROUND

The King Shaka International Airport (hereafter referred to as KSIA) was first conceptualized in the 1970s, however the development was halted due to economic constraints in the country during that time. The development of the KSIA was a means of addressing the limitations being experienced at the now decommissioned Durban International Airport. Between 2004 and 2007 the new airport development was once again revived, with a partnership formed between the Airports Company of South Africa SOC Limited (ACSA) and the Dube TradePort Corporation - both of whom had a common goal of creating an 'aerotropolis' in the north of Durban[1], centred around the Dube Trade Port (DTP) and the KSIA. As such, the construction of the new airport commenced in 2007 and continued until 2009. Flight testing at the airport began in December 2009, and the operation of commercial flights commenced timeously in May 2010 to accommodate the FIFA 2010 Soccer World Cup.

The concept behind the KSIA [and the DTP] was to create a catalyst for the creation of a globally competitive multi-modal trade gateway in southern Africa. King Shaka International was designed as a means to grow international services in this part of the country, while maintaining its position as a key airport for domestic service. This is evident in the airport having received awards from the Airport Council International as well as the Skytrax airport and airline review organisation[2].

THE APPLICANT

South Africa's airplane terminals were owned and operated by the state until 23 July 1993, when ACSA was formally established. ACSA was formed just over 20 years ago when South Africa's main airports were transferred into a public company through the enactment of the Airports Company Act 44 of 1993. ACSA manages a system of nine airplane terminals in South Africa, including the three principle worldwide entryways of O.R. Tambo International, Cape Town International and KSIA[3]- while processing approximately 36 million passengers per annum. Although ACSA is majority owned by the South African government (through the Department of Transport (DoT)), the company is legally and financially autonomous and operates under commercial law.

The nine air terminals possessed by the Company are significant generators of direct and indirect employment and business opportunities and some are considered the centres of improvement hubs. This is aligned with the idea of the 'aerotropolis', whereby a scope of assembling, business offices, supplemented by lodgings, retail outlets, recreational buildings and workplaces are clustered around an airplane terminal- is likely to further accelerate the core role of airports. This is particularly true for the international airports like the KSIA. [3]

[1] The airport is a part of the Dube Tradeport, which includes a trade zone linked to the airport's cargo terminal, facilities to support the airport like nearby offices and transit accommodation for travellers, an integrated agricultural export zone and an Information Technology platform. Source: http://www.dubetradeport.co.za/

[2] https://en.wikipedia.org/wiki/King_Shaka_International_Airport

[3] http://www.airports.co.za/about-us/airports-company/company-profile

Throughout the years, ACSA has transformed a fragmented, infrastructural parastatal into an engaged, client driven, proficient and monetarily fruitful business, whose air terminals have turned out to be critical achievement elements to Brand South Africa. ACSA continues to play its role as a key driver of South Africa's economy by demonstrating socio-economic and environmental responsibility through its activities and programmes. This is shown in its continued development of the country's airports- such as the proposed activities for the KSIA.

PROJECT LOCALITY

The KSIA is located in La Mercy, KwaZulu-Natal, approximately 35 km north of Durban. The airport falls within the jurisdiction of the eThekwini Municipal Area. eThekwini is the largest city in KwaZulu-Natal and the third-largest city in the country. Its land area is comparatively larger than that of other South African cities and is topographically hilly, with many gorges and ravines.

The airport precinct is bordered by the M43 to the north, the Mdloti River to the south, the R102 to the west, and the N2 freeway to the east (see Figure 1). Neighbouring communities are Mount Moreland to the near south west and Verulam to the far south-west; Tongaat to the west and north; and Umdloti to the south-east. Notable communities further away are Umhlanga to the south and Ballito to the north. The airport is accessible from both the N2 freeway and the alternative R102 road, with the M65 linking the N2 and the R102 with the airport.

PROJECT DESCRIPTION

ACSA has proposed extension works at the KSIA with the construction of additional apron stands and the extension of the Bravo Taxiway (see Figures 2 and 3). The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. Four remote wide-body aircraft stands ('aprons') will be constructed and this will be complemented by the newly extended taxiway. The development will be conducted in a manner that meets the International Civil Aviation Organization (ICAO) Code F standards[4], and the end goal of the project is to increase the airport's overall operational capacity.

Apron Stands

An apron stand is the area of an airport where aircraft are parked, unloaded or loaded, refuelled, or boarded. There are currently four aprons at KSIA, namely Alpha, Bravo, Charlie and Delta. Stands Bravo and Alpha are Code C[5] stands, while Charlie and Delta are Code F stands. Stands Bravo and Alpha are positioned on the opposite side (east) of the Code C apron taxiway, which provides access to Alpha and Bravo apron stands (see Figure 2). As it stands, neither of these two aprons can currently accommodate wide-body aircraft. Charlie Apron to the west of the terminal building consists of two, Code F stands, which are MARS-configured[6] to accept Code C aircraft. Charlie stands are contact, nose-in and push-back. The Delta Apron serves the existing cargo terminal and is also suitable for the parking of two wide body aircraft. These stands are also MARS-configured.

As part of the planned development, consideration was given to reconfiguring several of the existing Alpha Apron stands as well as constructing two new apron stands. 10 stand option layouts were produced from the various stand type combinations. This was moderated to five option pair combinations (which still comprised the various stand type combinations listed above) for further development/evaluation. Some of the evaluation criteria was based on cost estimates and bulk service layout development.

The following variations on the paired stand type combinations shown in Figure 3 were considered as part of the feasibility study:

1. Contact + 2 Remote (Option A1)
2. 2 Contact + 2 Future Pier Served (Option B1);
3. 2 Remote + 2 Remote (Option C);
4. 2 Remote + 2 Future Pier Served (Option D1); and
5. 2 Future Pier Served + 2 Future Pier Served (Option E).

The five options represented the 'best' options selected in terms of pavement extents and operational advantages. In the feasibility studies, it was concluded that constructing four new remote stands would be the most viable option.

[4] The apron restrictions are being constructed in line with part two of the ICAO Aerodrome Reference Code which categorises aircraft types. The part two categorisation is derived from the most restrictive of either the aircraft wingspan or the aircraft outer main gear wheel span (Source: https://www.skybrary.aero/index.php/ICAO_Aerodrome_Reference_Code; 2015).

[5] The ICAO has certain standards that areas of airports need to meet or adhere too. These standards are referred to as 'Codes' (ICAO 2009).

[6] 'MARS' is an acronym for maximizing parking space on the tarmac. The Multiple Apron Ramp System (MARS) allows airport planners to make their gates – and, therefore, their aircraft turnarounds – more flexible and efficient. As more airlines acquire the new generation of larger aircraft to keep up with passenger demand, airports have to build gates to accommodate them (http://www.airportsinternational.com/2013/02/manoeuvres-on-mars/13873)

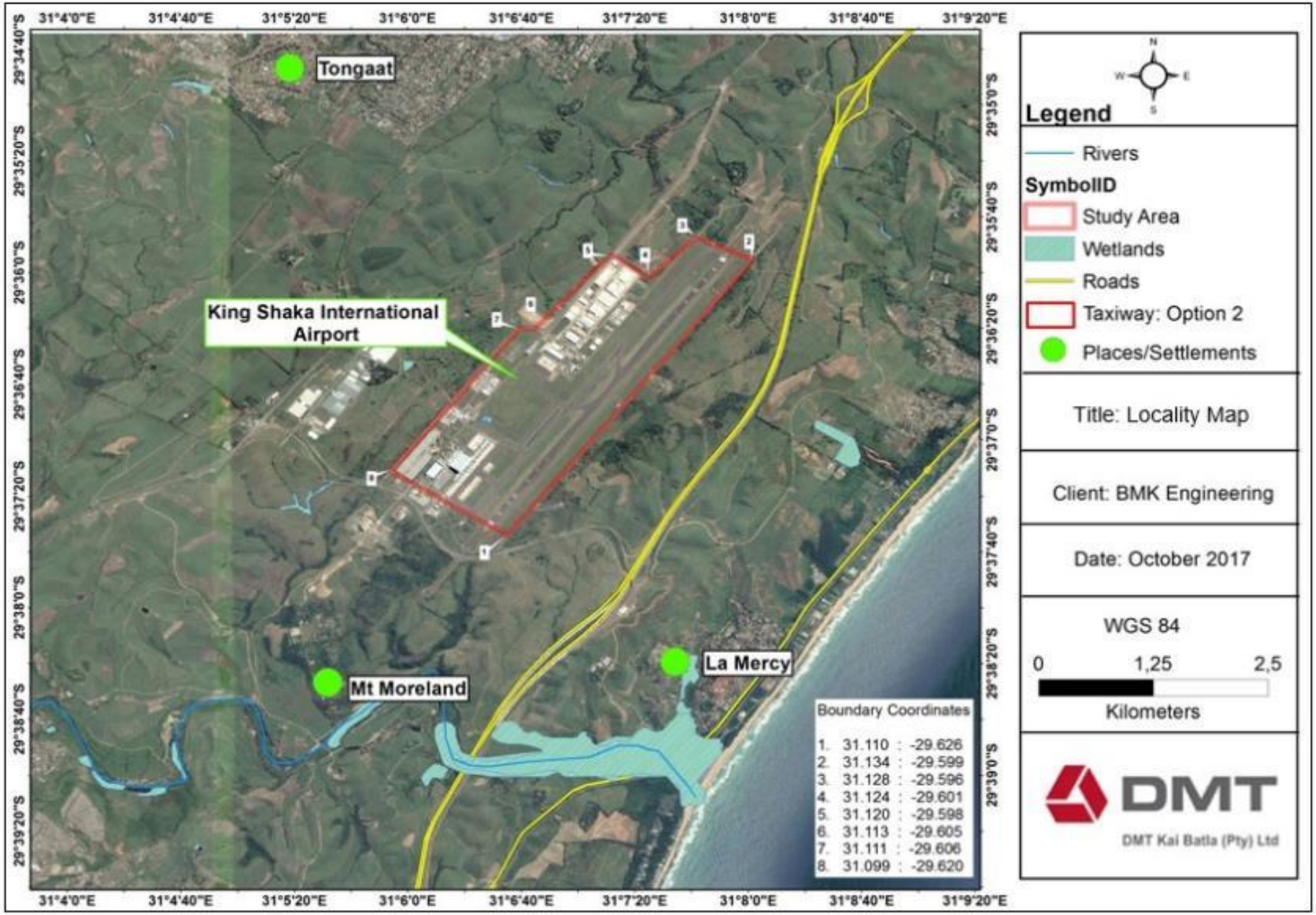

Figure 1: Project locality

Figure 2: Project focus area (Source: BMK 2017)

Figure 3: Apron stand layout options (Source: BMK 2017)

The layout planning and physical characteristics for aircraft stand development are governed by the standards listed in the ICAO Annex 14 (ICAO, 2016) and supporting ICAO Design Manuals (as seen in Table 1 below). The MARS configuration will allow for mixed aircraft usage of the Apron stand. The new stands will be power-in (nose in) and (tractor) push-back. The stands are MARS-configured to allow for two Code C aircraft to simultaneously utilise a single Code F (wide-body) stand position.

Furthermore, the following aircraft considerations were made in the stand design and construction planning:

- *Aircraft wingtip clearance:* The ICAO recommended minimum wingtip clearance distance between Code F aircraft is 7.5m. The corresponding ICAO minimum for Code C aircraft on a MARS configured Code F stand is 4.5m, however at OR Tambo International Airport, ACSA has adopted a 7.5m wingtip clearance. ACSA is to confirm whether the same 'standard' should be applied at KISA.

- *Aircraft front of stand clearances:* Head of stand areas should typically allow room for a pushback tractor (tug) to maneuver onto the stand and not block traffic on an adjacent service road. The tractor with tow bar connected to the nose wheel gear of the most forward positioned aircraft on a stand should also be able to fit within the stand's footprint. It is proposed that a minimum clearance of 13m from the most forward aircraft's nose gear be allowed (typically 7.5m from the most forward nose position). 13m will allow for a 9m tug + 4m tow bar combination.

- *Aircraft back of stand clearances:* Typically for inspection (and maintenance) purposes, or circulation around an aircraft parked on a stand, space provisions should be made for vehicles to manoeuver around the tail section of a parked aircraft. It is proposed that a distance of 4.5m is considered by ACSA for this purpose (reduced to 2m where space is limited) and will be assumed by BMK in the design unless otherwise directed.

- *Aircraft Mix:* Code F stands will be designed to accommodate four main codes of aircraft: Code F, Code E, Code D and Code C aircraft.

Other aspects that have been considered in the conceptualization of the Apron Stands include:

- *Connecting Taxiway Infrastructure:* New taxiway infrastructure will be required, regardless of which Code F apron stand option is selected for progression. Taxiways will be designed as Code F taxiways, with all physical design characteristics (horizontal and vertical) as per Annex 14 (ICAO, 2016) standards and recommendations – this includes taxiway minimum separation distances.

- *Service Roads:* Head-of-stand and back-of-stand service roads (bi-directional) will be included as part of the stand designs and shall be between 10 and 12m wide- space permitting.

Table 1: ICAO apron geometric design standards and recommendations (Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum clearance between an aircraft and adjacent building, aircraft on another stand and other objects.	4.5 (7.5m)[1]	7.5
Slopes on aprons	<1%=	<1%
Max aircraft wingspan	36m	80m
Minimum stand width (MARS-configured Code F)		87.5m
Minimum HOS nose clearance	4.5m	7.5m
Minimum distance from longest aircraft to BOS line[2]	4.5m	4.5m
Service road width (dual direction)	10m (min) 12m (preferred)	

[1]ACSA requirement at OR Tambo Int'l Airport
IATA ADRM (IATA, 2004)
[2]Not an ICAO requirement

- *GSE Layout:* A portion of the apron stand footprint will be dedicated to Ground Support Equipment (GSE). The GSE equipment type to be accommodated on-stand will be in line with airport/airline operational requirements areas will be marked according to equipment type.

The fully serviced Apron Stand offerings will include (but not be limited to) the following services:

1. Fixed electrical ground power (FEGP);
2. Fuel hydrant pits;
3. Stand number indicator boards (SNIB);
4. Stand Entry Guidance System (SEGS);
5. Floodlights;
6. Fire hydrant (American style or as specified by ACSA);
7. Emergency stop buttons (for SEGS and fuel);
8. Emergency fixed line telephone – to be confirmed;
9. Fuel/oil spill kits – to be confirmed;
10. CCTV – to be confirmed;
11. Baggage interface systems (to be confirmed)
12. Mini substations (serving multiple stands; as required);
13. Pre-conditioned air – to be confirmed;
14. Communications cabinet – to be confirmed; and
15. Back of stand slot drain infrastructure (to convey stormwater runoff into existing pollution control system).

Considering aviation standards and requirements, as well as taking the functionality/operational impact, cost, and environmental viability of the options listed above, **Option C (4 remote stands**) has been selected as the most feasible apron stand design. Therefore, this application is for the authorisation of developing Option C of the proposed Apron stand construction.

Bravo Taxiway Extension

The existing airport operates with a single runway. The runway is served by a single, full length parallel taxiway (Taxiway Alpha) and 2 Rapid Exit Taxiways (RETs) – namely taxiways Golf (G) and Hotel (H) (see Figure 5). A complex juncture of taxiway infrastructure links exists in the vicinity of RET Golf and has been identified as a 'hotspot' (defined in the ICAO *Manual on the Prevention of Runway Incursions* (ICAO, 2007) as an area where potential exists for aircraft collisions (see Figure 5). The extension of the Bravo Taxiway has been proposed to alleviate several operational issues currently being experienced in the airside manoeuvring area at the airport. As part of the feasibility phase, two options were considered, with the options pertaining to the alignment of the link between the main taxiway extension alignment and the existing runway.

Whilst there are a number of different permutations, the taxiway extension options presented as part of this study are:

- Option 1: RET Hotel and proposed intersection taxiway combined (positioned at RET (Figure 6); and
- Option 2: Intersection taxiway positioned north of RET Hotel (Figure 7).

Both options provide for a minimum take-off runway available (TORA) distance of 2,100m.

The Bravo Taxiway extension is a proposed 1300m extension from the Hotspot 1 [highlighted in Figure 4], towards the Runway 24 threshold. This has been identified as the infrastructure intervention needed to address the hotspot risk and to simplify this particular intersection. The taxiway extension includes a 90-degree taxiway link to the runway, which crosses over the existing parallel taxiway (Alpha). Based on the review of available wind data, Runway 06 is used for the majority of runway operations, i.e. landings and take-offs towards the north (BMK 2017).

Table 4: ICAO Annex 14 taxiway geometric design criteria (Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum pavement width	15m	25m
Shoulder width	5m	17.5m
Taxiway strip width	52m	102m
Graded portion of strip	25m	60m
Minimum clearance of outer main wheel to taxiway edge	4.5m	4.5m
Minimum separation distance between taxiway centre line and runway (instrument runways)	168m	190m
Maximum longitudinal slope of taxiway pavement	1.5%	1.5%
Maximum change in longitudinal slope of taxiway	1% per 30m	1% per 30m
Maximum transverse slope of taxiway pavement	1.5%	1.5%
Minimum radius of longitudinal vertical curve	3000m	3000m
K-value	K-value 30 30	K-value 30 30

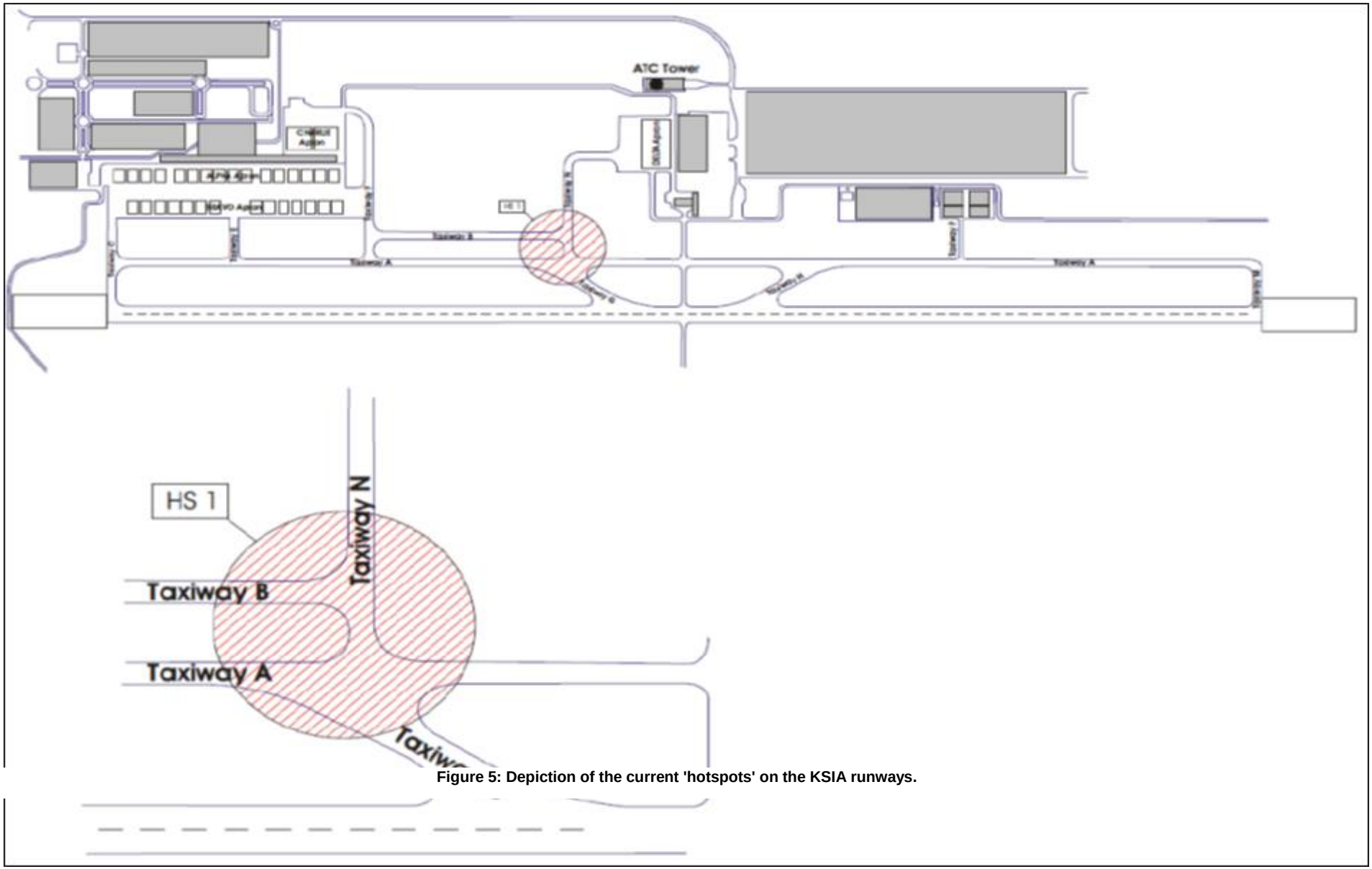

Figure 5: Depiction of the current 'hotspots' on the KSIA runways.

