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East Kimberley Regional Airport (Kununurra)

Runway Extension Project: Business Case and Cost Benefit Analysis

FINAL REPORT

Prepared for: Shire of Wyndham – East Kimberley

Reference no: TAG1026

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Airport Group (TAG) has been engaged by the Shire of Wyndham – East Kimberley (SWEK) to provide support services for a project to extend the runway at the remote East Kimberley Regional Airport (EKRA) at Kununurra in Western Australia (WA). The proposed 601-metre runway extension at EKRA will allow Australia's (and the world's) most commonly used aircraft type, the B737/A320 (Aerodrome Reference Code 4C), to access the airport.

This will:

- ensure the region of Kununurra (one of the most remote and beautiful regions in Australia) remains connected to the rest of Australia well into the future;
- negate the risk of isolation when the current ageing aircraft are retired in the short to medium term;
- create the potential for the region to be connected to the major cities of Australia and South East Asia;
- create the potential for the unique attractions of the East Kimberley region to be readily accessible to the 15,000,000 international visitors that are forecast to arrive in Australia in 2026–27 (Tourism Research Australia, 2017a); and
- increase the import and export airfreight capacity, both domestically and internationally to South East Asia. Freight is vital for the community's critical health and medical supplies, as well as the developing agricultural and seafood exports from the region.

Current runway length limits aircraft options

Kununurra is a remote destination and the airport is the gateway to the town and the entire region. The generalised cost of these air services, for passengers and airlines alike, is significantly higher as a result.

The current runway length is too short to allow for the most common, efficient and popular aircraft (B737/A320, i.e. Code 4C aircraft) to access the airport. The current airlines operating from the airport use Code 3C aircraft types — namely, Fokker 100 (F100) and Embraer 170 (ERJ170). The average age of F100s used in Australia is 26.1 years, and the F100 is long out of production, making it likely that the fleet will be retired over the coming decade. In future, current Code 3C operations present a constraint and challenge for the airport. They are constrained during the wet season as they are restricted in seat capacity on the outbound from EKRA by 15% (15 seats) on a F100. During hot weather, F100 aircraft commonly have to wait to depart from EKRA until after the weather cools down, and they stop to refuel in Newman before proceeding to Perth.

The 'work horses' of the Australian aviation industry are the Code 4C aircraft, both the Boeing 737-800/MAX family and the A320 family. Code 4C aircraft are the optimal design aircraft standard for EKRA to mitigate the future challenge for operations and airline and passenger development.

Runway Extension Project (the Project)

Aircraft operations to EKRA are constrained by the current runway length. This increases the unit cost of operations at the airport. The existing runway restricts airline services to aircraft that are inefficient relative to those commonly used and favoured by domestic Australian carriers, i.e. B737/A320. This cost is passed onto consumers, which increases the 'generalised cost' of travel, including:

- naturally higher cost of airfares to the regions due to less competition;
- higher airfares and passenger charges to compensate for the higher costs of suppling airline services at EKRA;
- additional travel time and costs of airfares for linking or in transit flights to reach EKRA from the East Coast such as via Perth or Darwin;
- the opportunity cost of the additional time that passengers and freight have to spend in transit to reach EKRA; and
- travel time and cost, inhibiting inbound tourists.

The runway can be extended to be sufficient for operations by B737 and A320 jet aircraft. This would be sufficient for aircraft arrivals and departures from East Coast airports and some airports within South East Asia. A pre-feasibility study has estimated the cost to be approximately $17.4 million (GHD Prefeasibility Study, 2016).

East Coast Demand confirmed in Market survey data

An in-terminal passenger survey undertaken at EKRA in June 2018 confirmed that a reasonable proportion of visitors are connecting from the major capital city ports on the East Coast of Australia. Further, there appears to be underlying demand for additional services and connectivity to the East Coast markets, as well as for additional services or frequencies on the existing routes that operate to EKRA.

The in-terminal survey conducted at EKRA found:

- Inbound and outbound demand levels are higher than current passenger carriage suggests.
- Capacity constraints, leading to an elevated airfare environment, are the main reasons for
- demand spill.
- The limited destination portfolio forces significant connect traffic through Darwin (DRW), and even Broome (BME).

Over the coming decade, it is expected that general traffic growth and Origin and Destination (O&D)-specific demand will be sufficient to justify the operation of Code 4C aircraft on both existing markets and what looks like a commercially viable additional market to a major capital city on Australia's East Coast.

EKRA — the highest-ranked regional airport in Western Australia

In 2017, EKRA was assessed with 14 other WA regional airports using a criteria-based strategic assessment framework developed for the Western Australia State Government departments of Transport and Regional Development. The airports assessed were: Albany, Broome, Busselton, Carnarvon, Derby-Curtin, Derby, Esperance, East Kimberley (Kununurra), Geraldton, Kalgoorlie-Boulder, Karratha, Learmonth, Newman, Onslow, and Port Hedland.

The purpose of the assessment framework was to provide the State Government with a tool to help prioritise the allocation of state funding in support of regional economic development.

Four key criteria were adopted to assess the level of strategic importance of each of 15 WA regional airports:

- potential for interstate and international linkages
- potential as a tourism destination
- potential as a freight hub
- potential to aid regional industry development.

East Kimberley (Kununurra) was the only local-government-owned airport of the group that was identified to have high strategic development potential in three of the four categories and moderate potential in the fourth.

Methodology for assessing the Runway Extension Project

Two widely accepted measures have been used to assess the Runway Extension Project and were used as tools to determine if the Project should be undertaken, all things remaining equal. These were:

- **net present value** (NPV) within the context of airport business; and
- **cost-benefit analysis** (CBA) to the immediate region.

Net Present Value

The **NPV** is the calculation of the sum of the present value of future income and expenses. A positive NPV indicates that the projected earnings generated by a project or investment (in present dollars) exceeds the anticipated costs (also in present dollars) over the forecast future life of the project or

investment. Generally, an investment with a positive NPV will be a profitable one, and one with a negative NPV will result in a net loss. This concept is the basis for the NPV rule, which dictates that the only investments that should be made are those with positive NPV values. Future income and expenses are discounted to present-day value using a discount rate.

Discount rate

The discount rate adopted often reflects the risk, opportunity cost, or other factors.

As there is no universally correct discount rate, government agencies adopt a rate of 7%, with 3% and 10% used for sensitivity testing.

Given, however, the prevailing low interest rates and lower expected equity, returns would give rise to a weighted average cost of capital, upon which a discount should be determined of approximately 5%. This would comprise a nominal discount rate (3.3%) and a real discount (inflationary adjusted) rate of 1.7%. Regional airports have a higher risk profile than capital city airports. A discount rate of 5% has been used as the Base Case, as this represents a more conservative position.

Sensitivity analysis

The sensitivity analysis for the Runway Extension Project assesses two broad scenarios:

1. Base Case — the runway extension is not constructed; versus
2. Growth options (low, medium, high), whereby the runway extension is undertaken and growth in passenger numbers results.

Within each of the broad options are sub-options around the forecast consequential passenger growth. Each of these sub-options is then compared using the benefit-to-cost ratio (BCR).

When reviewing the results of the NPV assessment of the Runway Extension Project to airport business, we make two important qualifications:

1. The accounts used for the analysis of the airport's performance are understated, due to the shire's community-service obligation to maintain its airports.
2. The 2017 Airport Master Plan identified a number of projects that will result in extensive uplift in the non-aero income streams of the airport. These future income streams have not been taken into account in the business case nor the cost-benefit analysis. Future onsite commercial development has been excluded from the financial assessment due to uncertainties over amount/timing.

The financial modelling of a medium-growth scenario of the Project identified an NPV of net cash flows (EBITDA – CAPEX) of $14,652,430. This assumes that the cost of the Project is funded from non-shire-related sources. (EBITDA is 'earnings before interest, tax, depreciation and amortisation'. It is a measure of a business's operating performance without factoring in financing, accounting treatments or tax).

Additionally, the weighted average NPV for the three growth scenarios is $15,040,501. This is based on the assumption that the medium scenario is 50% likely, whilst the low and the high scenarios are 25% likely. The comparison of the Base Case (or 'do nothing' scenario) with the Runway Extension Project (Growth scenario) is summarised below:

Summary	NPV of Net Cash Flows (EBITDA – CAPEX)
Weighted average Base Case	$5,310,623
Medium Growth	$14,652,430
Weighted Average Growth	$15,040,501

In summary, the NPV illustrates that the Runway Extension Project delivers a higher NPV for the SWEK's Airport Business Unit than not doing the Project.

Cost-benefit analysis

While the Business Case evaluates the Project within the context of the Airport Business Unit only, the CBA attempts to measure the costs and benefits to the region as a whole, in this case the region the airport directly affects — East Kimberley. In an ideal situation, all of the benefits and the costs can be

quantified over the life of the Project and these costs and benefits can then be compared. However, there are a number of benefits and costs that are difficult to quantify. These have been identified as non-quantifiable benefits and costs.