Figure 6: Bravo taxiway Option 1 (at RET Hotel)

Figure 7: Bravo taxiway Option 2 (north of RET Hotel)

The Bravo Taxiway will provide some inherent benefits, which- amongst others- include:

- Simplification of the hotspot intersection. Aircraft will no longer be able to taxi along Bravo, turn right on to November (Taxiway N) and then left on to Alpha. This will prevent potential collisions with landing aircraft which may vacate the runway using RET Golf.

- The extension of Taxiway Bravo, including a new 90-degree link to the runway, will ensure that pilots of the aircraft at the proposed runway holding position will have increased visibility of landing/approaching aircraft.

- An increased take-off run distance will be afforded from the point where the taxiway joins with the runway, compared with aircraft using RET Hotel for the same purpose – approximately 800m if aircraft line-up compensations are accounted for.

From a cost point of view, Option 2 (configured as per Figure 7) is more expensive to construct than Option 1. However, from an operational perspective Option 2 is a much simpler solution in terms of intersection geometry, providing a completely independent taxiway link to the runway, unlike that of Option 1, which has an interaction with the existing RET. The potential risk of the intersection becoming a future hotspot is less with Option 2. Therefore, Option 2 is the preferred option under application for authorisation.

CONSTRUCTION WORKS

The construction phase is envisaged to be of a 21-month duration. It is envisaged that the construction operations will be split into two phases, namely the construction of the Bravo Taxi Way Extension; and construction of the remote stand construction. The effect of the construction activities on the daily operations of the airport will be discussed and agreed upon with the Project Manager, Airside and Landside Management and Operation Officials before commencement of the project.

ENVIRONMENTAL AUTHORISATION PROCESS

The proposed development requires Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (Act 107 of 1998). Activities identified in Government Notice Regulations (GN R) 327 and 325 (Listing Notice 1 and Listing notice 3, respectively) of the EIA Regulations of 2014- as amended in 2017- will be triggered by the proposed project. Thus a Basic Assessment (BA) process is being undertaken to obtain the authorisation. The said activities are as follows:

Table 3: Triggered activities from the NEMA and NWA

GN R 327 **Listing Notice 1**	*Activity 61:* The expansion of airports where the development footprint will be increased.
GN R 325 **Listing Notice 3**	*Activity 7:* The development of aircraft landing strips and runways 1,4 kilometres and shorter, in: d. KwaZulu-Natal vii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
	Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan, in: KwaZulu-Natal; iv. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

The summary of the authorisation process is depicted in Figure 8.

Ultimately, the outcome of the BA Process is to provide the Competent Authority (i.e. the national Department of Environmental Affairs (DEA)), with sufficient information to provide a decision on the Application in terms of granting environmental authorisation in order to avoid or mitigate any detrimental impacts that the activity may inflict on the receiving environment. In respect of this, DMT-Kai Batla (Pty) Ltd has been appointed by the BMK Engineering Consultants on behalf of ACSA, as the Independent Environmental Assessment Practitioner (EAP) to conduct the Basic Assessment process.

PUBLIC PARTICIPATION PROCESS

The aim of the Public Participation Process (PPP) is to allow interested and Affected Parties (I&APs) the opportunity to gain an understanding of the project and consider all facets of the proposed development. The PPP will:

- Provide I&APs with information about the proposed development and associated potential impacts;
- Allow I&APs the opportunity to raise concerns on the proposed project; and
- Incorporate the concerns raised by I&APs in the study and ultimate decision-making process.

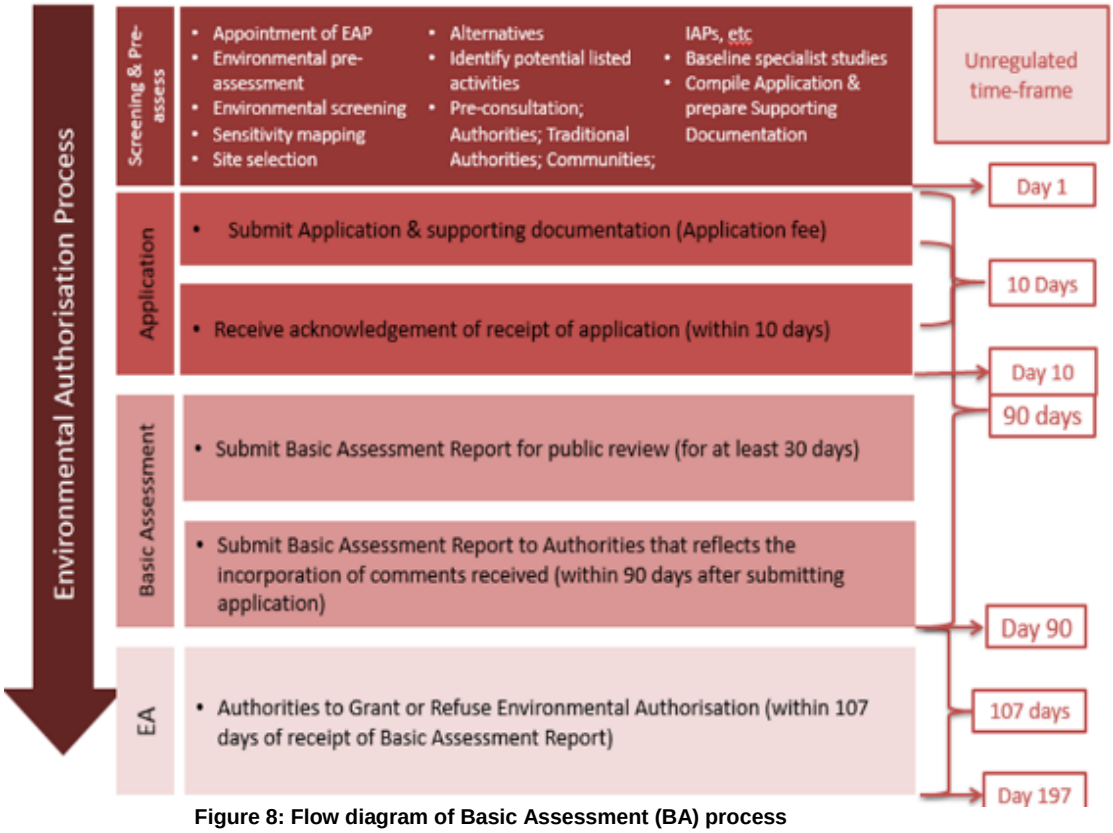

Figure 8: Flow diagram of Basic Assessment (BA) process

The following activities will take place during this period:

- Advertising the BA Process (in a local/regional press). An advertisement will be placed in the (*The Daily News and The Sunday Times*) and site notices will be placed at the project site and public venues;
- Registering I&APs and key stakeholders on the database. BIDs will be distributed to I&APs informing them that the Environmental Authorisation application is being lodged by the EWS. The Basic Assessment Report (BAR) and Environmental Management Plan (EMP) will be available at the Tongaat South Library, and on Dropbox (link provided below);
- Recording all comments, issues and concerns raised by I&APs and preparation of a PPP report and Comments & Responses Report.
- Updating of the BAR and EMPr taking into consideration all comments received; and
- Submission of the final BAR and EMPr to the DEDTEA for Authorisation.

GETTING INVOLVED

Surrounding communities, government and other stakeholders such as traditional authorities, community leaders, Non-Governmental Organisations (NGOs) and others are invited to register as I&APs. Stakeholders have the opportunity to comment on the draft BAR and EMPr and these comments will be incorporated into the final report and a separate public participation report will be compiled and submitted to the relevant authorities. The Draft BAR and EMPr are available for commenting for a period of 30 days (11 October to 11 November 2017). To access these reports, please go to the following venues:

- Tongaat South Library: 1 Crest Rd, Watsonia, Tongaat, 4400; or
- On Dropbox, at via the link below:

https://www.dropbox.com/home/ACSA%20King%20Shaka%20International%20Airport%20BAR

All persons who wish to take part in the Public Participation Process by commenting on or raising any concerns regarding the development are invited to do so through the following means:

1) Registering as an Interested and Affected Party (In writing or telephonically at the details provided below);
2) Submit any comments in writing on the response sheet attached to this document if you have any (and return to us by **13 November 2017**
3) BAR and EMPr and raise any concerns or comments. The Draft BAR and EMPr are available for commenting for a period of 30 days, from **13 November to 14 December 2017**

Contact Details for Registering as an I&AP and commenting on the proposed project:

Contact Samantha Moodley (Environmental Assessment Practitioner- EAP); Tel: (011) 781 4548; Fax: 086 545 2720; E-mail: Samantha.Moodley@dmt-group.com; Postal Address: PO Box 41955, Craighall, 2024, by **13 November 2017.**

Once the authorities have made a decision regarding the project, stakeholders will be informed accordingly.

AIRPORTS COMPANY SOUTH AFRICA

Basic Assessment for the Proposed Construction of Apron Stands and Expansion of the Taxiway at King Shaka International Airport

in terms of Government Notice Regulation 983 (Listing Notice 1) of the National Environmental Management Act (Act No. 107 Of 1998)

Comments and Response Sheet

Name and Surname			
Company/ Organisation			
Capacity (landowner, manager, director etc.)			
Postal Address			
Email Address			
Fax Number			
Telephone and/or Cellphone Number			
Have you received a BID?	**Yes**		
	No		

Questions, comments and responses

Would you like to be kept informed about progress of the proposed project?	**Yes**		
	No		

Are there any other individuals, organisations or stakeholders who you think should be consulted regarding the development? If yes, provide list their names and contacts details?

Contact Details for Registering as an I&AP and commenting on the proposed project:
Samantha Moodley (Environmental Assessment Practitioner- EAP)
Postal Address: PO Box 41955, Craighall, 2024
Tel: (011) 781 4548
Email: Samantha.Moodley@dmt-group.com

APPENDIX E5

List of I&APs

NAME OF I&AP	INSTITUTION	TELEPHONE	EMAIL
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NAME OF I&AP	INSTITUTION	TELEPHONE	EMAIL
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Jeeva Pillay	Tongaat Civic Association		jeeva@telkomsa.net
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Paul Ramlal	La Mercy Ratepayers Association: Chairman		paulramlal@optinetsa.co.za
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Paul Russell	Tongaat Hulett Developments	0315601900	paul.russell@huletts.co.za
Kamla Singh	Tongaat Hulett Developments	0315601900	kamla.singh@thdev.co.za
Vanessa Black	Earthlife Africa eThekwini	0824728844	black@ispace.co.za
Alice Thomson	Earthlife Africa eThekwini	0845643891	alicetho@ispace.co.za
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APPENDIX E6
Stakeholder Correspondence

DMT Kai Batla (Pty) Ltd

PRE- APPLICATION AUTHORITY CONSULTATION

Proposed Construction of Apron Stands and Expansion of the Bravo Taxiway at King Shaka International Airport, KwaZulu-Natal Province

NOTES OF THE PRE-APPLICATION CONSULTATION WITH THE KWAZULU-NATAL DEPARTMENT OF WATER AND SANITATION

Date: **11 October 2017**

Time: **08:00 to 09:00**

Venue: **Southern Life Building 9th Floor 88 Joe Slovo Street Durban, 4000**

PRESENT

Hassina Aboobaker	Department and Water and Sanitation (DWS)
Christopher Jones	Airports Company of South Africa (ACSA)
Nilesh Beeputh	BMK Engineering Group (BMK)
Samantha Moodley	DMT-Kai Batla (DMT-KB)

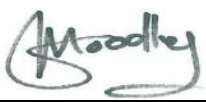
APOLOGIES

None

Summary of the Discussion with the DWS

1. DWS was made aware of the scope of the project, and what the proximity of the wetlands on site are.
2. DWS are of the opinion that the project does not call for a Water Use Licence (WUL) given that the project is occurring within an already developed area, and that there is existing infrastructure between the wetland and the proposed site.
3. DWS requested copies of maps indicating the location of the project, as well as a map that indicates the 500m buffer.
4. DWS will review the documentation and submit a letter to ACSA confirming that there is no need for a Water Use Licence Application (WULA)

SIGNED AS A TRUE RECORD OF PROCEEDINGS



Samantha Moodley

12 October 2017

Date

APPENDIX F: IMPACT ASSESSMENT

Alternative 1 (preferred alternative): 2 + 2 Remote Stands

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	DESIGN PHASE			
	None			
	CONSTRUCTION PHASE			
Direct Impacts	**Vegetation Clearing (-ve)** The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. This vegetation will be cleared in preparation for bulk earthworks. Extent: 1 Intensity: 3 Duration: 2 Score: 6 Probability: Definite	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.	Low
	Extensive earth works (-ve) The remote stand area will require extensive earthworks given that it is a greenfield. Extent: 1 Intensity: 3 Duration: 2 Score: 6 Probability: Definite	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents. • Excavations to adequately barricaded and labelled. ○ This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area.	Low

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>Soil disturbance (-ve)
There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.
<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>3</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>6</td></tr>
<tr><td>Probability</td><td>Definite</td></tr>
</table></td><td>Medium</td><td>• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting.
• Topsoil stockpiles should not exceed 2 meters in height.
• All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled.
• Sloped areas can be temporarily stabilized during construction using geotextiles.
• All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.</td><td>Low</td></tr>
<tr><td></td><td>Disruption to existing critical service infrastructure (-ve)
Remote stands can be built in isolation without adversely affecting airside operational efficiencies. Therefore, it is not anticipated that construction of this stand type will have a significant impact on the existing airport infrastructure.
<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>5</td></tr>
<tr><td>Probability</td><td>Possible</td></tr>
</table></td><td>Low</td><td>• The construction schedule should be adhered to ensure that construction occurs timeously.
• The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations.
• Construction activities should be restricted to hours that will cause the least disruption.</td><td>Very Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td rowspan="3">Indirect Impacts</td><td>Soil and groundwater contamination (-ve)
Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.

Extent: 1
Intensity: 2
Duration: 2
Score: 5
Probability: Possible</td><td>Low</td><td>• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational.
○ The temporary system should include an oil/water separator.
• All construction vehicles should be properly maintained to prevent leaks.
• Cement mixing must be confined to a designated area and must be done on an impervious surface.
• Any fuel stored on site must be kept in a bunded containment area and be clearly marked.
• Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.
• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.</td><td>Very Low</td></tr>
<tr><td>Visual/Aesthetic Impact (-ve)
Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.

Extent: 2
Intensity: 2
Duration: 2
Score: 6
Probability: Definite</td><td>Medium</td><td>• Construction activities will be restricted to hours that will cause the least disruption.
• Lighting on site is to be sufficient for safety and security purposes
• No stockpiles should exceed 2 m in height. Wind-blown dust from stockpiles and construction activities, should be controlled.
• Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance.
• The construction site and material stores, should be kept tidy.
• Measures to control wastes and litter should be included in the contract specification documents.
• All rubbish and rubble removed to a recognized waste facility.
• A certificate of disposal must be obtained for any waste that is disposed of.
• The construction camp must be located as far from other buildings as possible.</td><td>Low</td></tr>
<tr><td>Noise impacts (-ve)
During the Construction Phase, activities may result in noise generation. Noise impacts may be</td><td>Low</td><td>• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone.</td><td>Very Low</td></tr>
</table>

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Definite		• Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.	
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.	Low
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of	Low	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation).	Very Low

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the area, neighbouring communities and activities, contractors as well as local ecology.
<table><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>1</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Definite</td></tr></table></td><td></td><td>• Topsoil stockpiles should be covered to prevent the surface soil from being blown away.
• The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles.
• Trucks transporting any form of soil or waste should be covered with a canvas.</td><td></td></tr>
<tr><td></td><td>Job creation (+ve)
The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.
<table><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>6</td></tr><tr><td>Probability</td><td>Definite</td></tr></table></td><td>Medium</td><td>• Where possible, first preference should be given to locals for job opportunities that will be created through the project
• Advertise employment opportunities adequately, so as not to limit application opportunities
• Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria.
• Promote the employment of women and youth.
• Ideally, constructions supplies should be sourced locally for the benefit of the local economy.
•</td><td>Medium</td></tr>
<tr><td></td><td>Impact on surface water drainage (-ve)
The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Improbable</td></tr></table></td><td>Low</td><td>• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary.
• It is recommended that vehicles and construction equipment be maintained off-site as far as possible.
• Refuel and service vehicles on an impermeable surface;
• Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site;
• Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; and
• Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground</td><td>Very Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td></td><td></td><td>• and ensure that they are adequately trained to take corrective action should an accidental spill occur.
• Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly.
• Spill kits must be made available and the correct procedures followed during the clean-up of spills.
• Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.</td><td></td></tr>
<tr><td></td><td>Health and safety (-ve)

The construction activities may pose a threat to safety of the surrounding industrial activities and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction

<table><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>6</td></tr><tr><td>Probability</td><td>Probable</td></tr></table></td><td>Medium</td><td>• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses
• Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences.
• Provide adequate safety warning signage on the roads.
• Construction paths must be clearly demarcated.
• Demarcate footprint of the site prior to construction commencing to prevent access to site during construction.
• Fence the site prior to construction commencing to prevent unauthorised access to site during construction.
• Appropriate speed limit should be enforced, e.g. 40km/h.
• Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles).
• Security to be provided (where possible) after hours to protect equipment in the construction camp
• Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station</td><td>Low</td></tr>
<tr><td></td><td>Waste (-ve)

There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to</td><td>Medium</td><td>• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water).
• Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein.
• Bins to have secured lids to prevent waste from being blown into the surrounding area.</td><td>Low</td></tr>
</table>

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	landfill. There is also the potential of hazardous waste being generated during construction. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite		• Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	
Cumulative Impacts	**Alien vegetation encroachment (-ve)** There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities Extent: 1 Intensity: 2 Duration: 2 Score: 5 Extent: Possible	Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.	Very Low
	OPERATIONAL PHASE			
Dir	**Increased operational capacity (+ve)**	Very High	No mitigation proposed.	Very High

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. stemming from the anticipated increase in cargo transport needs and an anticipated increase in tourism-based revenue.				
	Extent	3			
	Intensity	3			
	Duration	3			
	Score	9			
	Probability	Definite			
	Minimised disruption to airport infrastructure (+ve) Once constructed, the stands will not disrupt other infrastructure or be impacted by future airport expansion projects and they are not envisioned to cause disturbance or disruption to other airport infrastructure.		Low	No mitigation proposed.	Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	6			
	Probability	Definite			
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.		Medium	No mitigation proposed.	Medium
	Extent	1			
	Intensity	2			
	Duration	3			
	Score	6			
	Probability	Definite			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
Indirect Impacts	*None*				
Cumulative Impacts	**Increased investment and stimulation of the economy (+ve)** The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ (please refer to the BAR, Section 1.9: Activity Motivation)		High	• Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.	High
	Extent	2			
	Intensity	2			
	Duration	3			
	Score	5			
	Probability	Probable			
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.		Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.	Very Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Probable			
	Health effects of increased air pollution (-ve)		Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD.	Very Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.			• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.	
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Possible			

Apron Stand Alternative 2: 2 Contact + 2 Remote (Option A1)

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Design Phase			
	None			
	Construction Phase			
Direct Impacts	**Vegetation Clearing (-ve)** The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. The intensity of this impact is lower than for the Preferred Alternative.	Very Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required	Very Low

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td><table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>1</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>4</td></tr>
<tr><td>Probability</td><td>Definite</td></tr>
</table></td><td></td><td>permits must be obtained prior to the feature being removed or destroyed.
• Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation.
• Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.</td><td></td></tr>
<tr><td></td><td>Extensive earth works (-ve)

The remote stand area will require extensive earthworks given that it is a greenfield. Furthermore, extensive earthworks will be required for the contact stands, where existing infrastructure needs to be considered.<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>5</td></tr>
<tr><td>Probability</td><td>Possible</td></tr>
</table></td><td>Low</td><td>• The extent of construction works must be limited to the development footprint and the designated buffer area.
• Earth works should be done in accordance with the construction schedule.
• Vehicles and machinery to be used by authorised/permitted personnel.
• Care should be taken to avoid health and safety incidents.
• Excavations to adequately barricaded and labelled.
o This is with particular reference to excavations exceeding 1-1.5m in depth.
• Excavated material to be placed in a designated place outside of the construction area.</td><td>Very Low</td></tr>
<tr><td></td><td>Soil disturbance (-ve)

There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion. The intensity of this impact is not as severe given that only two stands will be from the remote stand cluster.<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>1</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>4</td></tr>
<tr><td>Probability</td><td>Definite</td></tr>
</table></td><td>Very Low</td><td>• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting.
• Topsoil stockpiles should not exceed 2 meters in height.
• All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled.
• Sloped areas can be temporarily stabilized during construction using geotextiles.
• All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.</td><td>Very Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>Disruption to existing critical service infrastructure (-ve)

Due to the requirement for new fixed-link bridges into the building, new node constructions, and airbridges, there will likely be some disruption to terminal building and head of stand service road operations. The impact of the reconfiguration construction on existing airside efficiencies is greater than that of the remote and future pier stands types as construction will occur on an existing, operational apron.