The primary issue experienced at EKRA is the constraint posed by the runway length, which is already resulting in technical restrictions for the operation of particular aircraft. Without a runway extension, this will be a challenge for future operations and pose an inherent risk to the livelihoods and connectivity of the local community in this remote Australian landscape.

The ideal outcomes for the Runway Extension Project at EKRA are to:

- alleviate the potential future risks posed by having Code 3C aircraft as the design aircraft;
- reduce the cost of providing airline services for airlines operating larger aircraft;
- provide access to the industry standard aircraft for EKRA;
- increase consumption efficiency and decrease generalised cost of travel;
- increase potential for airline competition and lower airfares in the EKRA market;
- optimise the dynamic and technical efficiency of the airport;
- improve access to the region from the East Coast for VFR (visiting friends and relatives), business and tourism markets; and
- safeguard scope for future operations.

Project costs included in the CBA are capital expenditure for the Runway Extension Project, ongoing airport maintenance and capital expenditure, other airport operating expenses, and airline business development. The quantifiable benefits taken into consideration are:

- the potential for reduced fares on existing routes;
- the incremental value of a direct route to the East Coast of Australia;
- additional capacity on existing routes with a Code 4C aircraft;
- the potential for increased inbound visitation and tourism spend;
- jobs;
- freight; and
- airport revenue.

The BCR (benefit-to-cost ratio) for each outcome of the CBA presented in this report relative to the capital expenditure requirements for the runway extension are overviewed in the table below. The table indicates that each of the quantifiable benefits of the Runway Extension Project have positive BCRs, and are likely to provide a positive return on the capital investment required to construct the runway extension at EKRA from a financial perspective. This should be considered in addition to the significant non-quantifiable benefits of the Project, which are also discussed in this report.

Benefits of the Project	Scenario		
	Low	Medium	High
Fare reductions on existing routes	1.62:1		
Savings for passengers flying direct to the East Coast	1.16:1		
Increase in inbound leisure visitor spend in the region	1.29:1	4.01:1	7.45:1
Airport revenue	3.83:1	4.38:1	5.03:1

The financial assessment has been used to calculate the BCRs of the entire project, as well as specifically the total BCR of the Runway Extension Project, as outlined below. In this table, it can be seen that the NPV of the potential project benefits outweigh the costs and provide a positive BCR in the medium (most likely scenario), which indicates that the project is likely to be commercially viable.

	Scenario		
	Low	***Medium***	***High***
TOTAL ECONOMIC COSTS	$77,186,805	$79,095,605	$80,844,736
TOTAL ECONOMIC BENFITS	$138,550,662	$195,791,816	$267,603,743
BCR	1.8:1	2.5:1	3.3:1
Ratio of net benefits to project capital expenditure	7.9:1	11.2:1	15.3:1

The primary stimulant of this is passenger growth and the opportunities that exist when opening the market up to Code 4C operations. This should be considered in light of the significant non-quantitative and social benefits discussed in this report.

The non-quantifiable costs discussed in the report include noise, visitation numbers, and the impact on the natural environment, roads, and the capacity of the airport to maintain the status quo. Despite this discussion, the non-quantifiable costs of the Project are negligible for the East Kimberley community. The non-quantifiable and primarily social benefits discussed in the report are job creation, freight, liveability, connectivity, and the benefits beyond the construction phase.

Social benefit

The non-quantifiable social benefit for undertaking the runway extension is strong. The social benefits that are likely to stem from this Project will support regional development and provide the local community with connectivity and liveability benefits through increased access to healthcare and other integral services, as well as increased opportunities to visit friends and family outside the region.

Isolation risk

The risk of the East Kimberley (Kununurra) community becoming isolated due to the ageing of the airline fleet that currently services the airport is high. The Runway Extension Project is required to ensure that the community can retain reasonable air services into the future, serviced by industry-standard aircraft.

Job creation

It is estimated that job creation from the Runway Extension Project is likely to be in excess of 240 jobs during construction and in post-completion phases in areas such as construction, airport operations and regional tourism. Opportunities for Indigenous employment span all of the sectors above. For example, the on-airport cafe is operated by KGT Employment, a not-for-profit organisation focused on supporting Indigenous and non-Indigenous people in the Kimberley region to establish a career pathway by providing training, sustainable employment opportunities and support services (KGT n.d.).

The main limitation within the construction phase is the extent of any specialised skills required for civil and runway construction activities. We have estimated approximately 10%–12% of the construction workforce can be provided from local Indigenous labourers.

Sector	During construction	Post-completion	Indigenous
Construction	220		20–26
Airport Operations		13	13
Regional Tourism – (accommodation, etc.)		9	9

Freight

The existing aircraft servicing EKRA have limited freight capacity due to their size. This limits the potential for the development of a freight export market. It also limits high-value inbound freight destined for the community. For example, stakeholder interviews have indicated this currently constrains important medical supplies from being airfreighted to EKRA.

The opportunity presented by larger aircraft represents significant increases in freight capacity and associated economic benefits. The B737 could provide a 122% increase in freight capacity compared to the Fokker 100 aircraft, which operate the minority of EKRA's RPT operations at present. There is also an opportunity or potential for dedicated or purpose-built freighter aircraft to service the airport in the longer term.

Aircraft type	MTOW (kg)	Aircraft freight capacity (kg)
Embraer 170	38,600	600
Fokker 100	51,800	900
B737	78,240	2,000
A320	77,000	2,000

Export range

The Project stimulates increased export ranges for aircraft, and consequently freight opportunities. The range of a B737 or A320 aircraft from EKRA extends into Asia and could service hubs such as Jakarta, Singapore and Kuala Lumpur, as well as Australia's East Coast.

In addition, from a qualitative perspective, additional freight capacity in the market allows for increased access to goods and services for the local community and offers local producers and potential exports with a closer point for airfreight exports either domestically or internationally.

Specific opportunities and potential for the East Kimberley region include:

- Project Sea Dragon;
- Ord–East Kimberley Expansion Project; and
- other agriculture and produce products as identified in the Department of Agriculture and Food report (2015) entitled *Growing the North – Market opportunities for irrigated agricultural produce from northern Western Australia* produced by the Department of Agriculture and Food.

Liveability

The liveability of a remote region is intrinsically linked to its connectivity and the range of services and facilities available within the remote community and in other centres. Airports play an important role in offsetting the geographical disadvantages of living in remote parts of Australia by delivering essential and emergency services (Deloitte Access Economics, 2018), including key social benefits through:

- **Accessibility**
  - more affordable airfares to travel from EKRA
  - more destination options for travellers to and from SWE.
- **Healthcare**
  - linking the community to specialist medical treatment that may not be available in existing networks or destinations available from EKRA;
  - providing more efficient accessibility and connectivity to specialist medical services in East Coast capital cities through direct point-to-point services to the specialist
  - offering increased access opportunities for medical professionals to visit Kununurra and the Kimberley region and the surrounding very remote communities.
- **Services and facilities**
  - growth in retail, hospitality, health and other sectors within existing townships
  - increased visitation to the region to support local services and businesses.

Population growth

A runway extension for EKRA, in conjunction with other regional projects, may be a catalyst for population growth in the region, which will fuel additional air services, as well as social connectivity for the community.

Local community

The Project will guard against the risk of increased isolation once the current aircraft leave service. The potential for direct East Coast flights would be a stimulant for increasing connectivity and the feeling of connectedness for the local community. It is vital for remote communities to be able to access medical services in other cities or visit friends and family. Social connectivity is particularly valuable in a nation such as Australia, known for its considerable distances between major urban hubs and isolated remote regions like Kununurra (Deloitte Access Economics, 2018).

GDP growth

The smaller populations of remote communities, with slow growth require regular air services to maintain connectivity to goods, services and trade. Generally, airport services have a positive relationship with economic growth, Gross Domestic Product (GDP), and increases in GDP can be affiliated with increased air services and population growth (Baker et al., 2015).

Business travellers

The Kimberley is home to a number of large projects in sectors such as tourism, resources and agriculture, and so there are people who travel to and from EKRA for business purposes. At present, to travel to EKRA from Australia's primary business centres on the East Coast involves a transfer flight via Perth, Darwin or Broome. The Runway Extension Project is likely to make a direct air service to an East Coast port viable, which would minimise travel-time requirements and increase connectivity for business travellers.

Tourists

The major drawcard for the Kimberley region is tourism. Direct services from one of Australia's primary international gateways on the East Coast in addition to the existing gateways into Perth and Darwin would increase the connectivity of the Kimberley for international visitors to Australia. Tourism Research Australia (2017a) estimates that approximately 15,000,000 international visitors will arrive in Australia in 2026–27.

As a whole, the Runway Extension Project will increase regional accessibility for business and tourism travellers, plus the local community travelling outbound. The improvements in connectivity will contribute to the economic performance of the wider region through enhancing productivity (Oxford Economics, 2011), as well as lessen the impact-generalised cost of travel to the region through the increase in route availability and the cost of airline operations. EKRA should maintain its connectivity to the existing network, as well as strive for the implementation of additional routes, in order to be the gateway to the Kimberley.