Extent: 1
Intensity: 3
Duration: 2
Score: 6
Probability: Definite</td><td>Medium</td><td>• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities.
• The construction schedule should be adhered to ensure that construction occurs timeously.
• The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations.
• Construction activities will be restricted to hours that will cause the least disruption.</td><td>Low</td></tr>
<tr><td></td><td>Disruption to airport terminals (-ve)

There will be substantial to the terminal operations with the construction/reconfiguration of the contact stands. This is given their adjacent location to the terminals compared to the remote stand cluster.

Extent: 1
Intensity: 3
Duration: 2
Score: 6
Probability: Definite</td><td>Medium</td><td>• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities
• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone.
• Construction activities will be restricted to hours that will cause the least disruption.
• Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone.
• Equipment will be fitted with silencers as far as possible to reduce noise.
• All equipment to be adequately maintained and kept in good working order to reduce noise.</td><td>Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>Soil and groundwater contamination (-ve)
Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>1</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Possible</td></tr></table></td><td>Low</td><td>• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational.
o The temporary system should include an oil/water separator.
• All construction vehicles should be properly maintained to prevent leaks.
• Cement mixing must be confined to a designated area and must be done on an impervious surface.
• Any fuel stored on site must be kept in a bunded containment area and be clearly marked.
• Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.
• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow</td><td>Very Low</td></tr>
<tr><td></td><td>Visual/Aesthetic Impact (-ve)
Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.
<table><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>6</td></tr><tr><td>Probability</td><td>Definite</td></tr></table></td><td>Medium</td><td>• Construction activities will be restricted to hours that will cause the least disruption.
• Lighting on site is to be sufficient for safety and security purposes.
• No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled.
• Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance.
• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons and airport staff of the construction activities.
• The construction site and material stores, should be kept tidy.
• Measures to control wastes and litter should be included in the contract specification documents.
• All rubbish and rubble removed to a recognized waste facility.</td><td>Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td></td><td></td><td>• A certificate of disposal must be obtained for any waste that is disposed of.
• The construction camp must be located as far from other buildings as possible.</td><td></td></tr>
<tr><td></td><td>Noise impacts (-ve)

During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.

Extent: 2
Intensity: 2
Duration: 2
Score: 6
Probability: Definite</td><td>Medium</td><td>• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons and airport staff of the construction activities.
• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone.
• Construction activities will be restricted to hours that will cause the least disruption Vehicles and machinery to be kept in good working order
• Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone
• Equipment will be fitted with silencers as far as possible to reduce noise.
• All equipment to be adequately maintained and kept in good working order to reduce noise.
• Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise.
• Track investigation actions and introduce corrective measures for continuous improvement.</td><td>Very Low</td></tr>
<tr><td></td><td>Traffic Disruption (-ve)

There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.

Extent: 2</td><td>Medium</td><td>• It is recommended that the public to be notified 7 days prior to construction commencing.
• Strict adherence to working hours must be maintained.
• Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes.
• Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic.
• Alternative routes to be provided for local motorists as far as possible should road closures be required.</td><td>Very Low</td></tr>
</table>

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Intensity	2		• Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.	
	Duration	2			
	Score	6			
	Probability	Definite			
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the airport, particularly to the contact areas adjacent to the terminal buildings.		Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.	Very Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.		Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy.	Medium
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Impact on surface water drainage (-ve) The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Improbable	Low	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills. • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.	Very Low
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding industrial activities and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction Extent: 2	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses • Clear signage needs to be put up to make and keep the surrounding industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h.	Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Intensity	2		• Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station	
	Duration	2			
	Score	6			
	Probability	Probable			
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.		Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill.	Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
			• The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	
Cumulative Impacts	**Alien vegetation encroachment (-ve)** There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Possible	Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.	Very low
	Operational Phase		•	

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
Direct Impacts	**Increased operational capacity (+ve)** The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipate increase in cargo transport needs and an anticipated increase in tourism-based revenue.		Very High	No mitigation proposed.	Very High
	Extent	3			
	Intensity	3			
	Duration	3			
	Score	9			
	Probability	Definite			
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.		Low	No mitigation proposed.	Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Definite			
	Future capacity as an apron stand (-ve) When considered in isolation, the contact stand reconfiguration will result in a net decrease in narrow-body stand capacity on Bravo apron due to the Code F taxilane. This is however, not a fatal flaw.		Low	No measures have been recommended as this impact cannot be mitigated. The assessment of this impact was covered in greater detail in the Feasibility Phase.	Low
	Extent	1			
	Intensity	1			
	Duration	3			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Score	5			
	Probability	Definite			
	Minimised disruption to airport infrastructure (+ve) Once constructed, the stands will not be impacted by future airport expansion projects and they are not envisioned to cause disturbance or disruption to other airport infrastructure. This applies to both the remote and contact stand types.		Low	No mitigation proposed.	Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Definite			
Indirect Impacts	*None*				
Cumulative Impacts	**Increased investment and stimulation of the economy (+ve)** The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ.		High	Maintain ongoing communication with appropriate business forums to optimise opportunities for local businesses to participate in and benefit from the Project.	High
	Extent	2			
	Intensity	2			
	Duration	3			
	Score	7			
	Probability	Probable			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.		Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement he hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.	Very Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Probable			
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.		Low	• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD • Ensure that the KSIA Air Quality Management Plan (AQMP, 2016) is implemented in accordance with the KSIA ROD. • Ensure the measure listed in the OEMPR are implemented.	Very Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Possible			

Apron Stand Alternative 3: 2 Remote + 2 Future Pier Served (Option D1)

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Design Phase			
	None		•	
	Construction Phase			
Direct Impacts	**Vegetation Clearing (-ve)** The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. Extent: 1 Intensity: 3 Duration: 2 Score: 6 Probability: Definite	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.	Low
	Extensive earth works (-ve) The remote stand area will require extensive earthworks given that it is a greenfield. Extent: 1 Intensity: 3 Duration: 2 Score: 6 Probability: Definite	Medium	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents. • Excavations to adequately barricaded and labelled. ○ This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area.	Low
	Soil disturbance (-ve) There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly.	Medium	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2 meters in height.	Low

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion. The intensity of this impact is not as severe given that only two stands will be from the remote stand cluster. Extent: 1 Intensity: 3 Duration: 2 Score: 6 Probability: Definite		• All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.	
	Disruption to existing critical service infrastructure (-ve) Due to the requirement for new fixed-link bridges into the building, new node constructions, and airbridges, there will likely be some disruption to airport buildings and head of stand service road operations. However, the intensity of Alternative 3 is less than for Alternative 2. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Definite	Low	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction schedule should be adhered to ensure that construction occurs timeously. • The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption.	Very Low
Indirect Impacts	**Soil and groundwater contamination (-ve)** Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling. Extent: 1 Intensity: 2	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks.	Very Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	2		• Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fueling of machinery and to catch incidental spills and pollutants. Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.	
	Score	5			
	Probability	Definite			
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site.		Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes. • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.	Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities • All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.	Low
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure access roads. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities.	Low

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
			• Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.	
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the airport, particularly to the contact areas adjacent to the terminal buildings. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.	Low
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy.	Medium

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Impact on surface water drainage (-ve) The Construction Phase may result in potential changes in groundwater quality associated with bulk earthworks and spillages on site. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Improbable	Low	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray / sand tray under the fuel nozzle when refueling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills. • Any significant spills on-site must be reported to the relevant Authority (e.g. Department of Water and Sanitation / EDTEA / Municipality etc.) and must be remediated as per the requirements of the EMPr.	Very Low
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction Extent: 2 Intensity: 2	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses • Clear signage needs to be put up to make and keep the surrounding industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h.	Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	2		• Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station	
	Score	6			
	Probability	Probable			
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.		Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste). • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste	Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
			generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	
Cumulative Impacts	**Alien vegetation encroachment (-ve)** There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Possible	Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.	Very Low
	OPERATIONAL PHASE			
Direct Impacts	**Increased operational capacity (+ve)** The new apron stands will accommodate wide body aircraft. This is in a drive to attract more international, direct flights to the airport. In addition, increasing the operational capacity of the airport also has positive economic implications stemming from the anticipated increase in cargo transport needs and an anticipated increase in tourism-based revenue.	Very High	No mitigation proposed.	Very High

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Extent	3			
	Intensity	3			
	Duration	3			
	Score	9			
	Probability	Definite			
	Proximity to Bravo taxiway (+ve) The remote apron stand cluster is in close proximity to the existing Bravo taxiway, which shortens some taxiway link infrastructure when compared to future pier served stands access.		Low	No mitigation proposed.	Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Definite			
	Future capacity of apron stand (-ve) As per the future development of the airport, the Future Pier Served stands will not offer contact stand capabilities when the Charlie apron is decommissioned.		Medium	No measures have been recommended as this impact cannot be mitigated. The assessment of this impact was covered in greater detail in the Feasibility Phase.	Medium
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	6			
	Probability	Definite			
Indirect Impacts	*None*				

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
Cumulative Impacts	**Increased investment and stimulation of the economy (+ve)** The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ. Extent: 2 Intensity: 2 Duration: 3 Score: 7 Probability: Definite	High	Maintain ongoing communication with appropriate business forums to optimise opportunities for local businesses to participate in and benefit from the Project. .	High
	Impact on surface water drainage (-ve) The increased impermeable surfaces (aprons and taxiways) will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas. Extent: 1 Intensity: 1 Duration: 3 Score: 5 Probability: Probable	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.	Very Low
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.	Low	• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD • Ensure that the KSIA Air Quality Management Plan (AQMP, 2016) is implemented in accordance with the KSIA ROD. • Ensure the measure listed in the OEMPR are implemented.	Very Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Possible			

Bravo Taxiway Option 1: RET Hotel and proposed intersection taxiway combined (positioned at RET)

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	DESIGN PHASE				
	None				
	CONSTRUCTION PHASE				
Direct Impacts	**Vegetation Clearing (-ve)** The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. This vegetation will be cleared in preparation for bulk earthworks.		Low	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas. • It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed. • Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation. • Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.	Very Low
	Extent	1			
	Intensity	2			
	Duration	2			
	Score	5			
	Probability	Definite			

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>Soil disturbance (-ve)

There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.

<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>5</td></tr>
<tr><td>Probability</td><td>Definite</td></tr>
</table></td><td>Low</td><td>• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting.
• Topsoil stockpiles should not exceed 2 meters in height.
• All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled.
• Sloped areas can be temporarily stabilized during construction using geotextiles.
• All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.</td><td>Very Low</td></tr>
<tr><td></td><td>Disturbance to groundwater recharge (-ve)

The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.

<table>
<tr><td>Extent</td><td>1</td></tr>
<tr><td>Intensity</td><td>1</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>4</td></tr>
<tr><td>Probability</td><td>Possible</td></tr>
</table></td><td>Very Low</td><td>• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational.
o The temporary system should include an oil/water separator.
• All construction vehicles should be properly maintained to prevent leaks.
• Cement mixing must be confined to a designated area and must be done on an impervious surface.
• Any fuel stored on site must be kept in a bunded containment area and be clearly marked.
• Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.
• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow
• Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.</td><td>Insignificant</td></tr>
</table>

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Limited access to contact stands (-ve) The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Definite	Low	• Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA. • Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.	Very Low
Indirect Impacts	**Soil and groundwater contamination (-ve)** Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling. Extent: 1 Intensity: 2 Duration: 2 Score: 5 Probability: Possible	Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow	Very low
	Visual/Aesthetic Impact (-ve) Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers and material moving on site, as well as construction traffic to and from the site. Extent: 2 Intensity: 2	Medium	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes. • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy.	Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	2		• Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.	
	Score	5			
	Probability	Definite			
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors.		Medium	• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.	Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads.		Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained. • Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads.	Low
	Extent	2			
	Intensity	2			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	2		• Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.	
	Score	6			
	Probability	Definite			
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the area, neighbouring communities and activities, contractors as well as local ecology.		Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.	Low
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.		Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities • Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy. •	Medium
	Extent	2			
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Definite			
	Health and safety (-ve)		Medium		Low

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction
<table>
<tr><td>Extent</td><td>2</td></tr>
<tr><td>Intensity</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>6</td></tr>
<tr><td>Probability</td><td>Probable</td></tr>
</table></td><td></td><td>• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses.
• Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences.
• Provide adequate safety warning signage on the roads.
• Construction paths must be clearly demarcated.
• Demarcate footprint of the site prior to construction commencing to prevent access to site during construction.
• Fence the site prior to construction commencing to prevent unauthorised access to site during construction.
• Appropriate speed limit should be enforced, e.g. 40km/h.
• Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles).
• Security to be provided (where possible) after hours to protect equipment in the construction camp
• Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station</td><td></td></tr>
<tr><td></td><td>Waste (-ve)
There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.
<table>
<tr><td>Extent</td><td>2</td></tr>
<tr><td>Intensity</td><td>2</td></tr>
<tr><td>Duration</td><td>2</td></tr>
<tr><td>Score</td><td>6</td></tr>
</table></td><td>Medium</td><td>• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water).
• Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein.
• Bins to have secured lids to prevent waste from being blown into the surrounding area.
• Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste).
• Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill.
• The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by</td><td>Low</td></tr>
</table>

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Probability	Probable		construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	
Cumulative Impacts	**Alien vegetation encroachment (-ve)** There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities		Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.	Very Low
	Extent	1			
	Intensity	2			
	Duration	2			
	Score	5			
	Probability	Possible			
	OPERATIONAL PHASE				
Direct Impacts	**Improved operations (+ve)** The extended taxiway connects the runway to the aprons. The extended taxiway will alleviate the operational issues currently being experienced in the airside manoeuvring area at the airport and will create more efficient room for aircraft manoeuvre.		Medium	No measures proposed.	Medium

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Extent	1			
	Intensity	2			
	Duration	3			
	Score	6			
	Probability	Definite			
	Improved alignment geometry at taxiway junction (-ve) The updated taxiway alignment (in conjunction with the land extension) will allow for a smother operation of the runway. However, the geometry of the Alternative 1 taxiway intersection is complex based on its interaction with the existing RET.		Medium	No mitigation proposed.	Medium
	Extent	1			
	Intensity	2			
	Duration	3			
	Score	6			
	Probability	Probable			
Indirect Impacts	*None*				
Cumulative Impacts	**Increased investment and stimulation of the economy (+ve)** The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ		High	Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.	High
	Extent	2			
	Intensity	2			
	Duration	3			
	Score	7			
	Probability	Definite			
	Continued incident risk at RET 'hotspot' (-ve)		Medium		Medium

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	There is the potential creation of an incident hotspot near the RET hotel. Extent: 1 Intensity: 2 Duration: 3 Score: 6 Probability: Possible		*No measures proposed. This impact has been accounted for in ACSA's planning.*	
	Impact on Groundwater Quality (-ve) Run-off from the runway and taxiway may be slightly different to natural rainwater due to accumulation of tyre compounds on the surface. although this is already the case for the existing lanes, with an increase in taxiway length and capacity there may be a higher concentration of compounds in stormwater run-off. if not adequately managed, this could potentially impact on groundwater quality. Extent: 1 Intensity: 1 Duration: 3 Score: 5 Probability: Definite	Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.	Very Low
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas. Extent: 1 Intensity: 2 Duration: 3 Score: 6 Probability: Definite	Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.	Insignificant

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
			• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.	
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw. Extent: 1 Intensity: 1 Duration: 3 Score: 5 Probability: Possible	Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD. • Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.	Very Low

Bravo Taxiway Alternative 2 (Preferred): Intersection taxiway positioned north of RET Hotel

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	DESIGN PHASE			
	None			
	CONSTRUCTION PHASE			

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td rowspan="2">Direct Impacts</td><td>Vegetation Clearing (-ve)

The study area falls within the KwaZulu-Natal Coastal Belt vegetation unit Grassland and is classified as an endangered ecosystem as listed by the National Environmental Management Act: Biodiversity Act (No. 10 of 2004). Much of the proposed project area has already been transformed, however some natural vegetation, although disturbed, remains. This vegetation will be cleared in preparation for bulk earthworks.

Extent: 1
Intensity: 2
Duration: 2
Score: 5
Probability: Definite</td><td>Low</td><td>• The extent of construction works must be limited to the development footprint and the designated buffer area.
• Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas.
• It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed.
• Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation.
• Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.</td><td>Very Low</td></tr>
<tr><td>Soil disturbance (-ve)

There is likely to be disturbance to topsoil during vegetation clearing. There is also potential loss of topsoil if stockpiles are not managed properly. Physical disturbance of the soil and plant removal may result in soil erosion/loss. In addition, the additional hardened surfaces created during construction could increase the amount of stormwater runoff, which has the potential to cause erosion.

Extent: 1
Intensity: 2
Duration: 2
Score: 5
Probability: Definite</td><td>Low</td><td>• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting.
• Topsoil stockpiles should not exceed 2 meters in height.
• All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled.
• Sloped areas can be temporarily stabilized during construction using geotextiles.
• All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.</td><td>Very Low</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td>Disruption to existing operations.
The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Definite</td></tr></table></td><td>Low</td><td>• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities.
• The construction schedule should be adhered to ensure that construction occurs timeously.
• The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations.
• Construction activities will be restricted to hours that will cause the least disruption.
• Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA.
• Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.</td><td>Very Low</td></tr>
<tr><td></td><td>Disturbance to groundwater recharge (-ve)
The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>1</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>4</td></tr><tr><td>Probability</td><td>Possible</td></tr></table></td><td>Very Low</td><td>• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational.
○ The temporary system should include an oil/water separator.
• All construction vehicles should be properly maintained to prevent leaks.
• Cement mixing must be confined to a designated area and must be done on an impervious surface.
• Any fuel stored on site must be kept in a bunded containment area and be clearly marked.
• Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.
• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow</td><td>Insignificant</td></tr>
</table>

<table>
<tr><th></th><th>Potential impacts:</th><th>Significance rating of impacts pre-mitigation</th><th>Proposed mitigation</th><th>Significance rating of impacts post-mitigation</th></tr>
<tr><td></td><td></td><td></td><td>• Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.</td><td></td></tr>
<tr><td></td><td>Limited access to contact stands (-ve)

The barricading of the taxiway extension area is likely to result in the limiting of access to some of the existing apron stands.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Definite</td></tr></table></td><td>Low</td><td>• Allowance will have to be made to ensure that the runway remains operational to cater for these aircraft, e.g. operating a shorter runway. This will be further addressed by ACSA.
• Overall, this impact will be accounted for in the construction method statement. It is expected that there will be limited access to some of the apron stands however this will be adequately catered for.</td><td>Very Low</td></tr>
<tr><td>Indirect Impacts</td><td>Soil and groundwater contamination (-ve)
Possible impacts associated with the construction phase include contamination of storm water through [mis]handling of hazardous substances such as cement, hydrocarbons from poorly maintained heavy machinery & liquid substance handling.
<table><tr><td>Extent</td><td>1</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>5</td></tr><tr><td>Probability</td><td>Possible</td></tr></table></td><td>Low</td><td>• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational.
○ The temporary system should include an oil/water separator.
• All construction vehicles should be properly maintained to prevent leaks.
• Cement mixing must be confined to a designated area and must be done on an impervious surface.
• Any fuel stored on site must be kept in a bunded containment area and be clearly marked.
• Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.
• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow</td><td>Very Low</td></tr>
<tr><td></td><td>Visual/Aesthetic Impact (-ve)

Potential visual impacts are associated with construction activities includes excavation of trenches, erection of signage and barriers, the additional machinery, workers</td><td>Medium</td><td>• Construction activities will be restricted to hours that will cause the least disruption.
• Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring businesses</td><td>Low</td></tr>
</table>

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	and material moving on site, as well as construction traffic to and from the site. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite		• No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility. • A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.	
	Noise impacts (-ve) During the Construction Phase, activities may result in noise generation. Noise impacts may be associated with a number of key activities including the use of construction equipment on the site. The construction activities will generate noise which may be a nuisance impact to surrounding receptors. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• All noise and sounds generated by plant or machinery must adhere to SABS 10103 specifications for the maximum allowed noise levels for the Special 10 land use zone. • Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.	Low
	Traffic Disruption (-ve) There will be increased movement of constructions vehicles in the project area. Possible lane closures, traffic delays and congestion during the construction phase are	Medium	• It is recommended that the public to be notified 7 days prior to construction commencing. • Strict adherence to working hours must be maintained.	Low

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	a possibility. If not properly maintained, increased road use for access purposes by construction personnel, may cause damage to the existing infrastructure and access roads. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite		• Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. • Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. • Alternative routes to be provided for local motorists as far as possible should road closures be required. • Flagmen to be posted when construction works are being undertaken adjacent to roads. • Signage is to be displayed indicating construction activities. • Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.	
	Dust Generation(-ve) During the Construction Phase, activities may result in dust generation and the release of particulates into the area. Potential dust generation activities may include digging trenches, movement of vehicles etc. It is anticipated that the nature of dust emissions would vary substantially from day to day depending on the level of activity, the specific operations, and the prevailing meteorological conditions. Dust emissions could impact on ambient air quality, the aesthetic quality of the area, neighbouring communities and activities, contractors as well as local ecology. Extent: 2 Intensity: 2 Duration: 2 Score: 6 Probability: Definite	Medium	• Dust suppression measures such as spraying of water on site access route and around site must be implemented. • Limiting the number of vehicles driving on and offsite. • Minimise the extent of open areas (areas cleared of vegetation). • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Trucks transporting any form of soil or waste should be covered with a canvas.	Low
	Job creation (+ve) The construction phase will generate direct employment opportunities. Semi-skilled and skilled workers will be employed for the construction of phase.	Medium	• Where possible, first preference should be given to locals for job opportunities that will be created through the project • Advertise employment opportunities adequately, so as not to limit application opportunities	Medium

	Potential impacts:	Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	<table><tr><td></td><td></td></tr><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>6</td></tr><tr><td>Probability</td><td>Definite</td></tr></table>		• Implement a transparent process of recruiting construction staff, following pre-established and accepted criteria. • Promote the employment of women and youth. • Ideally, constructions supplies should be sourced locally for the benefit of the local economy. •	
	Health and safety (-ve) The construction activities may pose a threat to safety of the surrounding businesses and construction workers, airplane passengers and KSIA staff due to the presence of earth moving equipment and heavy vehicle traffic as well as through exposed trenches. There is potential for construction labour to trespass onto neighbouring properties. As well as security risks, such as unauthorised entry into construction <table><tr><td>Extent</td><td>2</td></tr><tr><td>Intensity</td><td>2</td></tr><tr><td>Duration</td><td>2</td></tr><tr><td>Score</td><td>6</td></tr><tr><td>Probability</td><td>Probable</td></tr></table>	Medium	• The construction management needs to communicate the commencement and duration of construction activities to the surrounding businesses • Clear signage needs to be put up to make and keep the industrial community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads. • Construction paths must be clearly demarcated. • Demarcate footprint of the site prior to construction commencing to prevent access to site during construction. • Fence the site prior to construction commencing to prevent unauthorised access to site during construction. • Appropriate speed limit should be enforced, e.g. 40km/h. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, and protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp • Comply with the applicable occupational health and safety regulations; hazardous materials storage and handling regulations; and related national standards relevant to design of a filling station	Low
	Waste (-ve) There is potential for the site and surrounding areas to become polluted if construction activities are not properly managed (e.g. oil/cement spills, litter from personnel on-site, sewage from portable ablutions etc.). In addition, domestic and construction waste will increase the amount of waste disposed to landfill. There is also the potential of hazardous waste being generated during construction.	Medium	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste).	Low

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Extent	2		• Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	
	Intensity	2			
	Duration	2			
	Score	6			
	Probability	Probable			
Cumulative Impacts	**Alien vegetation encroachment (-ve)** There potential for the proliferation of alien and invasive plant species as a result of the disturbance of vegetation and soils on the site by construction activities		Low	• Removal of species should take place throughout the construction phase. • All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion. • It is recommended alien vegetation control should be overseen by a suitably qualified alien vegetation control specialist.	Very Low
	Extent	1			
	Intensity	2			
	Duration	2			
	Score	5			
	Probability	Possible			
	OPERATIONAL PHASE				
Dir	**Improved operations (+ve)**		High	No measures proposed.	High

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	The extended taxiway connects the runway to the aprons. The extended taxiway will alleviate the operational issues currently being experienced in the airside manoeuvring area at the airport and will create more efficient room for aircraft manoeuvre.				
	Extent	1			
	Intensity	3			
	Duration	3			
	Score	7			
	Probability	High			
	Improved alignment geometry at taxiway junction (+ve) The extended taxiway and its alignment will make the runway operate more efficiently. The Alternative 2 intersection geometry is simpler and will provide a completely independent taxiway link, unlike Alternative 1.		Medium	No mitigation proposed.	Medium
	Extent	1			
	Intensity	2			
	Duration	3			
	Score	6			
	Probability	Definite			
Indirect Impacts	*None*				
Cumulative Impacts	**Increased investment and stimulation of the economy (+ve)** The expansion of operation capacity at the KSIA is envisioned to cater for and stimulate investment in the area, when coupled with the overall development of the Dube IDZ.		High	Maintain ongoing communication with appropriate business forums to optimize opportunities for local businesses to participate in and benefit from the Project.	High
	Extent	2			
	Intensity	2			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	3			
	Score	7			
	Probability	Probable			
	Continued incident risk at RET 'hotspot' (-ve) There is the potential creation of an incident hotspot near the RET hotel. However, the risk is less with Option 2.		Low	No measures proposed.	Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Possible			
	Impact on Groundwater Quality (-ve) Run-off from the runway and taxiway may be slightly different to natural rainwater due to accumulation of tyre compounds on the surface. although this is already the case for the existing lanes, with an increase in taxiway length and capacity there may be a higher concentration of compounds in stormwater run-off. if not adequately managed, this could potentially impact on groundwater quality.		Low	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces in the airfield. • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements.	Very Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Definite			
	Disturbance to groundwater recharge (-ve) The runway and taxiways are impermeable surfaces and will reduce direct recharge to groundwater. This is in particular reference to the remote stand cluster and taxiway extension area, where concrete and tar will be laid in formerly vegetated areas.		Very Low	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator.	Insignificant
	Extent	1			
	Intensity	2			

	Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
	Duration	3		• All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow • Provide sub-surface drainage and stormwater removal systems at edges of impermeable surfaces where impermeable geological layers are shallow.	
	Score	6			
	Probability	Definite			
	Health effects of increased air pollution (-ve) The development operations could potentially result in the increased release of air pollutants (such CO, NO_2, SO_2, $PM_{10/5}$) which will in turn increase the expected health risks. The increase in air pollutants is attributed with the projected increase in aircraft coming in and out of the airport and the increase in emissions associated with this. However, this is not a fatal flaw.		Low	• Ensure that the KSIA Air Quality Management Plan (AQMP) is implemented in accordance with the KSIA ROD. • Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development. • Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD.	Very Low
	Extent	1			
	Intensity	1			
	Duration	3			
	Score	5			
	Probability	Possible			

No-go alternative

Potential impacts:		Significance rating of impacts pre-mitigation	Proposed mitigation	Significance rating of impacts post-mitigation
No disturbance to current airport infrastructure (+ve) The airport infrastructure will remain as is and operations will continue as per the norm.		Medium	No mitigation proposed.	Medium
Extent	1			
Intensity	2			
Duration	3			
Score	6			
Probability	Definite			
Decreased operational capacity (-ve) The envisioned growth for the KSIA will not be realised and the airport will not meet the demand for air travel and cargo transfer on a local and national scale.		High	No mitigation proposed.	High
Extent	3			
Intensity	2			
Duration	3			
Score	7			
Probability	Definite			
Loss of potential investment opportunities (-ve) The no-go area would negate the investment opportunities that may come as a result of an airport with a greater operational capacity. This is for both passenger and cargo travel.		High	No mitigation proposed.	High
Extent	3			
Intensity	2			
Duration	3			
Score	7			
Probability	Probable			

APPENDIX G: ENVIRONMENTAL MANAGEMENT PROGRAMME

DMT Kai Batla (Pty) Ltd

Basic Assessment for the Proposed Construction of Apron Stands and Expansion of the Taxiway at King Shaka International Airport, KwaZulu-Natal Province

(DEA REF: 14/12/16/3/3/1/1841)

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR PUBLIC REVIEW

Prepared for:

Airports Company South Africa SOC Ltd

AIRPORTS COMPANY SOUTH AFRICA

Prepared by:

DMT Kai Batla (Pty) Ltd

Date:

November 2017

DOCUMENT SUMMARY

Project:	Basic Assessment for the Proposed Construction of Apron Stands and Expansion of the Taxiway at King Shaka International Airport, KwaZulu-Natal Province ((DEA REF: 14/12/16/3/3/1/1841) Draft Environmental Management Programme for Public Review
Client:	Airports Company South Africa (ACSA)
Contact Details:	Nokuthula Mcinga Environmental Manager Po Box 57701 King Shaka International Airport, La Mercy, Kwazulu-Natal 4407 Tel: 0324366596 Fax: 0324366309 Email: Nokuthula.Mcinga@airports.co.za
Consultant:	DMT Kai Batla (Pty) Ltd
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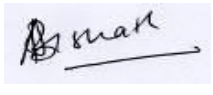
COMPILED BY:	CHECKED & APPROVED BY:
Samantha Moodley	Avinash Bisnath
DATE: 3 November 2017	DATE: 10 November 2017
	

DISCLAIMER

This report is based on state of affairs at the date of the Basic Assessment Report compilation. It is based on information received from ACSA personnel. DMT Kai Batla (Pty) Ltd and its employees do not accept any responsibility for liability incurred by the organisation, or any of its agents, parent companies, affiliates, employees or contractors, as a result of reliance on the findings and opinions, or because of any omissions from the report content, findings or opinions.

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1 ENVIRONMENTAL AUTHORISATION APPLICATION DETAILS

The details of the Environmental Authorisation (EA) application and the parties involved are as follows:

1.1 Applicants Details

Table 1: Contact details of Proponent

Item	Company Details
Name:	Airports Company of South Africa Ltd
Contact Person:	Nokuthula Mcinga
Tel no:	0324366596
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Postal address:	P.O. Box 57701, King Shaka International Airport, La Mercy, Kwazulu-Natal, 4077

1.2 Environmental Consultant Details

Table 2: Contact details of the EAP's Organisation

Item	Company Details
Name:	DMT-Kai Batla (Pty) Ltd
Environmental Assessment Practitioner:	Samantha Moodley
Contact Person:	Avinash Bisnath
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E-mail address:	Samantha.Moodley@dmt-group.com
Postal Address:	26 Republic Road, Bordeaux, Randburg, 2194

1.3 Principles of the EMPr

The aim of implementing an Environmental Management Programme (EMPr) is to ensure that all activities attributed to the project, with irreversible impacts are avoided, and measures are taken to minimise or rectify impacts where possible. The EMPr also provides on-going monitoring and management of these impacts by documenting good or bad performances and compliances with the EMPr. The implementation of this EMPr is aimed at ensuring that all activities attributed to the project, with irreversible impacts are avoided, and measures are taken to minimise or rectify impacts where possible. The EMPr also provides on-going monitoring and management of these impacts by documenting good or bad performances and compliances with the EMPr. The objectives of the EMPr include:

- Ensuring that all associated activities are undertaken in a way that minimises identified potential negative effects on the surrounding environment;
- Ensuring that appropriate environmental management measures are assimilated in the final development plans;
- Ensuring that relevant environmental management are well stipulated, understood and documented for all relevant parties;
- Ensuring that the suitable record keeping and reporting structures are put in place to ensure that implementation of the stipulated environmental management measures are monitored in the long-term; and
- Ensuring that the roles and responsibilities for the management of various aspects are clearly defined and understood.

2 INTRODUCTION

2.1 Project Background

The King Shaka International Airport (hereafter referred to as KSIA) was first conceptualized in the 1970s, however the development was halted due to economic constraints in the country during that time. The development of the KSIA was a means of addressing the limitations being experienced at the now decommissioned Durban International Airport. Between 2004 and 2007 the new airport development was once again revived, with a partnership formed between the Airports Company of South Africa SOC Limited (ACSA) and the Dube TradePort Corporation - both of whom had a common goal of creating an 'aerotropolis' in the north of Durban[1], centred around the Dube Trade Port (DTP) and the KSIA. As such, the construction of the new airport commenced in 2007 and continued until 2009. Flight testing at the airport began in December 2009, and the operation of commercial flights commenced timeously in May 2010 to accommodate the FIFA 2010 Soccer World Cup.

The concept behind the KSIA [and the DTP] was to create a catalyst for the creation of a globally competitive multi-modal trade gateway in Southern Africa. King Shaka International was designed to grow international services in this part of the country, while maintaining its position as a key airport for domestic service. This is evident in the airport having received awards from the Airport Council International as well as the Skytrax airport and airline review organisation[2].

The Applicant

South Africa's airplane terminals were owned and operated by the state until 23 July 1993, when ACSA was formally established. ACSA was formed just over 20 years ago when South Africa's main airports were transferred into a public company through the enactment of the Airports Company Act 44 of 1993. ACSA manages a system of nine airplane terminals in South Africa, including the three principle worldwide entryways of O.R. Tambo International, Cape Town International and KSIA[3]- while processing approximately 36 million passengers per annum. Although ACSA is majority owned by the South African government (through the Department of Transport (DoT)), the company is legally and financially autonomous and operates under commercial law.

The nine air terminals possessed by the Company are significant generators of direct and indirect employment and business opportunities and some are considered the centres of improvement hubs. This is aligned with the idea of the 'aerotropolis', whereby a scope of assembling, business offices, supplemented by lodgings, retail outlets, recreational buildings and workplaces are clustered around an airplane terminal- is likely to further accelerate the core role of airports. This is particularly true for the international airports like the KSIA[3].

Throughout the years, ACSA has transformed a fragmented, infrastructural parastatal into an engaged, client driven, proficient and monetarily fruitful business, whose air terminals have turned out to be critical achievement elements to Brand South Africa. ACSA continues to play its role as a key driver of South Africa's economy by demonstrating socio-economic and environmental responsibility through its activities and programmes. This is shown in its continued development of the country's airports- such as the proposed activities for the KSIA.

[1] The airport is a part of the Dube Tradeport, which includes a trade zone linked to the airport's cargo terminal, facilities to support the airport like nearby offices and transit accommodation for travellers, an integrated agricultural export zone and an Information Technology platform. Source: http://www.dubetradeport.co.za/
[2] https://en.wikipedia.org/wiki/King_Shaka_International_Airport
[3] http://www.airports.co.za/about-us/airports-company/company-profile

2.2 Project Locality

The KSIA is located in La Mercy, KwaZulu-Natal, approximately 35 km north of Durban. The airport falls within the jurisdiction of the eThekwini Municipal Area. eThekwini is the largest city in KwaZulu-Natal and the third-largest city in the country. Its land area is comparatively larger than that of other South African cities and is topographically hilly, with many gorges and ravines.

The airport precinct is bordered by the M43 to the north, the Mdloti River to the south, the R102 to the west, and the N2 freeway to the east (see Figure 1). Neighbouring communities are Mount Moreland to the near south west and Verulam to the far south-west; Tongaat to the west and north; and Umdloti to the south-east. Notable communities further away are Umhlanga to the south and Ballito to the north. The airport is accessible from both the N2 freeway and the alternative R102 road, with the M65 linking the N2 and the R102 with the airport.

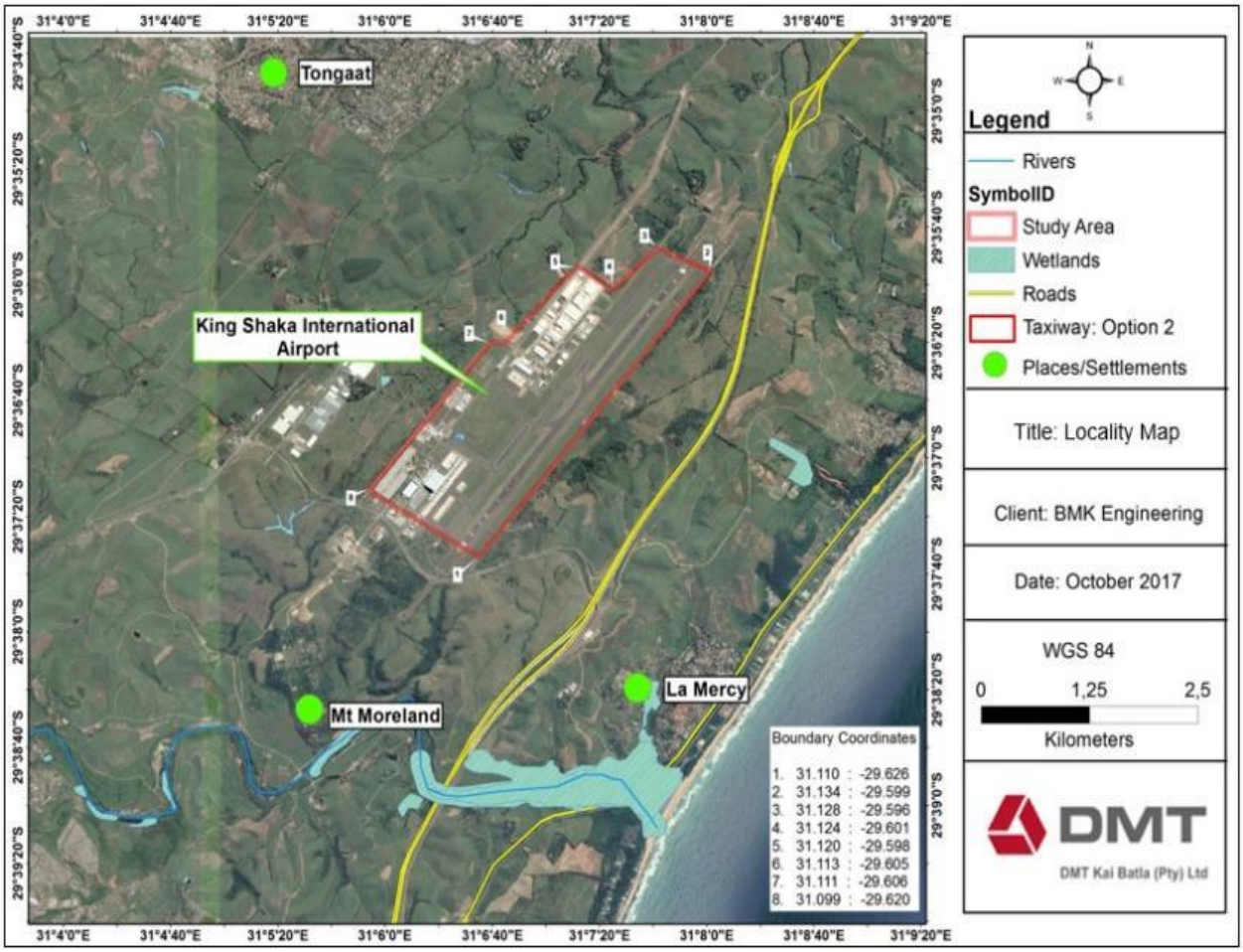

Figure 1: Project locality

2.3 Project Description

ACSA has proposed extension works at the KSIA with the construction of additional apron stands and the extension of the Bravo Taxiway. The development is aimed at addressing operational risks identified in the taxiway areas, while also increasing the airport's capacity for having larger aircraft stationed in between flight operations. Four remote wide-body aircraft stands ('aprons') will be constructed and this will be complemented by the newly extended taxiway. The development will be conducted in a manner that meets the International Civil

Aviation Organization (ICAO) Code F standards[4], and the end goal of the project is to increase the airport's overall operational capacity.

Apron Stands

An apron stand is the area of an airport where aircraft are parked, unloaded or loaded, refuelled, or boarded. There are currently four apron stands at KSIA, namely Alpha, Bravo, Charlie and Delta. The Apron Stands Bravo and Alpha are Code C[5] stands, while Charlie and Delta are Code F stands. The Apron Stands Bravo and Alpha are positioned on the opposite side (east)of the Code C apron taxiway, which provides access to the Alpha and Bravo apron stands (see Figure 2). As it stands, neither of these two aprons can currently accommodate wide-body aircraft. Charlie Apron to the west of the terminal building consists of two, Code F stands, which are MARS-configured[6] to accept Code C aircraft. Charlie stands are contact, nose-in and push-back. The Delta Apron serves the existing cargo terminal and is also suitable for the parking of two wide-body aircraft. These stands are also MARS-configured.