Benefits beyond the construction phase

Large-scale infrastructure projects such as the proposed runway extension at EKRA would bring long-term benefits to the airport and the greater region for an extended period. As these are diverse and are reliant on the outcomes of the Project, they have not been quantified.

Some of the general benefits are:

- population growth;
- stimulation of demand for residential and industrial uses in the regions townships;
- job creation and industry development in the region (e.g. airport, tourism, retail and hospitality);
- opportunity for the airport to have the capacity to accommodate larger aircraft and greater passenger numbers and appropriately respond to changes in demand;
- inbound and outbound region accessibility; and
- ensuring airport aviation infrastructure is not a constraint to future opportunities
- encouraging new airlines and operators to choose Kununurra as a destination.

Emergency services

The extended runway will improve the capability for EKRA to accommodate larger aircraft deployed by emergency services and defence for various roles including:

- a forward fire response base;
- safe haven during cyclone season; and
- a forward defence response base.

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Abbreviations

ABS	Australian Bureau of Statistics
AsA	Airservices Australia
BCR	Benefit Cost Ratio
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CAPEX	Capital expenditure
CASA	Civil Aviation Safety Authority
CBA	Cost-benefit analysis
CPI	Consumer Price Index
CY	Calendar Year
EBITDA	Earnings before interest, tax, depreciation and amortisation
EKRA	East Kimberley Regional Airport
FIFO	Fly-in, fly-out
FTE	Full-time equivalent
FY	Financial Year
GDP	Gross Domestic Product
IVS	International Visitor Survey
NPV	Net present value
NVS	National Visitor Survey
MTOW	Maximum take-off weights
O&D	Origin and Destination
PAPI	Precision approach path indicators
PCN	Pavement Classification Number
RAAF	Royal Australian Air Force
RPT	Regular public transport
SWEK	Shire of Wyndham-East Kimberley
TAG	The Airport Group
VFR	Visiting friends and relatives
WA	Western Australia

Reference documents and data

- 2017 EKRA Asset Management Plan
- 2017 Master Plan
- 2016 GHD Prefeasibility Study
- 2018 EKRA Long-Term Financial Plan
- Airport operating statistics
- Bureau of Infrastructure, Transport and Regional Economics
- ABS Census data
- National Visitor Survey (NVS)/International Visitor Survey (IVS)
- REMPLAN Economy
- Published airline fare data.

INTRODUCTION

1. INTRODUCTION

The Airport Group (TAG) has been engaged by the Shire of Wyndham – East Kimberley (SWEK) to provide support services for a project to extend the runway at East Kimberley Regional Airport (EKRA or Kununurra Airport). EKRA services the very remote community of Kununurra in the northeast of Western Australia. The township is 828 kilometres from Darwin and 3,212 kilometres from Perth. EKRA is the gateway to this region for the community and visitors and a means of access to services and connectivity to the rest of Australia. The airport has regular public transport (RPT) services, which are serviced by Air North and Virgin Australia with routes to Broome, Darwin and Perth. These services are operated by Fokker 100 and Embraer 170 aircraft.

Aviation is a critical service to remote communities in Australia who are regularly impacted by higher costs of travel, including airfares, as well as living costs, despite connectivity being key to the community's health and wellbeing.

The SWEK and EKRA are currently considering the extension of runway 12/30 to a future length of 2,430 metres from its current length of 1,829 metres, an increase of 601 metres. This would see the airport upgrade from Aerodrome Reference Code 3C to Aerodrome Reference Code 4C. The upgraded runway would give the airport the potential to be used by the most widely utilised commercial aircraft in Australia and the world — the Boeing 737 and Airbus 320 — thus guaranteeing the region will not only remain connected to the existing ports of Perth and Darwin but will have the potential to be connected to all major cities in Australia, as well as parts of South East Asia.

The proposed runway extension at EKRA will be integral in growing Australia's north and providing a gateway to the region, as well as support services for emergency services, and become a key alternative airport for the northwest in the event of emergencies.

1.1. Purpose of this report

The purpose of this report is to support the SWEK to achieve the extension of the runway at EKRA (including associated works to taxiways, apron and lighting/navigational aids) through the preparation of a cost-benefit analysis (CBA).

The report:

- reviews the proposed project and pre-feasibility study undertaken by GHD in 2016;
- reviews and assesses the potential of the proposed EKRA Runway Extension Project;
- reviews the social and economic benefits of the Project and uses them as inputs to produce a CBA that assesses these benefits against the project costs and a Base Case ('do nothing') scenario; and
- identifies whether the future potential benefits to EKRA, Kununurra and the SWEK outweigh the initial project costs and Base Case operating scenario through the use of net present values (NPVs).