The new stand provision will comprise, four Code F MARS-configured aircraft stands which will be sized for a specific mix of aircraft, including future generation wide-body aircraft.

As part of the planned extension, consideration was given to reconfiguring several of the existing Alpha Apron stands as well as constructing two new apron stands. Ten stand layout options were produced from the various stand type combinations. This was moderated to five option pair combinations (which still comprised the various stand type combinations listed above) for further development/evaluation. Some of the evaluation criteria was based on cost estimates and bulk service layout development.

The following variations on the paired stand type combinations shown in Figure 3 were considered as part of the feasibility study:

1. Contact + 2 Remote (Option A1)
2. 2 Contact + 2 Future Pier Served (Option B1);
3. **2 Remote + 2 Remote (Option C) (Preferred);**
4. 2 Remote + 2 Future Pier Served (Option D1); and
5. 2 Future Pier Served + 2 Future Pier Served (Option E).

The five options represented the 'best' options selected in terms of pavement extents and operational advantages. In the feasibility studies, it was concluded that constructing four new remote stands would be the most viable option. The proposed remote stand layout is depicted in Figure 3. [7]

[4] The apron restrictions are being constructed in line with part two of the ICAO Aerodrome Reference Code which categorises aircraft types. The part two categorisation is derived from the most restrictive of either the aircraft wingspan or the aircraft outer main gear wheel span (Source: https://www.skybrary.aero/index.php/ICAO_Aerodrome_Reference_Code; 2015).

[5] The ICAO has certain standards that areas of airports need to meet or adhere too. These standards are referred to as 'Codes' (ICAO 2009).

[6] 'MARS' is an acronym for maximizing parking space on the tarmac. The Multiple Apron Ramp System (MARS) allows airport planners to make their gates – and, therefore, their aircraft turnarounds – more flexible and efficient. As more airlines acquire the new generation of larger aircraft to keep up with passenger demand, airports have to build gates to accommodate them (http://www.airportsinternational.com/2013/02/manoeuvres-on-mars/13873)

[7] Aprons and taxiways are named A, B, so forth at airports. However, the IACO/Phonetic Alphabet is used, and the areas are assigned the aviation nomenclature for the alphabets, i.e. A-Alpha, B-Bravo, C-Charlie, D-Delta, and so forth (ICAO 2016).

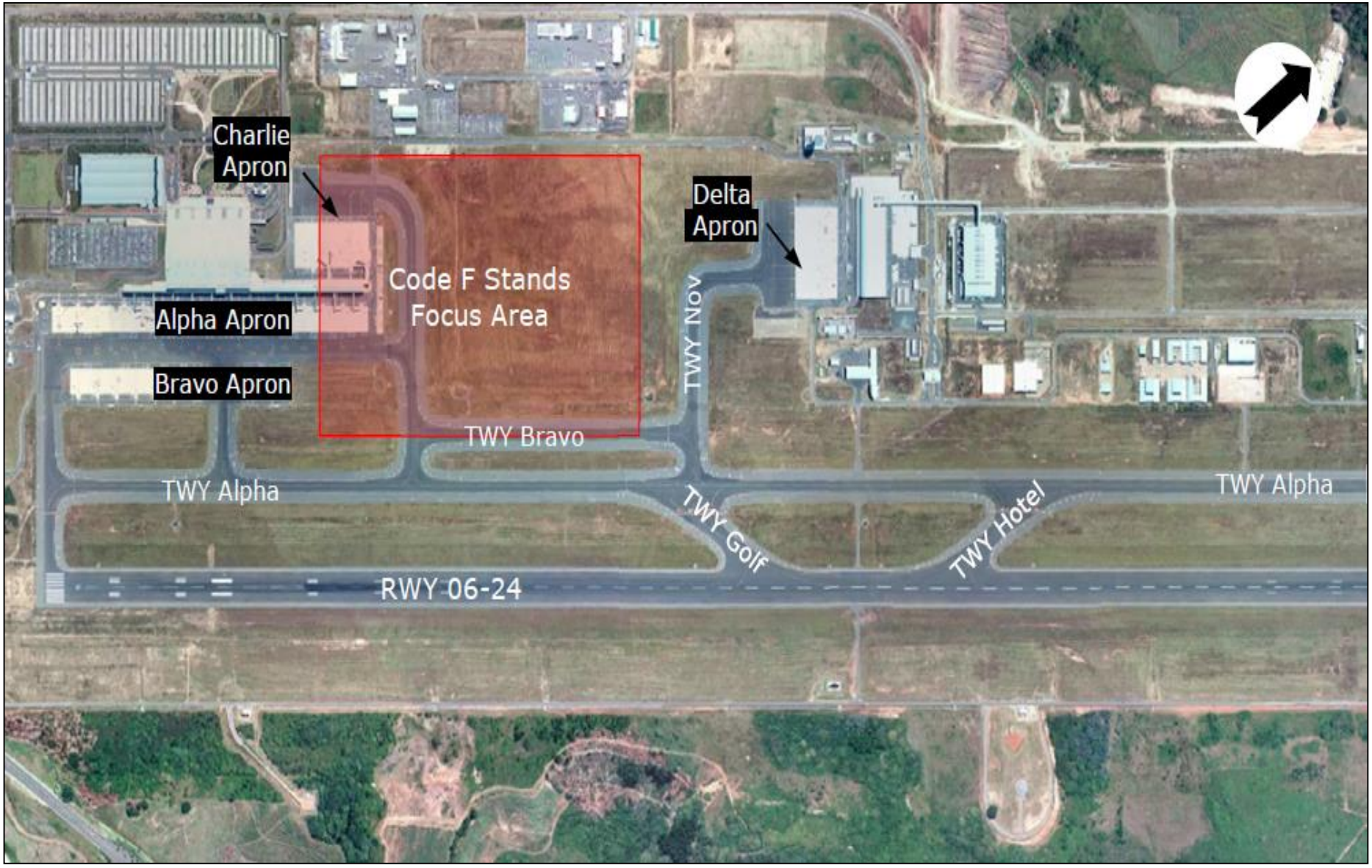

Figure 2: Project focus area (Source: BMK 2017)

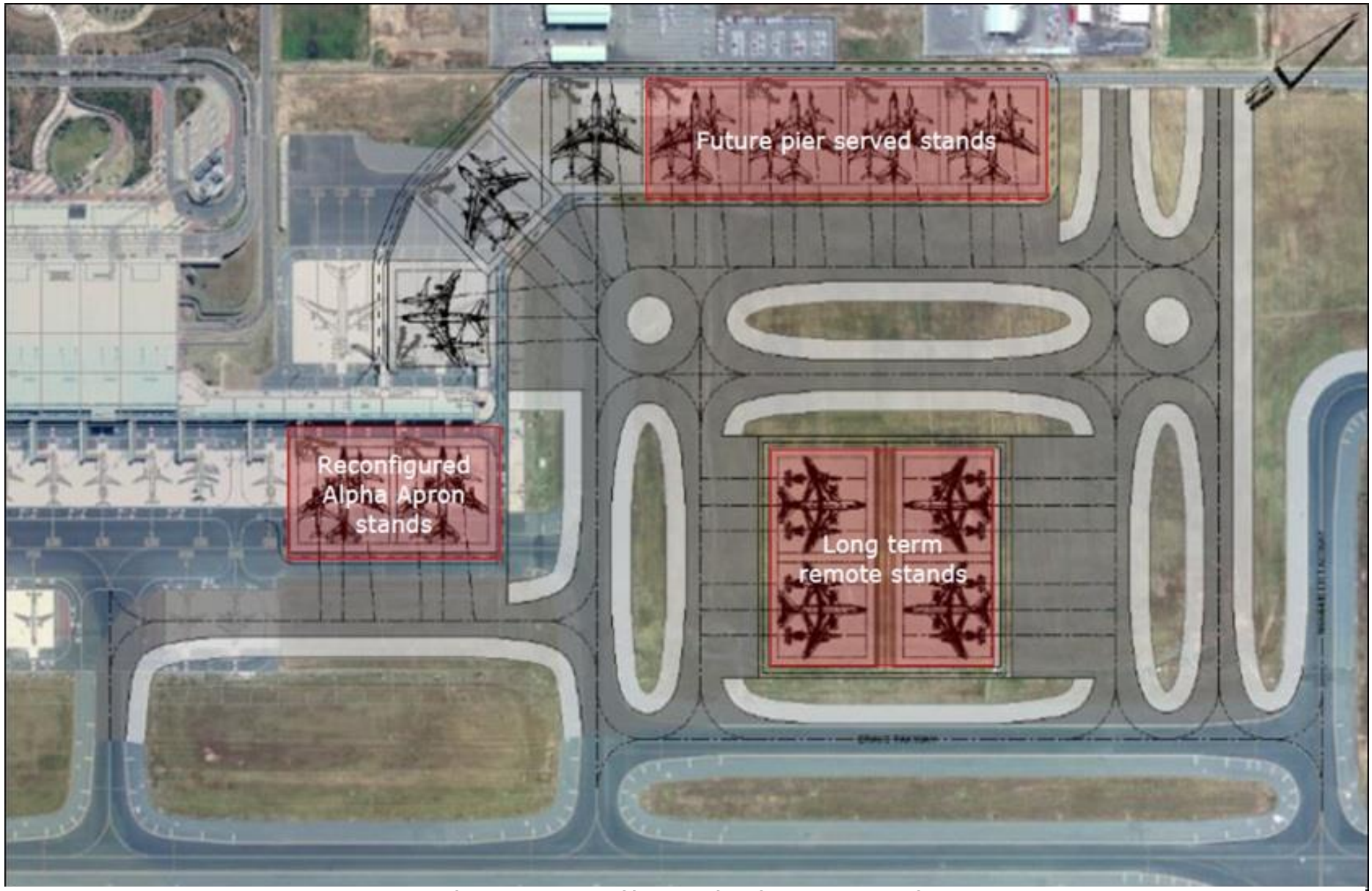

Figure 3: Apron stand layout options (Source: BMK 2017)

The layout planning and physical characteristics for aircraft stand development are governed by the standards listed in the ICAO Annex 14 (ICAO, 2016) and supporting ICAO Design Manuals (as seen in Table 3 below):

Table 3: ICAO apron geometric design standards and recommendations (Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum clearance between an aircraft and adjacent building, aircraft on another stand and other objects.	4.5 (7.5m)*	7.5
Slopes on aprons	<1%=	<1%
Max aircraft wingspan	36m	80m
Minimum stand width (MARS-configured Code F)		87.5m
Minimum HOS nose clearance	4.5m	7.5m
Minimum distance from longest aircraft to BOS line[2]	4.5m	4.5m
Service road width (dual direction)	10m (min) 12m (preferred)	

*ACSA requirement at OR Tambo Int'l Airport
IATA ADRM (IATA, 2004)
[2]Not and ICAO requirement

The MARS configuration will allow for mixed aircraft usage of the Apron stand. The new stands will be power-in (nose in) and (tractor) push-back. The stands are MARS-configured to allow for two Code C aircraft to simultaneously utilise a single Code F (wide-body) stand position.

Furthermore, the following aircraft considerations were made in the stand design and construction planning:

- *Aircraft wingtip clearance:* The ICAO recommended minimum wingtip clearance distance between Code F aircraft is 7.5m. The corresponding ICAO minimum for Code C aircraft on a MARS configured Code F stand is 4.5m, however at OR Tambo International Airport, ACSA has adopted a 7.5m wingtip clearance.

- *Aircraft front of stand clearances:* Head of stand areas should typically allow room for a pushback tractor (tug) to manoeuvre onto the stand and not block traffic on an adjacent service road. The tractor with tow bar connected to the nose wheel gear of the most forward positioned aircraft on a stand should also be able to fit within the stand's footprint. It is proposed that a minimum clearance of 13m from the most forward aircraft's nose gear be allowed (typically 7.5m from the most forward nose position). 13m will allow for a 9m tug + 4m tow bar combination.

- *Aircraft back of stand clearances:* Typically for inspection (and maintenance) purposes, or circulation around an aircraft parked on a stand, space provisions should be made for vehicles to manoeuver around the tail section of a parked aircraft. It is proposed that a distance of 4.5m is considered by ACSA for this purpose (reduced to 2m where space is limited) and will be assumed by BMK in the design unless otherwise directed.

- *Aircraft Mix:* Code F stands will be designed to accommodate four main codes of aircraft: Code F, Code E, Code D and Code C aircraft.

Other aspects that have been considered in the conceptualization of the Apron Stands include:

- *Connecting Taxiway Infrastructure:* New taxiway infrastructure will be required, regardless of which Code F apron stand option is selected for progression. Taxiways will be designed as Code F taxiways, with all physical design characteristics (horizontal and vertical) as per Annex 14 (ICAO, 2016) standards and recommendations – this includes taxiway minimum separation distances.

- *Service Roads:* Head-of-stand and back-of-stand service roads (bi-directional) will be included as part of the stand designs and shall be between 10 and 12m wide- space permitting.

- *GSE Layout:* A portion of the apron stand footprint will be dedicated to Ground Support Equipment (GSE). The GSE equipment type to be accommodated on-stand will be in line with airport/airline operational requirements areas will be marked according to equipment type.

The fully serviced Apron Stand offerings will include (but not be limited to) the following services:

1. Fixed electrical ground power (FEGP);
2. Fuel hydrant pits;
3. Stand number indicator boards (SNIB);
4. Stand Entry Guidance System (SEGS);
5. Floodlights;
6. Fire hydrant (American style or as specified by ACSA);
7. Emergency stop buttons (for SEGS and fuel);
8. Emergency fixed line telephone – to be confirmed;
9. Fuel/oil spill kits – to be confirmed;
10. CCTV – to be confirmed;
11. Baggage interface systems (to be confirmed);
12. Mini substations (serving multiple stands; as required);
13. Pre-conditioned air – to be confirmed;
14. Communications cabinet – to be confirmed; and
15. Back of stand slot drain infrastructure (to convey stormwater runoff into existing pollution control system).

Considering aviation standards and requirements, as well as taking the functionality/operational impact, cost, and environmental viability of the options listed above, **Option C (4 remote stands**) has been selected as the most feasible apron stand design. Option C is therefore being presented as the preferred alternative under application for authorisation

Bravo Taxiway Extension

The existing airport operates with a single runway. The runway is served by a single, full length parallel taxiway (Taxiway Alpha) and 2 Rapid Exit Taxiways (RETs) – namely taxiways Golf (G) and Hotel (H) (see Figure 5). A complex juncture of taxiway infrastructure links exists in the vicinity of RET Golf and has been identified as a 'hotspot' (defined in the ICAO *Manual on the Prevention of Runway Incursions* (ICAO, 2007) as an area where potential exists for aircraft collisions (see Figure 4). The extension of the Bravo Taxiway has been proposed to alleviate several operational issues currently being experienced in the airside manoeuvring area at the airport. As part of the feasibility phase, two options were considered, with the options pertaining to the alignment of the link between the main taxiway extension alignment and the existing

runway. Whilst there are a number of different permutations, the options presented as part of this study are:

- Option 1: RET Hotel and proposed intersection taxiway combined (positioned at RET); and
- **Option 2: Intersection taxiway positioned north of RET Hotel (Preferred.)**

Both options provide for a minimum take-off runway available (TORA) distance of 2,100m.

The Bravo Taxiway will provide some inherent benefits, which- amongst others- include:

- Simplification of the hotspot intersection. Aircraft will no longer be able to taxi along Bravo, turn right on to November (Taxiway N) and then left on to Alpha. This will prevent potential collisions with landing aircraft which may vacate the runway using RET Golf.

- The extension of Taxiway Bravo, including a new 90-degree link to the runway, will ensure that pilots of the aircraft at the proposed runway holding position will have increased visibility of landing/approaching aircraft.

- An increased take-off run distance will be afforded from the point where the taxiway joins with the runway, compared with aircraft using RET Hotel for the same purpose – approximately 800m if aircraft line-up compensations are accounted for.

From a cost point of view, Option 2 is more expensive to construct than Option 1. However, from an operational perspective Option 2 is a much simpler solution in terms of intersection geometry, providing a completely independent taxiway link to the runway, unlike that of Option 1, which has an interaction with the existing RET. The potential risk of the intersection becoming a future hotspot is less with Option 2. Therefore, Option 2 is the preferred option under application for authorisation.

The characteristics of the preferred Taxiway design are summariesd in Table 4 below.

Table 4: ICAO Annex 14 taxiway geometric design criteria *(*Source: BMK 2017)

Physical Apron Characteristics	Code C	Code F
Minimum pavement width	15m	25m
Shoulder width	5m	17.5m
Taxiway strip width	52m	102m
Graded portion of strip	25m	60m
Minimum clearance of outer main wheel to taxiway edge	4.5m	4.5m
Minimum separation distance between taxiway centre line and runway (instrument runways)	168m	190m
Maximum longitudinal slope of taxiway pavement	1.5%	1.5%
Maximum change in longitudinal slope of taxiway	1% per 30m	1% per 30m
Maximum transverse slope of taxiway pavement	1.5%	1.5%
Minimum radius of longitudinal vertical curve	3000m	3000m
K-value	K-value 30 30	K-value 30 30

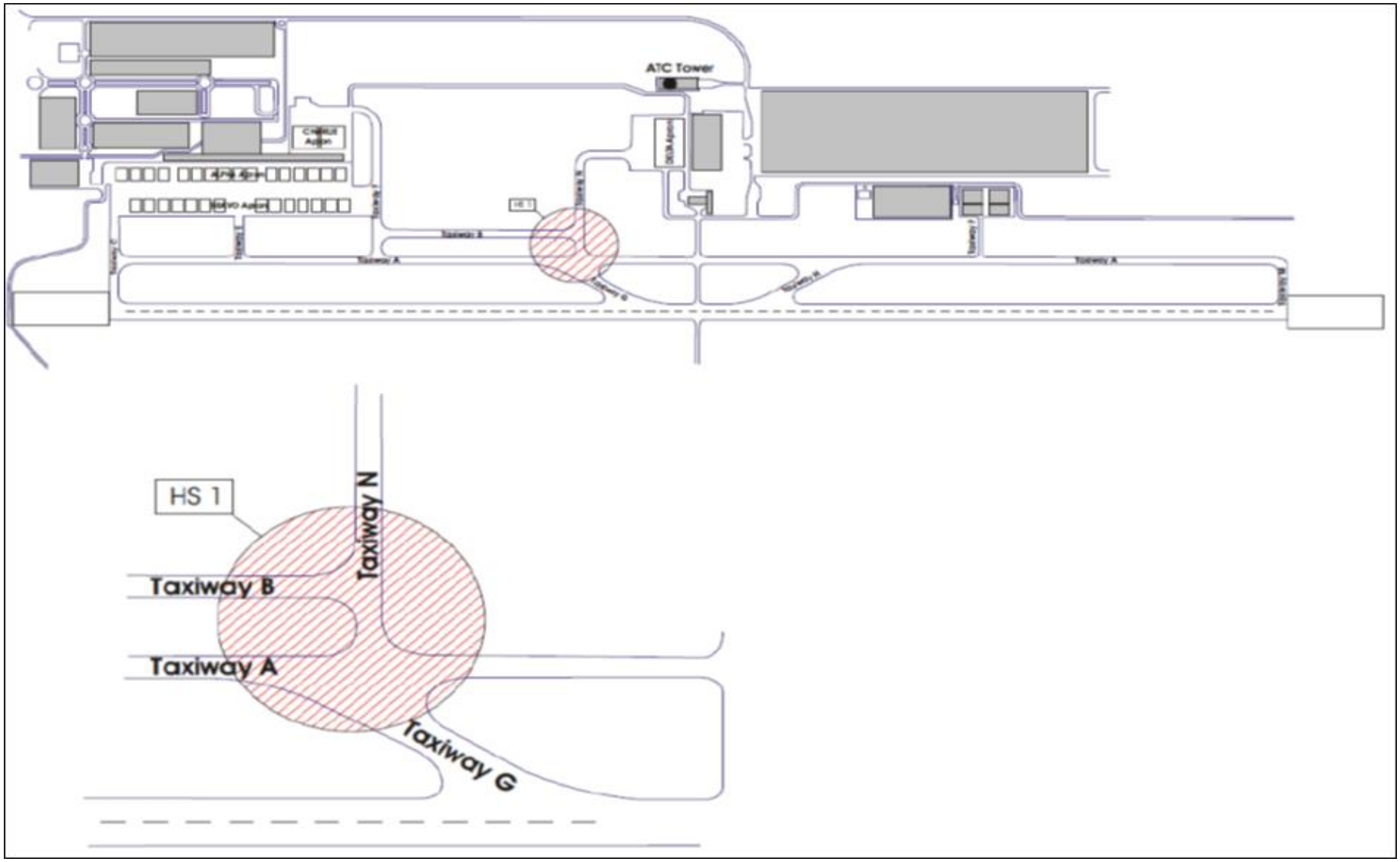

Figure 4: Depiction of the current 'hotspots' on the KSIA runways.

2.4 Constrution Works

The construction phase is envisaged to be of a 21-month duration. It is envisaged that the construction operations will be split as follows:

- Construction of the Bravo Taxi Way extension; and
- Remote stand construction.

The effect of the construction activities on the daily operations of the airport will be discussed and agreed upon with the Project Manager, Airside and Landside Management and Operation Officials before commencement of the project.

2.5 Environmental Authorisation Process

The proposed development requires Environmental Authorisation in terms of the National Environmental Management Act (NEMA) (Act 107 of 1998). Activities identified in Government Notice Regulations (GN R) 327 and 325 (Listing Notice 1 and Listing notice 3, respectively) of the EIA Regulations of 2014- as amended in 2017- will be triggered by the proposed project. Thus a Basic Assessment (BA) process is being undertaken to obtain the authorisation. The said activities are as follows:

Table 5: Activities triggered by the proposed project

Legislation, triggered activity	Description and application
National Environmental Management Act (Act No 107 of 1998); GNR 327: Listing Notice 1 of the EIA Regulations of 2014- as amended in 2017 Activity 61: The expansion of airports where the development footprint will be increased.	ACSA has proposed the construction of 4 new apron stands to accommodate wide-body aircraft at the KSIA. Part of the development will include the extension of one of the taxiways at the airport.
National Environmental Management Act (Act No 107 of 1998); GNR 325: Listing Notice 3 of the EIA Regulations of 2014- as amended in 2017 Activity 7: The development of aircraft landing strips and runways 1,4 kilometres and shorter, in: d. KwaZulu-Natal vii. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	ACSA is proposing the extension of the Bravo Taxiway at the KSIA. The total length of the extension works will be 1300m.
Activity 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. d. KwaZulu-Natal: v. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Vegetation will be cleared from the remote stand site. The greatest areas to be cleared will be in Alternatives 1 and 3 (as discussed later in this report) There will also be vegetation clearing in the path of the Bravo Taxiway.

Ultimately, the outcome of the BA Process is to provide the Competent Authority (i.e. the national Department of Environmental Affairs (DEA)), with sufficient information to provide a decision on the Application in terms of granting environmental authorisation in order to avoid or mitigate any detrimental impacts that the activity may inflict on the receiving environment. In respect of this, DMT-Kai Batla (Pty) Ltd has been appointed by the BMK Engineering Consultants on behalf of ACSA, as the Independent Environmental Assessment Practitioner (EAP) to conduct the Basic Assessment process.

3 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

3.1 Constitution of the Republic of South Africa Act No. (106 of 1996

The Constitution is the supreme Law in South Africa. Chapter 2 of the Constitution contains the Bill of Rights including section 24 which provides that:

"Everyone has the right-

(a)to an environment that is not harmful to their health or well-being; and

(b)to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-

i. prevent pollution and ecological degradation;
ii. promote conservation; and
iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Other rights protected by the Constitution relevant to an application for environmental authorisation include the right to administrative justice and to information, and rights, known as "socio-economic rights", such as access to adequate housing and basic services. The right to administrative justice is relevant to applications for environmental authorisations because decisions made by the competent authority in the course of the EIA process (such as the decision to accept a basic assessment report) as well as a final decision on the application fall into the definition of "administrative action"

The Constitution, and the stipulations it sets out on environmental management are the guiding principles on which environmental and development legislation has been conceptualised. The responsibility that the Applicant has to the environment needs to be in line with the Constitution- hence the need to ensure that all potential harm and pollution is highlighted and brought to the attention of the relevant decision makers (in this case, the National Department of Environmental Affairs, (DEA) given that ACSA is a State Owned Company (SOC)).

3.2 The National Environmental Management Act (NEMA), (Act No 107 of 1998) and the Environmental Impact Assessment (EIA) Regulations of 2014- as amended in 2017(Government Notice No. R. 324, 325, and 327)

NEMA establishes a set of principles which all authorities have to consider when exercising their powers. This coincides with the role played by developers as per Section 28 of the Act, which requires that "*every person who causes, has caused or may cause significant pollution*
or degradation of the environment must take reasonable measures to prevent such pollution or
degradation from occurring, continuing or recurring". NEMA legislates the requirement to obtain environmental authorisation for certain development proposals or projects in line with the EIA Regulations. The EIA Regulations, made under section 24 of NEMA, are intended to integrate and facilitate environmental impact management with development activities or processes, in line with sustainable development objectives. They provide a method for the investigation, assessment and communication of the potential consequences or impacts of listed activities. The purpose of these Regulations

is to ensure that the impacts of activities for which environmental authorisations are necessary are properly assessed; so that the positive environmental impacts are enhanced; the activities which may have an unacceptable, negative effect on the environment are not authorised and those which are suitable for authorisation are approved, with conditions to avoid or mitigate possible detrimental effects. *The proposed project triggers activities in Listing Notice 1 (GNR 327) and Listing Notice 3 (GNR 325) of the EIA activities, as amended in 2017, and is therefore subject to Basic Assessment as the process to be followed in obtaining Environmental Authorisation.*

3.3 The National Water Act, 1998 (Act No 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) mandates the Minister of Water Affairs to ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Act guides the steps taken towards applications for and obtaining required authorisations in order for certain developments to proceed. This is in relation to developments that- amongst others- occur within water courses; activities that involve the abstraction of water from water courses, and the s well the disposal of water in a watercourse.

ACSA has a responsibility to implement measures to prevent pollution of any water resources during construction and operational activities. *To ensure that this responsibility is taken up, ACSA has been in consultation with the DWS on the potential impact on any watercourses and the need for a water use authorisation. The DWS has reviewed the documentation submitted by ACSA during these consultations, and have confirmed have submitted a letter to ACSA confirming that there is no need for a Water Use Licence Application (WULA).*

3.4 National Environmental Management: Biodiversity (NEM: BA) Act 10 of 2004

The purpose of the NEM:BA is to provide for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection. The NEM:BA makes provision for the publication of bioregional plans and the listing of ecosystems and species that are threatened or in need of protection. Threatened or Protected Species Regulations (2007), Guidelines for the determination of bioregions and the preparation and publication of bioregional plans (2009) and a National List of Ecosystems that are Threatened and in Need of Protection (2011) have been promulgated in terms of NEM:BA. A published bioregional plan is a spatial plan indicating terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning. These areas are referred to as Critical Biodiversity Areas (CBA) in terms of NEM:BA. Bioregional plans provide guidelines for avoiding the loss or degradation of natural habitat in CBAs with the aim of informing EIAs and land-use planning.

The project area is underlain by KwaZulu-Natal Coastal Belt grassland, which is an endangered vegetation unit. The area also falls within a CBA, and the proposed activities will involve substantive clearing of vegetation. A s such, care must be taken to prevent any adverse impacts on the local biodiversity in accordance with NEM: BA.

3.5 National Heritage Resources Act (Act 25 of 1999); KwaZulu-Natal Heritage Act, (Act No. 4 of 2008)

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (NHRA). The enforcing authority for this act is the South African National Heritage Resources Agency (SAHRA). In KwaZulu-Natal, SAHRA has delegated this authority to KwaZulu-Natal Provincial Heritage Authority (Amafa/Heritage KwaZulu-Natal). In terms of the Act, historically important features such as graves, trees, archaeological artefacts/sites and fossil beds are protected. Similarly, culturally significant symbols, spaces and landscapes are also afforded protection. Section 38 of the NHRA requires that any person who intends to undertake certain categories of development must notify SAHRA and/or AMAFA at the very earliest stage of initiating such a development and must furnish details of the location, nature and extent of the proposed development. Section 38 also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that, if such an assessment is deemed adequate, a separate Heritage Impact Assessment (HIA) is not required.

Based on knowledge of the site, heritage or cultural artefacts do not occur in the development footprint. Should archaeological artefacts or skeletal material be revealed in the area during development activities, such activities should be halted, and the KZN Provincial Heritage Authority (i.e. KZN AMAFA) be notified in order for an investigation and evaluation of the find(s) to take place.

3.6 Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The OHS Act provides for the health and safety of persons at work and for the health and safety of persons indirectly associated with the daily construction site activities; the protection of persons other than persons at work; and protects against hazards to health and safety arising out of or in connection with the activities of persons at work. This Act will be enforced during the construction and it serves to mitigate any potentially negative impacts the proposed project may have on any of the labour force and on the surrounding communities.

3.7 Noise Regulations under the Environment Conservation Act (ECA) (Act 73 of 1989); SANS 10103-2008

Noise is regulated in terms of the Noise Control Regulations of the Environmental Conservation Act (Act No. 73 of 1989 - ECA). Legislative responsibility for the Noise Control Regulations is devolved to the provinces and implemented at a local level by municipalities. In terms of airport-related noise, the noise generated within the airport is guided by *SANS 10117: Calculation and prediction of aircraft noise around airports for land use purposes.* This standard embraces the internationally acceptable approach of using land-use planning as an integral tool in mitigating the impact of aircraft noise from airports. Furthermore, in terms of the proposed project, the construction phase is likely to result in noise generation but of a temporary nature. This standard governs "*measurement and rating of environmental noise with respect to annoyance and to*

speech communication". The project proponent is required to adhere to these limits during the project development and/or operation.

3.8 National Environmental Management: Air Quality Act (Act No 39 of 2004)

The Air Quality Act governs the standard of air quality and sets out the requirements to be met in terms of maintaining certain air quality levels. A key aspect of the NEM: AQA is the establishment of national ambient air quality standards. The Act provides for the identification of priority pollutants (sulphur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter (PM), ozone (O_3), lead and benzene (C_6H_6)) and the setting of ambient standards with respect to these pollutants. These standards are based on international best practice and provide the goals for air quality management and the yardstick by which the effectiveness of air quality management is measured.

The proposed Project does not trigger activities listed in terms of NEM: AQA, as the ACSA is already in possession of the necessary air emissions authorisations for the airport.

3.9 National Airports Development Plan, 2015; White Paper on National Civil Aviation Policy, 2015

Airport activities in general and aircraft operations in particular could have a major impact on the local environment as a whole. The National Civil Aviation Policy (NCAP) is focused more on the metropolitan and urban areas to facilitate the integration of the airport into its built environment and to ensure optimal utilisation of the development opportunities which the airport presents. Chapter 7 of the NCAP addresses the interaction between an airport and its environment and vice versa, and attempts to deal with all the aspects of land-use, which are not directly related to the operation of the airport. The airport environment in broad terms refers to the vicinity or area of influence of an airport. As such, the area of influence of an airport includes the airside as well as the landside of the airport. It also includes the geographic areas surrounding the airport, which are directly or indirectly affected by the airport or airport operation and vice versa. It therefore follows that the policy under this theme includes integrated development planning, land use on and around the airport and local emergency - and bulk municipal services, and development of the airport precinct and surrounding areas. Chapter 12 particularly deals with the environmental impact of aircraft operations. This impact includes noise and air pollution as well as human-induced climate change.

The National Airports Development Plan (NADP) has been initiated on the basis of the NCAP as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key stakeholders.

The KSIA expansion plans listed in this plan are as follows:

- The development of an additional 450 bays to car hire parking
- Construction of an additional 1000 bays to multi-storey parking
- ***Extension of the Bravo taxiway (this project)***

3.10 Airports Company Act 44 of 1993

The Airports Company Act 44 of 1993, under the auspices of the DoT, provides for an independent statutory body, the Regulating Committee, to oversee the economic regulation of Airports Company South Africa. The key mandate of Airports Company of South Africa includes, amongst others:

- Promoting the safe, efficient, economical and profitable operation of Airports Company South Africa airports; and
- Encouraging timely improvement of facilities at Airports Company South Africa airports so as to satisfy anticipated demand.

ACSA is regulated by the Regulating Committee stipulated in this Act through the prescription of service standards at airports and the limiting of airport charges.

3.11 Civil Aviation Act 13 of 2009

The Civil Aviation Act 13 of 2009, under the administration of the DoT, provides for the regulation and control of aviation in South Africa, the establishment of a South African Civil Aviation Authority (SACAA) with aviation safety and security oversight functions and gives effect to certain international aviation conventions, such as those standards and recommended practices of the International Civil Aviation Organisation (ICAO). The Minister of Transport is responsible with setting the regulations for the licensing, the inspection or management of aerodromes, including the technical, operational, safety and environmental management and protection standards in respect of airports in accordance with Section 155(1) of the Act as well as in accordance with the stipulations of the Airports Company Act, and other designated airports.

These regulations are applicable to all operations at the KSIA as they are at other aerodromes in South Africa.

3.12 KwaZulu-Natal Provincial Growth and Development Strategy (PGDS) 1997; Provincial Economic Development Strategy (2006)

The provincial planning framework is provided by the KwaZulu-Natal Provincial Growth and Development Strategy (PGDS, 1997- as revised) and the Provincial Economic Development Strategy (2006). The most recent revision of the PGDS was undertaken in 2016 and is purposed to:

- Be the primary growth and development strategy for KwaZulu-Natal to 2035;
- Mobilise and synchronise strategic plans and investment priorities in all spheres of government, and development partners in order to achieve the desired growth and development goals,
    - Spatially contextualise and prioritise interventions so as to achieve greater spatial equity;
    - Guide clearly defined institutional arrangements that ensure decisive and effective leadership, robust management, thorough implementation and ongoing inclusive reviews of the growth and development plan.

The PGDS recognises the need to increase the capacity of KSIA in order to make an increased contribution to the international logistics and connectivity competitive advantage of the Province.

3.13 Ethekwini Municipality Integrated Development Plan (IDP) (2017/18 – 2021/2022) and eThekwini Municipality Spatial Development Framework Review 2016-2017 (SDF)

The IDP displays the EMA's efforts in the provision of quality and affordable basic services, providing a safe and clean environment while also creating a favourable environment for local economic and social development. It provides strategic guidance for the location and nature of future development in the Municipality. The Municipal Spatial Development Framework (SDF) sets out the objectives for the desired spatial form of the municipal area. It provides strategic guidance for the location and nature of future development in the Metro. It contains a strategic assessment of the environmental impact of the SDF and identifies programs and projects for the development of land within the municipality. The development and expansion of the KSIA operations are included in the Municipality's growth objectives listed in these documents.

4 PLANNED ENVIRONMENTAL AND PERFORMANCE ASSESSMENT

4.1 Role and Responsibilities

Effective implementation of the EMPr requires that all parties or role players involved in this project need to comply with the directives set out. A concise description of impacts and their mitigation/management measures will be provided and understood by all role players responsible for the implementation and monitoring of the mitigation measures. The project will comprise of the following role players:

Table 6: Roles and Responsibilities for the personnel involved in the project

FUNCTION	RESPONSIBILITY
Developer/Proponent (ACSA)	ACSA is responsible for ensuring that the proposed development is in line with the standards of NEMA, as well as the provincial and municipal development and spatial plans. In implementing environmental management measures during the apron stand/taxiway operation, ACSA needs to: • Ensure that all parties during operational activities, are well aware of and implement the applicable environmental management requirements (as listed in the EMPr); • Ensure that all personnel are well versed with the EMPr; • Ensure that the Engineering Manager is undertaking all activities in accordance with the requirements of the EMPr and that high standards of environmental management are pursued; • Allocate and manage resources to ensure adequate supervision of environmental matters; and • Undertake and review environmental monitoring reports and verify that environmental monitoring results are within specified limits. • Ensure that personnel are adhering to the conditions of the - should the application be successful.
Lead Authority	• The Department of Environmental Affairs (DEA) is responsible for approving the Environmental Authorisation (EA) application. Ensuring that the monitoring and adherence to EMPr is carried out, by going through/reviewing audit reports submitted by the proponent and conducting regular site visits.
Engineering Manager	The Engineering Manager takes complete responsibility of the whole project and any contracted parties and ensuring that all environmental management facets are adhered to. The roles and responsibilities of the Engineering Manager during the Construction Phase will include: • Identifying the need for remedial measures with regard to proposed works; • Communicating directly with the Contractor and sub-contractors; and • Issuing non-conformance notifications to contractors that do not comply with the requirements as set out in the EMPr.
Contractor	The Contractor is responsible for the following • Ensure that all activities on site are undertaken in accordance with the EMPr; • Monitor the Contractor's activities (together with the ECO) with regard to the requirements outlined in the EMPr;

FUNCTION	RESPONSIBILITY
	• Ensure that all employees and sub-contractors comply with the EMPr; • Immediately notify the ECO of any non-compliance with the EMPr, or any other issues of environmental concern; and • Ensure that non-compliance is remedied timeously and to the satisfaction of the ECO. The Contractor has a duty to demonstrate respect and care for the environment. The Contractor will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the EMPr, environmental regulations and relevant legislation.
Environmental Control Officer	ACSA's obligation is to ensure that the implementation of the project complies with the requirements of any environmental authorisations and permits, and obligations emanating from other relevant environmental legislation. This obligation is partly met through the development and the implementation of the EMPr - through its integration into the contract documentation. ACSA's is also responsible for appointing and independent Environmental Control Officer (ECO) who will be responsible for ensuring that all EMPr obligations are implemented and that all activities taking place in the project are in compliance with the EA conditions and DEA requirements.
Environmental Assessment Practitioner	As defined in Section 1 of NEMA; "the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans and programmes, or any other appropriate environmental instrument introduces through regulations". DMT Kai Batla is the EAP appointed to conduct the environmental assessment as part of the environmental authorisation process.

4.2 Procedures for the Pre-Operational Phase

The implementation and monitoring procedures to be undertaken for the successful execution of the EMPr include:

- Undertaking an initial site visit during which ACSA and the parties tasked with the management and maintenance of the new apron stands and extended taxiway discuss issues of environmental concern relating to the project, and agree on roles and responsibilities, communication and reporting procedures;
- Executing an environmental awareness training workshop prior to the commencement of construction and operations for all ACSA and Contractors personnel involved- informing them of the purpose and importance of the EMPr;
- The implementation of ACSA's emergency response procedure;
- The ECO will inspect the site regularly to monitor and review the environmental performance of the new apron stands and extended taxiway against the commitments of the EMPr;

- During construction, the ECO will prepare weekly compliance checklist reports, detailing any environmental issues, non-compliance and actions to be implemented, to be submitted to the Engineering Manager or the relevant party as decided on by ACSA.
    - ECO or the Engineering Manager will be formally notified of the required corrective action;
    - The ECO will be expected to implement the required corrective action as detailed in the formal notification, and within the timeframes specified by the ECO; and
- These procedures should also be implemented for all activities during the Operational Phase- where applicable.

4.3 Environmental awareness training

Environmental awareness training courses should be provided to all personnel on site prior to the commencement of operation activities, detailing their obligations towards environmental management and in terms of the EMPr. The environmental training courses will include, amongst others, aspects such as:

- Environmental issues on site and having a full understanding of the environmental setting of the new apron stands and extended taxiway;
- Roles and responsibilities of all ACSA, external employees, service providers and all parties involved in the project;
- The operational environmental management measures;
- Toolbox talks on environmental practices and safety awareness on site, and the prevention of any incidents or disasters; and
- Cultural awareness.

Courses shall be held during normal working hours, at a suitable venue. All attendees shall remain for the duration of the course and, on completion, sign an attendance register that clearly indicates participants' names. A copy of the register shall be handed to the ECO for record keeping/ evidence of attending the training session.

4.4 Non-compliance and Corrective Action

Should, under any circumstance, the operational activities pose any damage on the environment and not comply with measures as stipulated in the EMPr, the Contractor will be held responsible for such non-compliance. It is therefore the responsibility of the Contractor to ensure that all relevant measures are taken to rectify such damage, at the wrong-doer's expense. It is the duty of the ECO to monitor compliance with the EMPr, and report and notify the Engineering Manager/ACSA of any non-compliance, highlighting the following:

- Details of the nature of the non-conformance;
- The actions to be taken to correct the situation; and
- The date by which each corrective action should be executed.

The Contractor will be held liable for any non-compliance on site. Following the identification and reporting of such occurrences, the Manager will be given 10 days to submit a Corrective Action Plan to the Engineering Manager's Environmental Management Department, which should detail how the required corrective actions will be implemented. This plan will be submitted to the ECO for approval prior to implementation. Once approved and the corrective measures have been carried out, the ECO will then determine the success or failure of the corrective action.