1.2. Objectives of this report

The objectives of this report are to:

- provide the SWEK with greater understanding surrounding the Runway Extension Project and its potential future financial feasibility;
- assess the quantifiable costs and benefits of the Project;
- discuss the non-quantifiable costs and social benefits of the Project; and
- provide the SWEK with data and information that can be utilised in the preparation of a funding application for the Runway Extension Project.

1.3. Reference data

The production of this report also takes into consideration a large number of data sources, some of which are referenced in the text. The data is extrapolated from:

- Kununurra Airport operating statistics;

- Bureau of Infrastructure Transport and Regional Economics (BITRE) aviation data;
- ABS Census;
- Tourism Western Australia (TWA)/National Visitor Survey (NVS); and
- Fare scrapes.

1.4. Report structure

The report has 10 key sections:

1. Introduction
2. Airport overview
3. Strategic assessment framework
4. Objectives of the Project
5. Increasing production efficiency
6. Options
7. Future demand
8. Financial analysis
9. Evaluation of the options
10. Summary of the CBA

AIRPORT OVERVIEW

2. AIRPORT OVERVIEW

2.1. Airport context

East Kimberley Regional Airport – Kununurra (EKRA or Kununurra Airport), operated by the Shire of Wyndham – East Kimberley (SWEK), serves a catchment population of approximately 7,400 residents, as published by REMPLAN and sourced by the SWEK. Of these, around one-third identify as Torres Strait Islander or Aboriginal. According to data provided by the SWEK, the area attracts a relatively high number of non-residents. At Census Night 2016, around 4,000 non-residents, thought to have been visiting the region for both business and holiday purposes, were counted.

The East Kimberley must be considered one of the more remote regions not only in Western Australia but in Australia overall, with the closest major city, Darwin, around 828 kilometres, or more than nine driving hours, to the northeast and Perth more than 3,000 kilometres to the southwest. Access by air is of critical importance to the region, which is currently[1] provided by both Airnorth (9 weekly departures to Darwin, 7 to Broome, 1 to Perth) and Virgin Australia (4 weekly departures to Perth).

2.2. Airport site

EKRA (IATA: KNX, ICAO: YPKU) is located in the Kimberley region of Western Australia, occupying a site of 275 hectares and owned and operated by the SWEK. The airport infrastructure is currently limited to accommodating Code 3C aircraft operations. EKRA is serviced by numerous operators, including Virgin Australia, Airnorth, charter airlines, and other general aviation users such as the Royal Flying Doctor Service.

Figure 1: EKRA site from the air

2.3. Airside infrastructure

EKRA has a single sealed runway, which is 1,829 metres long and has a width of 30 metres. The runway is capable of up to Code 3C operations (namely Embraer ERJ170 and Fokker 100 operations). It has a flexible pavement with a current pavement classification number (PCN) of 40 and a 'low strength' subgrade strength category. The runway is illuminated with low-intensity runway lighting, which is pilot activated. EKRA will need to replace the AT-TVASIS in the near future.

EKRA also has a taxiway network made up of seven taxiways, as can be seen in Figure 2. Taxiway A, which provides the main access between the runway and apron areas, is the only illuminated taxiway.

[1] Northern Summer 2018 scheduling season.

Kununurra Airport has three primary apron areas: the RPT apron, the east general aviation (GA) apron, and the west GA apron. The RPT apron has flood lighting.

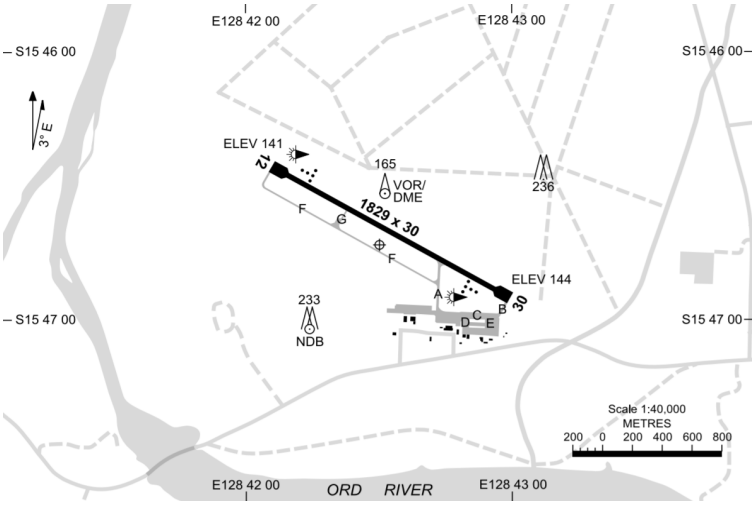


Figure 2: EKRA Airfield Layout

Source: Airservices Australia

2.4. Landside infrastructure

The terminal building at EKRA, which was significantly upgraded in 2011, has an internal area of 1,680 square metres and a footprint of 2,480 square metres including external areas. The landside infrastructure can be seen in Figure 3.