4.5 Environmental Management Programme Implementation and Monitoring

Environmental Records and Reports

The frequency and nature of reporting of environmental management performance will depend upon the nature of the activity and aspect that is being managed. Reporting may take several forms:

- Reports to the ECO on critical issues that may arise;
- Compliance checklist reports on a weekly basis;
- Monthly reports on environmental performance and compliance or non - compliance;
- Performance reports on key indicators on a quarterly basis;
- Environmental monitoring reports to confirm if environmental monitoring results fall within specified limits on the EMPr; and
- Summary reports to external stakeholders.

Reports and records to be kept are presented in Table 7.

Table 7: Reports required during operations

Item	Report	Frequency	From	To	Aim / Objective
1	Internal Environmental Compliance Audit Report	Bi-annual	ECO	Engineering Manager, ACSA and DEA	Detailed project compliance across all relevant legislation, identifying non-compliances, actions to be taken to rectify and timeframes to implement actions by responsible persons.
2	External Compliance Audit Report	Annual	External auditor	ACSA and DEA	Detailed plant compliance across all relevant legislation, identifying non-compliances, actions to be taken to rectify and timeframes to implement actions by responsible persons. Verify internal compliance audits.
3	Environmental, Health and Safety Monitoring	Monthly	ECO	Engineering Manager, ACSA	Verify that environmental monitoring results are within specified limits. Report on any environmental issues, non-

Item	Report	Frequency	From	To	Aim / Objective
	Reports and relevant/ accompanying checklists (environmental, first aid, baling machine, etc.)				compliance and actions to be implemented.
4	Corrective Action Plans	As required	Engineering Manager in the event of environmental non-conformance	ECO	Detail how the required corrective actions will be implemented.
5	Incident Reports	As required	Engineering Manager in the event of an incident	ECO	Report any environmental incidents, how they occurred, damage caused and how future incidents will be prevented.

5 ENVIRONMENTAL MANAGEMENT PROGRAMME

5.1 General Guidelines on site

The following measures provide guideline solutions to frequently anticipated issues on most development activities:

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the pre-construction, construction and operational phases, illegal activities, delays caused by archaeological finds, etc. is ultimately the responsibility of the applicant/developer as stipulated under Section 28, National Environmental Management Act [NEMA] (Act No. 107 of 1998);
- Operations must be limited to the property as that is where all licensed activities will be taking place;
- Any damage incurred to be repaired immediately and to the satisfaction of the property owner/s;
    - All private and public amenities near the project site must be protected against damage at all times, and any damage must be rectified immediately;
- Relevant landowners and businesses must be informed of the starting date of construction/operations and the activities to take place;
- The Engineering Manager must adhere to all contractual agreements- including the EMPr;
- Proper documentation and record keeping of all complaints and actions taken;
- A positive attitude towards environmental management by all recycling plant personnel must be motivated through regular and effective awareness and training sessions.

5.2 Environmental Management Measures

The following tables detail the environmental management measures that have to be put in place for the various aspects of the project that may result in impacts, both negative and positive, on the receiving and surrounding environment. Environmental Management Measures in the Pre-construction and Construction Phase (Table 8); and Operational Phase (Table 9) phases are detailed. The environmental management tables also provide information on the frequency at which each aspect and management measure should be monitored, and the person responsible for implementing the management measures.

Table 8: Pre-construction and Construction Phase EMPr

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
Authorisations	• Ensure that all required licenses and permits have been obtained before the start of construction.	Once-off	ACSA
Environmental Management Programme (EMPr)	• A finalized EMPr must address all authorization conditions stipulated by the DEA (and other commenting authorities). • The EMPr should also encompass all environmental impact mitigation measures as identified in the Final BAR.	Once-off	ACSA
Appointment of Environmental Control Officer	• ACSA will appoint an ECO that will be tending the compliance and related as aspects on the project. • Include the EMPr in all tender documents to ensure that sufficient resources are allocated to environmental management by the Contractor.	Once-off	ACSA
Permits and Permissions	• ACSA must ensure that all licensing, permits or certificates required for the project are in place prior to the commencing of any activities on site.	Once-off	ACSA,
	• Engineering Manager must ensure that copies of all licensing, permits or certificates required are kept at the construction site camp.	On-going	Engineering Manager
Grievances	Maintain a complaints' register. The register must record: • Complainant name and contact details; • Date complaint was lodged; • Person who recorded the complaint; • Nature of the complaint; • Actions taken to investigate the complaint and outcome of the investigation; • Action taken to remedy the situation; and • Date on which feedback was provided to complainant.	On-going	ACSA, Contractor

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
Ablution Facilities	• Provide ablution facilities (i.e. chemical toilets)- if required. Should portable toilets be used, these should be secured to the ground within the site camp to the satisfaction of the Engineering Manager/ECO to prevent them toppling due to wind or any other cause. • Maintain toilets in a hygienic state (i.e. toilet paper to be provided, toilets to be cleaned and serviced regularly (at least twice- monthly by an appropriate waste contractor), and toilets to be emptied before long weekends and builders' holidays). The waste shall be disposed at a licensed waste disposal facility. • Ensure that no spillages occur when the toilets are cleaned or emptied. Repeated incidents of spillage of chemicals and or waste (i.e. more than one incident), will require toilets to be placed on a solid base with a sump. • Urination or defecation on site, other than at the designated ablution facilities, is strictly prohibited.		
Handling of Construction Materials	• Imported materials shall be free of weeds, litter and contaminants. Materials to be obtained from reputable commercial sources. • Stockpile areas shall be approved by the Engineering Consultant/ ECO before any stockpiling commences. • Where possible, stockpiles shall be located in sheltered areas where they are not exposed to the erosive effects of the wind. • Stockpiles shall not exceed 2m in height.		

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility

Vegetation Clearing	• The extent of construction works must be limited to the development footprint and the designated buffer area.
	• Areas to be cleared need to be clearly marked and clearing of vegetation must only take place within these demarcated areas.
	• Ensure that no vegetation is removed or disturbed outside the delineated construction site boundary.
	• Limit clearing of vegetation to those areas within the footprint of construction activities and bulk earthworks.
	• It is recommended that a suitably qualified biodiversity specialist be tasked with any features which require permit applications prior to their removal / destruction. Any required permits must be obtained prior to the feature being removed or destroyed.
	• Retain as much indigenous vegetation as possible so it can be replanted during rehabilitation.
	• Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	  ○ Removal of species should take place throughout the construction phase.
	  ○ All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion.
	• Stockpiles shall not exceed 2m in height. If stockpiles are greater than 2m in height, then suitable measures shall be taken to avoid wind-blown dust.
		On-going	Contractor

Extensive earth works	• The extent of construction works must be limited to the development footprint and the designated buffer area. • Earth works should be done in accordance with the construction schedule. • Vehicles and machinery to be used by authorised/permitted personnel. • Care should be taken to avoid health and safety incidents.	On-going	Contractor

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Excavations to adequately barricaded and labelled. ○ This is with particular reference to excavations exceeding 1-1.5m in depth. • Excavated material to be placed in a designated place outside of the construction area		
Soil disturbance	• It is recommended that topsoil stockpiles be protected against wind, erosion and seeds, i.e. by use of shade cloth or netting. • Topsoil stockpiles should not exceed 2m in height. • All soils compacted as a result of construction activities falling outside of project footprint areas should be ripped and profiled. • Sloped areas can be temporarily stabilized during construction using geotextiles. • All exposed earth should be rehabilitated promptly with suitable vegetation to stabilize the soil.	On-going	Engineering Manager/ Contractor, ECO
Soil and groundwater contamination	• It is recommended that appropriate storm water management system must be implemented during construction. The plan must include measures to ensure that all runoff from the forecourt is directed into the existing storm water management system in the interim of the newly constructed one being operational. ○ The temporary system should include an oil/water separator. • All construction vehicles should be properly maintained to prevent leaks. • Cement mixing must be confined to a designated area and must be done on an impervious surface. • Any fuel stored on site must be kept in a bunded containment area and be clearly marked. • Drip trays are to be utilized during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.	On-going	Engineering Manager/ Contractor, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Drip trays are to be inspected on a weekly basis for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.		
Surface Water Drainage/ Water Management	• Potentially hazardous materials used during the construction phase (including cement and solvents) must be housed under cover (where practical) and utilised in bunded areas, where necessary. • It is recommended that vehicles and construction equipment be maintained off-site as far as possible. • Refuel and service vehicles on an impermeable surface; • Make use of a drip tray/ sand tray under the fuel nozzle when refuelling vehicles or equipment on site; • Place drip trays/sand trays under engines of vehicles or mechanical equipment when parked or stored overnight or longer; • Make all relevant staff aware of the need to prevent spills, leaks and disposal of contaminated water onto the ground • and ensure that they are adequately trained to take corrective action should an accidental spill occur. • Accidental oil and fuel spillages to be cleaned up immediately by the Contractor, placed in sealed containers and disposed accordingly. • Spill kits must be made available and the correct procedures followed during the clean-up of spills. • Any significant spills on-site must be reported to the relevant Authority (e.g. the DEA and the eThekwini Municipality) and must be remediated as per the requirements of the EMPr.	On-going	Contractor
Disruption to existing critical service infrastructure	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities. • The construction schedule should be adhered to ensure that construction occurs timeously.	On-going	Contractor

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• The extent of construction works must be limited to the development footprint and the designated buffer area to limit disruption to other airport operations. • Construction activities will be restricted to hours that will cause the least disruption.		
Disruption to airport terminals	• Adequate signage should be erected at the contact areas (across the terminal buildings), as well as inside the buildings to notify passengers and all airport patrons of the construction activities • Construction activities will be restricted to hours that will cause the least disruption. • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating does not exceed the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise.	On-going	Contractor
Visual impacts	• Construction activities will be restricted to hours that will cause the least disruption. • Lighting on site is to be sufficient for safety and security purposes • No stockpiles should exceed 2m in height. Wind-blown dust from stockpiles and construction activities, should be controlled. • Limit exposed areas (removal of vegetation) to the project footprint. Keep all areas neat, clean and organised in order to portray a general tidy appearance. • The construction site and material stores, should be kept tidy. • Measures to control wastes and litter should be included in the contract specification documents. • All rubbish and rubble removed to a recognized waste facility.	Weekly	ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• A certificate of disposal must be obtained for any waste that is disposed of. • The construction camp must be located as far from other buildings as possible.		
Noise impacts	• Construction activities will be restricted to hours that will cause the least disruption. • Vehicles and machinery to be kept in good working order • Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit is in accordance with the levels stipulated for the Special 10 land use zone. • Equipment will be fitted with silencers as far as possible to reduce noise. • All equipment to be adequately maintained and kept in good working order to reduce noise. • Introduce a formal recording system/grievance mechanism to capture public perceptions and complaints with regard to noise. • Track investigation actions and introduce corrective measures for continuous improvement.	Weekly	ECO
Traffic disruption	○ It is recommended that the public to be notified 7 days prior to construction commencing. ○ Strict adherence to working hours must be maintained. ○ Limiting the number of vehicles entering and exiting the construction site will ensure that traffic is kept to what is needed for construction and monitoring purposes. ○ Access roads should be planned ahead of time, with the public receiving sufficient warning of impending traffic. ○ Alternative routes to be provided for local motorists as far as possible should road closures be required. ○ Flagmen to be posted when construction works are being undertaken adjacent to roads. ○ Signage is to be displayed indicating construction activities.	On-going	Engineering Manager, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	○ Any damage caused to surrounding roads as a result of construction activities must be repaired as soon as possible to prevent further deterioration to the road network. • Construction vehicles and plant must not be permitted outside of the demarcated construction area.		
Dust fallout	• Minimise the extent of open areas. • Retain existing vegetation for as long as possible and only clear areas when required. • Topsoil stockpiles should be covered to prevent the surface soil from being blown away. • Minimise material handling and the frequency of disturbance of stockpiles to minimise wind erosion. • Dust suppression techniques to be used on all dust generating surfaces. ○ Pre-water areas earmarked for disturbance, if possible. • The speed of construction vehicles to be restricted to 40km/h within the construction area or near stockpiles. • Minimise travel distances on site through appropriate construction site layout and design. ○ Trucks transporting any form of soil or waste should be covered with a canvas. • Rehabilitate / revegetate exposed areas as soon as works are completed. Consider using hydro-seeding, ground-covering mesh, etc. to facilitate revegetation.	On-going	Contractor
Health and Safety and security	• The construction management needs to communicate the commencement and duration of construction activities to the community. • Clear signage needs to be put up to make and keep the community awareness of construction activities so as to prevent any hazardous occurrences. • Provide adequate safety warning signage on the roads.	On-going	Engineering Manager, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Construction workers and vehicle operators must take heed of normal road safety regulations, thus all personnel must obey and respect the law of the road. A courteous and respectful driving manner must be enforced and maintained so as not to cause harm to any individual. • A safe designated speed limit must be set by the project managers to limit possible road strikes and accidents. • Construction paths must be clearly demarcated. • The position of the water main is to be placed away from the footpaths. • Demarcate and barricade the new apron stand and extended taxiway footprint to prevent access to open trenches site during construction. • Enforce the use of appropriate Personal Protective Equipment at all times (i.e. hard hats, steel capped safety boots, protective goggles). • Security to be provided (where possible) after hours to protect equipment in the construction camp. • No construction staff must be permitted to trespass on private land. Any construction personnel found to be trespassing on private land must be immediately subjected to a disciplinary action. • Access to site to be strictly controlled.		
Waste	• Minimise waste generation, e.g. by providing re-usable items and refillable containers (e.g. for drinking water). • Waste bins are to be located at the construction camp and construction sites and must have clear markers saying the type of waste (general or hazardous) contained therein. • Bins to have secured lids to prevent waste from being blown into the surrounding area. • Store waste in labelled containers, indicating clearly whether the waste is hazardous or non-hazardous (general waste).	Weekly	Engineering Manager, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated Waste generated by construction workers must be collected and disposed of weekly at the nearest registered landfill. • Records of all waste being taken off site must be recorded and kept as evidence • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.		
Concrete/Cement Work	• Use Ready-Mix concrete rather than batching on site where possible. • Ensure that no cement truck delivery chutes are cleaned on site. Cleaning operations are to take place off site at a location where wastewater can be disposed of in the correct manner. If this is not possible a suitable washing facility is to be developed on site in consultation with the ECO. • Batch cement in a bunded area within the boundaries of the development footprint only (where unavoidable).	On-going	Contractor, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Ensure that cement is mixed on mortar boards and not directly on the ground (where unavoidable). • Physically remove any remains of concrete, either solid, or liquid, immediately and dispose of as waste. • Place cement bags in bins with lids and dispose of bags as waste to a licensed waste disposal facility. • Contaminated water from batching areas shall be contained and sediments allowed to settle before being disposed of as waste water.		
Hazardous Materials	• Keep relevant Material Safety Data Sheets (MSDS) on site for all potentially hazardous substances (as defined in the regulations for hazardous chemical substances). In the event of an emergency, procedures detailed in the MSDS shall be followed. • Maintain a register of all hazardous substances stored on site. • Store all hazardous substances (including hazardous waste substances e.g. oils, bitumen, hydraulic fluids) within secondary containment in a suitable storage facility. Major stocks of hazardous materials other than fuel should preferably be stored off-site. • No hazardous substance shall be disposed of on site. • Ensure that hazardous substances (including cement) are not placed directly on the ground. • Develop (or adapt and implement) procedures for the safe transport, handling and storage of potential pollutants. •	On-going	Contractor, ECO
Storage and Dispensing of Fuel	• Identify a suitable designated area for the fuel storage tanks. • Store fuel in accordance with relevant SABS specifications and all fuel storage tanks shall be provided with adequate bunding (110% of the largest tank). The bund floor shall be impermeable and sloped to a sump to enable removal of spilled fuel and contaminated water.	On-going	Contractor, ECO

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Refuel and service vehicles on an impermeable surface; • Make use of a drip try / sand tray under the fuel nozzle when refuelling vehicles or equipment on site; • Use appropriately sized drip trays for all refuelling and/or repairs done on machinery – ensure these are strategically placed to capture any spillage of fuel, oil, etc. • Adequate fire-fighting equipment shall be provided at the fuel storage and dispensing areas. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.		
Fire Control	• No fires are permitted on site except in areas approved by the ECO in consultation with ACSA. Any such areas are to be situated as far as possible from vegetated areas, flammable material stores, etc. • Ensure that no smoking is permitted on the site except for within a designated area in the site camp (to be included in the site camp Method Statement). Suitable firefighting equipment must be readily available in this area. • Appoint a fire officer who shall be responsible for coordinating emergency response in the event of a fire. • Ensure that all personnel on site are aware of the location of firefighting equipment on the site and how the equipment is operated. • Suitably maintain firefighting equipment.	On-going	Contractor, ECO
Closure and rehabilitation	• Revegetate disturbed areas with indigenous species • Use harvested topsoil for rehabilitation. • Stabilise slopes disturbed / cleared for construction with geofabric or another appropriate erosion stabilisation technique to prevent erosion.	On-going	Contractor

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring Frequency	Responsibility
	• Remove all construction equipment, vehicles, equipment, waste and surplus materials, site office facilities, temporary fencing and other items from the site. • Clean up and remove any spills and contaminated soil in the appropriate manner. • Do not bury discarded materials on site or on any other land not designated for this purpose. • Rehabilitate affected areas on the site as soon as construction activities in the relevant area are completed, rather than undertaking all rehabilitation at the end of the contract period. • Rehabilitate areas adjacent to the site (if disturbance is unavoidable) to at least the same condition as was present prior to construction.		

Table 9: Operational Phase EMPr

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring	Responsibility
The operational phase measures are listed here pertain to the impacts identified for the construction phase, as a result of the new Apron stand and extended Bravo Taxiway. Some of the measures listed here rare extracted from the most recent Operational Environmental Management Programme (OEMPR) Compiled by WSP Parsons Brinckerhoff for the KSIA, in April 2017 (Report N^{O} 40815-01).			

Vegetation and Fauna Management	• Clear as much alien vegetation as possible to retain nutrients for indigenous vegetation.
	  ○ Removal of species should take place throughout the construction phase.
	  ○ All removal of alien vegetation must be undertaken in such a way as to ensure that at no time is there excessive base ground created which would be susceptible to erosion.
		On-going	ACSA

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring	Responsibility

	• Avoid insect infestations at the airport by spraying or managing habitats that may attract insects as necessary (to minimise the attraction of birds and bats to the area).
	• Assess the risk of bat strikes, and if necessary:
	  ○ avoid using lighting wavelengths at the airport that attract insects;
	  ○ prevent the re-establishment of bushes, shrubs and trees within the site; and
	  ○ prevent bats from taking shelter in buildings by installing exclusion measures.
	• Prevent birds and bats from taking shelter in ACSA buildings and hangars by installing anti-perching spikes, netting and panelling on ledges and in holes in buildings where appropriate.
	• Limit pooling water of the airport property as far as possible to deter birds and insects from the airport property.		

Surface Water Drainage/ Water Management	• Provide sub-surface drainage and storm water removal systems at edges of impermeable surfaces where impermeable geological layers are shallow. • Ensure that regular maintenance is done on tar mac and other surfaces • Curtail sheet runoff from paved surfaces and access roads. • Attenuate stormwater in order to prevent erosion. • Immediately clean up and treat spills and pollution accordingly to minimise the potential of further polluting stormwater. • Wastewater disposed to sewer must be of a standard capable of treatment • Implement the hydrology management measures detailed in the existing EMPr for KSIA, as per the ROD requirements. • Ensure the measures listed in the OEMPR are implemented.	On-going	ACSA
Health effects of increased air pollution	• Monitor priority pollutants that have the potential to affect human health- as per the approvals/ROD for the initial airport development.	On-going	ACSA

Management Aspect	Mitigation Measure/ Actions to be implemented	Monitoring	Responsibility
	• Investigate and where possible implement the recommendations for the reduction in air emission, in line with the standing ROD • Ensure that the KSIA Air Quality Management Plan (AQMP, 2016) is implemented in accordance with the KSIA ROD. • Ensure the measure listed in the OEMPR are implemented.		
Environmental Management Procedures	• Update the existing management procedures to incorporate the project-specific management measures. Develop additional management procedures if necessary.	Prior to commissioning of new apron stands and extended taxiway	ACSA

6 COMPLIANCE AUDITS, REVISING THE EMPR AND CONCLUDING RECOMMENDATIONS

6.1 Compliance Audits and Reporting

Audits of compliance with the EA conditions and implementation of the EMPr must be undertaken internally on a biannual basis (i.e. twice a year). A report of the audit findings must be compiled, and the report should include:

- The date of when the audit was conducted;
- The name of the auditor;
- The outcome of the audit in terms of compliance with the environmental authorisation conditions and the requirements of the EMPr; and
- Corrective measures to ensure that ACSA' compliance rating is improved or maintained.