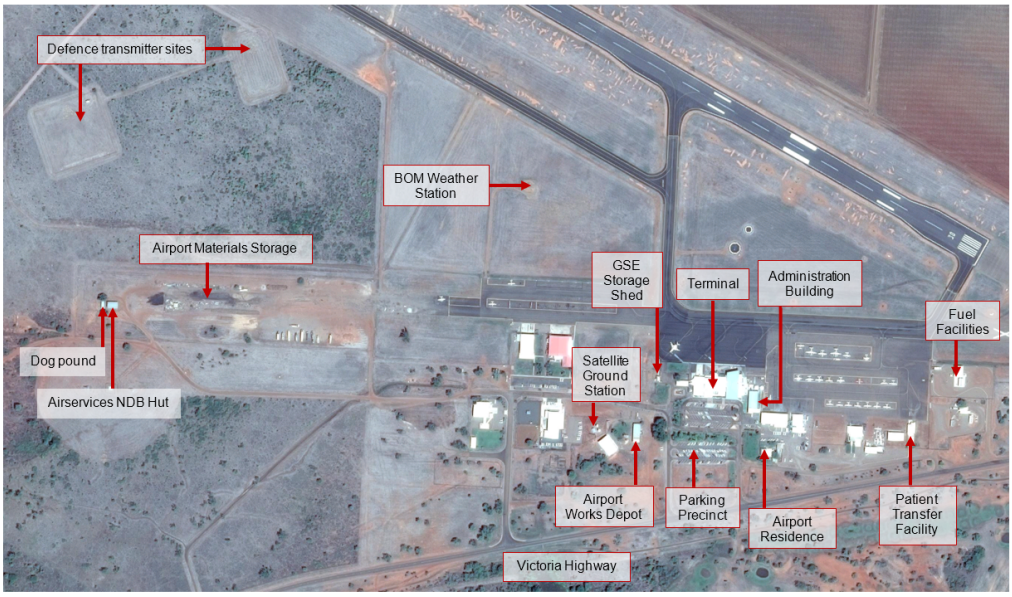


Figure 3: EKRA Landside Infrastructure Overview

Source: TAG, 2017

Other landside infrastructure includes:

- fuel facilities
- a Bureau of Meteorology weather station
- Patient Transfer Facility for aeromedical operations
- an Airservices Australia satellite ground station
- Department of Defence transmitter sites
- Airport Works Depot

- Airport Materials Storage
- SWEK on-airport residence
- vehicle parking for rental cars, shuttle buses, staff, and visitors to EKRA.

2.5. Historical traffic development

Historical traffic development at Kununurra Airport shows some interesting trends, evident in Figure 4, below. High passenger throughput up to calendar year (CY) 1994 is followed by a collapse to less than one-third in CY2002 and CY2003, apparently a result of Ansett first withdrawing its services, then collapsing, and, thereafter, Qantas discontinuing Bae146 operations. The decade starting in 2004 saw continuous traffic growth, undoubtedly helped by resources-related traffic during the mining boom.

Since CY2012, BITRE has published both RPT and charter traffic, which is signified in Figure 20 by a jump in total traffic during that year. After Virgin Australia (VA) acquired Skywest in 2013, route competition at Kununurra Airport came to a halt, leading to a market duopoly and ultimately to virtual route monopolies, described above. During CY2017, RPT traffic at Kununurra Airport stood at 70,000 passengers, less than what was achieved 30 years earlier. Including charter traffic, CY2017 total traffic volume was 104,600.