In addition, ACSA should appoint an independent party to undertake external audits on the EMPr implementation during the construction phase. The auditor must be provided with the internal audit reports for review, and must produce a report containing the type of information presented in the internal audit reports. This report must be submitted to the competent authority (i.e. the DEA) and copies should be readily available on site.

6.2 The EMPr as a Live Document

When considered necessary, the EMPr should be revised and updated to incorporate issues identified through emergencies, incidents, monitoring or audits. ACSA should be cognisant of the fact that the EMPr is a dynamic document, and revisions and updates made to it will ensure that the operation activities are planned and implemented taking identified environmental issues into account.

6.3 Concluding Remarks

In implementing the proposed project, and this EMPr, the following is recommended:

1. Maintaining the existing infrastructure- like the storm water management system, roads, fences/boundaries and other structures.
2. Managing the operational areas in accordance with the integrated and spatial development plans, and implementing the environmental protection measures detailed therein.
3. Implementing the EMPr to guide the pre-construction, construction and operational activities, and to provide a framework for the on-going assessment of environmental performance.
4. Maximising the employment of local people and the procurement of local resources during operations to ensure maximum benefit to the provincial/local economy.
5. A suitably qualified licence holder employee must be mandated with the task of monitoring compliance, and correct implementation of all mitigation measures and provisions as stipulated in the licence, EMPr and standard operation procedures.

It is also recommended that the developer appoint an independent external party to undertake annual audits of the new development's compliance with the EA conditions.

APPENDIX H: DETAILS OF EAP AND EXPERTISE

DMT Kai Batla (Pty) Ltd

COMPETENT PERSON'S CERTIFICATE

Position:	**Senior Environmental Manager**
Name of Firm:	**DMT-Kai Batla (Pty) Ltd**
Name of Staff Member:	**Samantha Moodley**
Profession:	**Principal Environmental Consultant**
Nationality:	**South African**

Professional Profile

A highly competent Environmental Consultant with 10 years' experience and advanced knowledge in the global environmental and engineering fields, predominantly in oil and gas, infrastructure development, industrial developments, minerals and metals. Successful track record in environmental permitting processes, managing specialists, project budgets, project management, conflict resolution, project administration, interfacing with other disciplines, environmental strategy and policy, environmental and related legislation (South African and international) and public participation processes. Successfully led and contributed to ESIAs for large multi-disciplinary projects and accomplished in producing sound scientific reports that are understandable to non-technical stakeholders. Strong communicator with project and technical teams, client, authorities and public role-players.

Membership in Professional Societies

- International Association for Impact Assessment (or)

Key Qualifications:

- Environmental and Social Impact Assessments according to international best practice standards, i.e. IFC Performance Standards.
- Project Management.
- Business Integration (environmental engineering sustainability).
- Identifying key environmental attributes, opportunities and constraints.
- Sensitivity analyses and sustainability assessments.
- Strategic environmental management plans.
- Technical report writing including: scoping reports; environmental and social impact assessment reports; environmental management plan reports and amendments; inception reports; status quo reports; desired state reports; environmental management framework reports; strategic environmental assessment reports; performance assessment reports; ecological specialist reports.
- Global experience (Botswana, Mozambique, Malawi, Nigeria, Zimbabwe and South Africa).
- Coordinating and managing specialists including developing terms of references, managing information needs, organising site visits, reviewing reports.
- Infrastructure experience (port and marine terminals, industrial plants, rail and road).
- Coal mining experience (Mozambique, Botswana and South Africa).
- Public participation processes including: communication strategies; stakeholder's analysis; background information documents, issues and responses reports; feedback stakeholders during public and focus group meetings.

Education:

Degree/Diploma	Field	Institution	Year
B.Soc. Sc. Honours	Geography and Environmental Management	University of KwaZulu Natal	2005
Bachelor of Social Science (B.Soc.Sc)	Geography and Environmental Management	University of KwaZulu Natal	2004

Employment Record:

Position	Company	Job description	Duration
Manager: Environmental Division	**Fourth Element Consulting (Pty) Ltd**	Manager: Environmental Division	2014
Environmental Advisor	**Hatch Goba (Pty) Ltd**	Environmental Advisor	2011 – 2013
Senior Environmental Consultant	**ERM Southern Africa**	Senior Environmental Consultant	2006 – 2011

Business and Project Management

- Pro-actively seeking out additional opportunities with the various parties involved in projects.
- Managing budgeting, work planning, team briefing, progress monitoring, financial monitoring, invoicing, reviews and QA/QC.
- Managing and contributing to high quality, successful proposals over the last 8 years.

Authorisation Permitting Studies

- Authoring and/or project managing a variety of environmental authorisations processes.
- Successfully undertaking EIAs for a range of projects across a number of sectors all over Africa.
- Excellent understanding of the legislative requirements associated with EIAs as well as an understanding of the in-country, South African and provincial regulatory and permitting processes.
- Fostering good relationships with competent authorities as well as local authorities in South Africa.
- Assisting clients in ensuring that projects meet international environmental and social assessment standards (including those of the IFC, World Bank, the African Development Bank (AfDB) and JBIC and others).
- Applying expertise to assist in the development of bankable projects in compliance with the Equator Principles and IFC Performance Standards in the last 2 years. This includes working for project developers seeking finance from the Equator Principles Financial Institutions as well as acting on behalf of project lenders in reviewing project compliance against the Equator Principles.

Engineering Interface

- Experience in working alongside engineering design teams in applying the required environmental assessment methodologies, at the appropriate time within the project life cycle process, providing her with the ability to recognise potential gaps that need to be addressed during the EIA and allowing for improved integration of information between the EIA project team and the engineering design team. This experience allowed her to manage potential EIA schedule delays by detailed planning and communication of required engineering inputs to the EIA and identification of tasks which can be advanced independently of the engineering design.
- Providing a managed interface between clients, engineering design teams and environmental assessment practitioner to facilitate the effective integration of environmental considerations into the design and planning processes.

Global Work experience

- Worked on Projects in: Botswana, Mozambique, Malawi, Zambia, Zimbabwe, Nigeria and South Africa.

- Proposals prepared for: Botswana, Brazil (Sao Paulo), Canada, Democratic, Lesotho, Liberia, Malaysia, Mozambique, Malawi, Namibia, Sierra Leone, Swaziland, Zambia, Zimbabwe and South Africa.

Technical Papers, Conferences and Seminars

- Kamal Govender, Stuart Heather-Clark, Samantha Moodley, EIA for coal barging on the Zambeze River: A successful EIA, IAIA 11, Mozambique, 2011.

Key Strengths

- Strong prioritisation and time management skills with particular focus on meeting deadlines.
- Able to manage multiple projects simultaneously in a team environment.
- Track record for meeting timelines and meeting expectations.
- Responds quickly to changing situations and works well under pressure while maintaining individual team effectiveness.
- Able to cope with ambiguity, contradiction, stress and uncertainty.
- Attention to detail, planning, organisation and daily delivery requirements.
- Excellent internal and external negotiation skills with ability to engage and influence clients.
- Good interpersonal skills - works well with others, motivates and encourages.
- Solid judgment and management skills to effectively deal with people's needs/issues.

Key Project Experience:

OIL AND GAS PROJECTS

EIA for NEMA Rectification Applications, Shell SA, Western Cape and Gauteng, 2006, Project Consultant

This project entailed the completion of the National Environmental Management Act (NEMA) Rectification Applications for above and below ground fuel storage sites. Responsibilities included coordinating the public consultation as well as the project report write-up for multiple sites.

Proposed aboveground storage facility and baghouse at ArcelorMittal, Vanderbijlpark Works, 2008, Assistant Project Manager

Appointed to undertake a Basic Assessment process for an aboveground storage facility and baghouse emission abatement technology for ArcelorMittal's Sinter Plant

EIA for underground storage tank at Mafube Colliery, 2008, Project Manager

Appointed to undertake a Scoping/ EIA process for a proposed underground storage tank at Mafube Colliery

Mafube Coal Mining BA for AST installation 2010, Project Manager

Appointed to undertake a Basic Assessment for the proposed installation of aboveground storage tanks at Mafube Colliery, Middelburg, Mpumalanga Province

ENGEN London Rd EIA 2009-Ongoing, Project Manager

Appointed to undertake an EIA for the proposed construction of two filling stations at the N3/London Road intersection, Gauteng.

Vodacom EA Audit 2009, Project Manager

Appointed to undertake an environmental audit of the Environmental Authorisation for the installation of bulk above ground storage tanks at the Vodacom 6 Development in Midrand, Gauteng.

Chevron ERP and EMP for depot at OR Tambo 2009, Project Consultant

Appointed to undertake an EMP and ERP for bulk fuel off-loading at the rail siding near OR Tambo Airport, Gauteng.

ENGEN Filling Station EIA, Ventersdorp EIA 2010, Project Manager
Appointed to undertake an EIA for the proposed construction of an Underground Storage Tank (UST) at the Voorwaarts Filling Station in the North West Province

MINING PROJECTS

Order of Magnitude Study for Rio Tinto Iron and Titanium - TIO4 Program, Mozambique, 2011
Hatch was appointed by Rio Tinto Mining and Exploration Limited (RTME) to conduct the OMS for the proposed mineral sand mining project in Mutamba, Mozambique. Key responsibilities on this project included reviewing the environmental requirements in terms of the permitting as well as design standards associated with the project.

Environmental, Social and Health Impact Assessment (ESHIA) of the Mmamabula Coal and Power Station in Botswana for CIC, 2006-2009, Project Consultant
CIC required an integrated ESHIA to be undertaken for a new coal mine and power station in south eastern Botswana. This ESHIA was required to meet the IFC Performance Standards. This is a multifaceted project which has a number of EIAs being conducted parallel to each other. Assisted with compiling ESHIA for the entire project, Compiled the Environmental Awareness Plan, assisted with other Management Plans, and overall project management.

ESIA for proposed Sheba's Ridge Mine, 2007-2008, Project Consultant
The project involves the development of a large, greenfield open pit nickel and copper mine and processing plant in Limpopo Province, South Africa. The ESIA was guided by Equator Principle and IFC requirements. Designated as the coordinator for the public participation process and was involved with managing stakeholder database, interacting with stakeholders and the writing up of documentation required for public participation process.

Project Mafutha Environmental Baseline Study, South Africa, 2008, Assistant Project Manager
Project Mafutha comprises a coal-to-liquid plant, a coal mine a town, water supply infrastructure and associated activities. As part of the pre-feasibility studies for Project Mafutha, ERM was appointed to undertake the Environmental Baseline Assessment. The project required delicate managing, in light of stakeholder expectations, the client's ongoing property purchasing negotiations, client's prospecting activities, and a related basic assessment for road construction and widening (also being undertaken by ERM). Managing a multi-disciplinary team of specialists, managing a desktop and detailed assessment and managing the public participation aspect required integration of different expertise and project components. The timeframe was short (12 months) and required innovative solutions to run processes in parallel to deliver on time.

Mafube EMPR Revision 2010, Project Manager
Appointed to undertake a revision of the EMPR for Mafube Colliery, Middelburg, Mpumalanga Province as per a Directive issued by DMR.

Anglo Prospecting EMP 2010, Project Manager
Appointed to undertake an EMP for prospecting activities carried out by a mine in Rustenburg. The EMP involved researching environmental and social impacts of prospecting activities as well as providing adequate mitigation measures for these impacts.

Coal of Africa Due Diligence, South Africa
Coal of Africa, 2011, Project Consultant
ERM was appointed Coal of Africa Limited to undertake an independent International Finance Corporation and Equator Principles review of the proposed Makhado Colliery Project in the Limpopo Province, South Africa. This includes a review of all environmental and social factors to determine overall conformance with IFC performance standards.

INFRASTRUCTURE PROJECTS

Kudumatse Wellfield EIA for Mmamabula Energy Project, 2007-2008, Project Consultant
Specific responsibilities for this project included working with specialists to ensure that the different environmental and social impacts of the project were carefully considered. Involvement in the public participation process of the EIA included holding meetings with relevant authorities and potentially affected communities. Further responsibilities included drafting of the Terms of Reference and EIS.

Railway Link and Services Corridor EIA for Mmamabula Energy Project, 2007 to 2008, Assistant Project Manager
Appointed to undertake EIA process for a proposed railway line, road upgrade and water supply pipelines as part of the Mmamabula Energy Project in Botswana. Key roles on this project included management of specialists and compilation of ESIA.

Basic Assessment for Road Construction and Widening, South Africa, 2008, Assistant Project Manager
Appointed to undertake a Basic Assessment for a proposed road construction and widening project to facilitate bulk sampling as part of clients' prospecting activities.

Riversdale Coal Barging Project, Phase 1, Mozambique, 2009
Project Consultant
Appointed to undertake a baseline sensitivity analysis of the proposed Zambezi River Coal Barging project with a view to identifying baseline sensitivities and potential fatal flaws.
ESIA for Riversdale Zambezi River Coal Barging Project, Mozambique, 2009 to 2011
Assistant Project Manager
The ESIA is to meet the Mozambican regulatory requirements as well as best practice as defined by the IFC Performance Standards. Key responsibilities on this project include regular interaction with client, managing a suite of specialists, budget control and compiling necessary reports.

Beira Coal Terminal EMP, Mozambique
Vale, 2011, Project Consultant
A comprehensive construction and operational Environmental Management Plan was prepared for Vale for the proposed coal terminal located at the Port of Beira, Mozambique.

EIA for Riversdale Beira Transhipment Project, Mozambique, 2010 to 2011, Project Manager
The EIA is to meet the Mozambican regulatory requirements. Key responsibilities on this project include regular interaction with client, managing subcontractors, budget control and compiling necessary reports

FEL 2 and FEL 3 Studies for Expansion of Terminal de Carvão da Matola Lda ("TCM") at Port of Maputo, Mozambique, 2011-2013, Environmental Manager.
Hatch Africa (Hatch) was appointed by Grindrod Terminals to carry out investigations for the proposed new coal terminal which will be developed and constructed in two phases**.** Samantha served as the Environmental Manager on the Project in which she managed the environmental requirements related to the expansion of Matola's TCM Facility. This involved compiling of project Environmental design criteria which are needed to guide the Project Technical Team during the planning phases and design work, interfacing and coordinating with engineering disciplines, management of the EAP undertaking environmental authorisation process (Environmental and Social Impact Assessment), managing of monitoring programmes, report review, construction management in terms of environmental compliance, as well as ensuring environmental best practice is applied to the expansion in feasibility and during project execution.

Vereeniging City Urban Design Framework, Gauteng Provincial Government, 2012-2013, Environmental Specialist
Appointed to as environmental specialist to inform the project design approach. Key responsibilities on this project involved addressing the environmental and social sectors, which includes the development of environmental and social inputs to the Status Quo report and the development of environmental and social sector plans. In addition to the sector specific input, sustainability input to the integrated visioning and sector planning process was provided.

INDUSTRIAL PROJECTS

FEL 2 and FEL 3 Studies for Nyanza Light Metals Recovery of Titanium from Slag Project, South Africa, Ongoing, Environmental Advisor
Hatch was retained by Arkein Capital to evaluate beneficiation options of discard furnace slag from Evraz Highveld as Nyanza Light Metals intends to construct and operate an industrial rutile pigment production facility in an area yet to be determined in South Africa. The environmental scope involves project deliverables that are based directly on those defined and described in the Hatch Project Lifecycle Process (PLP) ensuring that the sustainable development aspects of the study are adequately addressed.

Fry's Metals, 2009, Project Manager
Appointed to undertake a legal review for the proposed new Battery Crusher at the Fry's Metals plant in Germiston.

Technical Consulting for an Environmental Impact Assessment for Bus Assembly Plant, Confidential Client, Nigeria, 2008, Project Manager
Appointed to provide technical support to the team carrying out an EIA for a proposed bus assembly plant in Nigeria. The EIA process and report was audited against the Nigerian regulatory EIA requirements. Recommendations were made to address gaps.

Certification:
I, the undersigned, certify that to the best of my knowledge and belief, these data correctly describe my qualification, my experience, and me.

Samantha Moodley

APPENDIX I: ADDITIONAL INFORMATION

water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

P.O. Box 1018, Durban, 4000. 88 Joe Slovo Street, Durban 4000. Tel: (031) 336-2700 Fax: (031) 305 9915.
Website: www.dwa.gov.za

Enquiries: Ms H. Aboobaker
Tel: 031-336 2700
Fax: 031-305 9915

E-mail: aboobakerh@dws.gov.za

File No : Taxiway&Rank

ACSA

PO Box 57701

King Shaka International Airport

4407

ATTENTION: CHRISTOPHER JONES

RE: VERIFICATION OF WATER USES: TAXIWAY, APRON & TAXI RANK

The Department does not consider that the application will trigger a water use in terms of the National Water Act, 1998 (Act 36 of 1998) section 21 (c) and (i) even though the activity is within 500m of a possible wetland.

The Department believes that the drivers of the wetland (surface, interflow and ground water flow) as well as Water Quality, Habitat (Physical Structure and Vegetation) and Biota will not be impacted on by the activity.

Therefore, the Applicant is not required to apply for a water use authorisation.

The Applicant is required to adhere to the following:

1. This decision is subject to all applicable provisions of the National Water Act, 1998 (Act 36 of 1998).
2. The responsibility for complying with the provisions of the decision is vested in the Applicant and not any other person or body.
3. The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of / amongst other things.
   3.1 Shortage of water;

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3.2 Inundation of flood;

3.3 Any *force majeur* event;

3.4 Siltation of the river or dam basin; and

3.5 Required Reserve releases.

4. The decision taken above does not negate the Applicant from applying for authorisation of these activities under any other Acts.

Should you have any queries, please do not hesitate to contact this office at the contract details provided above.

Yours faithfully

for **Provincial Head: KZN**
Mr.S.O.Naidoo
Deputy Director
Date: 26/10/2017

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447 · PRETORIA · 0001 · Environment House · 473 Steve Biko Road, Arcadia · PRETORIA

DEA Reference: 14/12/16/3/3/1/1841
Enquiries: Ms Salome Mambane
Tel: 012 399 9385 **E-mail:** SMambane@environment.gov.za

Samantha Moodley
DMT Kai Batla (Pty) Ltd
PO Box 41955
CRAIGHALL
2024

Tel: 011 781 4548
Email: Samantha.Moodley@dmt.com

PER EMAIL / MAIL

Dear Sir/Madam

ACKNOWLEDGEMENT OF RECEIPT OF THE NEW APPLICATION FOR ENVIRONMENTAL AUTHORISATION (BASIC ASSESSMENT PROCESS) FOR THE CONSTRUCTION OF APRON STANDS AND EXPANSION OF THE TAXIWAY AT KING SHAKA INTERNATIONAL AIRPORT, KWAZULU-NATAL PROVINCE

The Department confirms having received the Application for Environmental Authorisation for the abovementioned project on 03 November 2017. You have submitted these documents to comply with the Environmental Impact Assessment (EIA) Regulations, 2014, as amended.

Please take note of Regulation 40(3) of the EIA Regulations, 2014, as amended, which states that potential Interested & Affected Parties, including the Competent Authority, may be provided with an opportunity to comment on reports and plans contemplated in Regulation 40(1) of the EIA Regulations, 2014, as amended, prior to the submission of an application but must be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority.

Note that in terms of Regulation 45 of the EIA Regulations, 2014, as amended, this application will lapse if the applicant fails to meet any of the time-frames prescribed in terms of these Regulations, unless an extension has been granted by the Department in terms of Regulation 3(7) of the EIA Regulations, 2014, as amended.

You are hereby reminded of Section 24F of the National Environmental Management Act, Act No. 107 of 1998, as amended, that no activity may commence prior to an Environmental Authorisation being granted by the Department.

Kindly quote the abovementioned reference number in any future correspondence in respect of the application.

Yours Sincerely

Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs:
Letter signed by: Ms Toinette van der Merwe
Designation: Environmental Officer: EIA Coordination, Strategic Planning and Support
Date: 07/11/2017

CC:	Beverly Nokuthula Mcinga	Airports Company of South Africa SOC Limited	Email: Nokuthula.Mcinga@airports.co.za
	Ms Mavis Padayachee	KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs	Email: Mavis.Padayachee@kzndtea.gov.za
	Diane van Rensberg	Ethekwini Municipality	Email: vanrensbergd@durban.gov.za