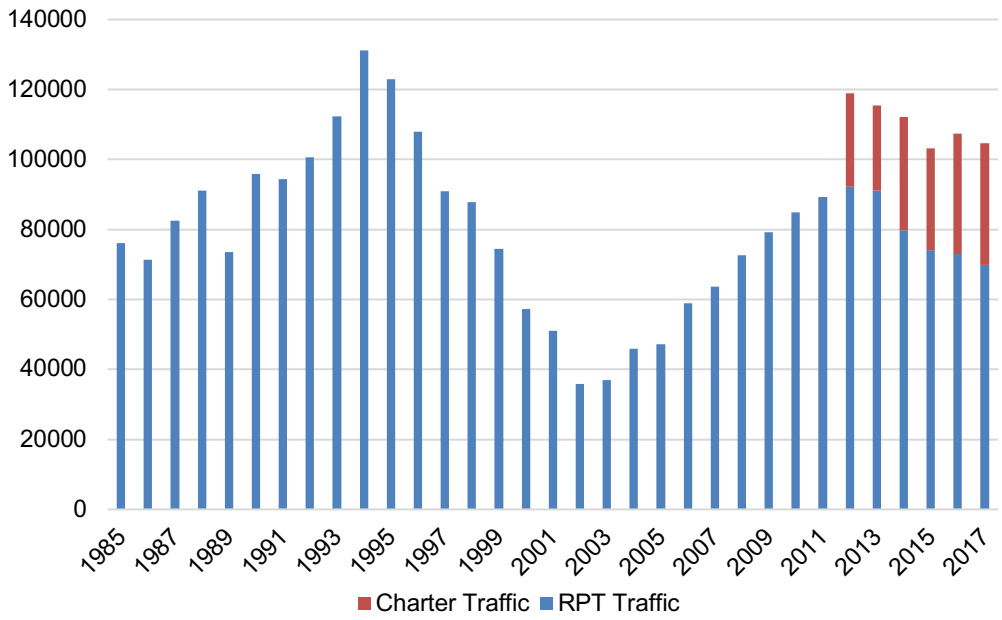


Figure 4: Kununurra Airport historical passenger movements (CY 1985–2017)

2.6. Overview of proposed Runway Extension Project

Due to runway length constraints (1,829 metres), Kununurra Airport is limited to Code 3C aircraft operations, making Airnorth's Embraer 170 (76 seats) and VA's Fokker 100 (100 seats) aircraft (currently in use at EKRA) among the largest types that the airport is licensed to handle. These types limit it not only in terms of available seat capacity, but also in terms of network breadth. South-Asian hub airports are out of Kununurra Airport's current range and services to Australia's East Coast are challenging, being either beyond the Fokker 100's range and/or the cost structure does not lend itself to attractive fares on flights close to 3,000 kilometres in distance.

The Kununurra Airport Master Plan was updated with the assistance of TAG and adopted by Council in July 2017. The Master Plan confirms B737-800 and A320 as the design aircraft and upgrading of the Kununurra Airport from Code 3C to 4C.

The extended runway would accommodate Code 4C aircraft, making aviation connections to the East Coast and South East Asia possible. As well, these efficient aircraft could reduce airfares on the routes, improving access and also stimulating demand.

Capital expenditure requirements for the upgrade are estimated at just over $17.4 million (GHD, 2016), which would have to be sourced through grants from one or a combination of governments (federal and

state). As grant applications by the SWEK will need to rely on robust business cases and cost-benefit analyses, this component of the overall Project reviews aviation business development opportunities for Kununurra Airport over the short to medium term.

It has been identified that Code 4C-compatible operations are desirable for EKRA in order for it to ensure aviation connections for the future, support future operations, the development of the airport and the greater community, and leverage the tourism potential for the region.

A pre-feasibility study for the runway extension was undertaken by GHD in 2016. The study details the concepts and options available for the runway extension and upgrade of taxiways and RPT apron pavements to enable Code 4C operations. Code 4C operations would allow EKRA to facilitate Boeing 737 and Airbus A320 operations for RPT services and would also expand the range of capability for non-stop destinations to and from EKRA.

The proposed runway length of 2,430 metres is the maximum possible length achievable on the site and is considered to be sufficient for operations by B737 and A320 jet aircraft. The limitation on runway length achievable within the site is due to the irrigation channel to the east and the land falling towards the Ord River to the west. The proposed future runway length is sufficient to operate B737 and A320 aircraft and to accommodate arrivals and departures from interstate airports and some airports within South East Asia.

Current CASA (Civil Aviation Safety Authority) aerodrome design standards generally require a 45-metre-wide runway for Code 4C operations. However, the CASA Narrow Runway Supplement allows grandfathering dispensations if airline operators are in agreement. The regulations specified in CAAP 235A-1(0) in November 2014 for the minimum runway width for aeroplanes engaged in RPT and charter operations with a maximum take-off weight greater than 5700 kilograms would enable B737 and A320 aircraft to operate in and out of EKRA on the existing 30-metre-wide runway. GHD adopted a 30-metre-wide runway as it has been identified that the maintenance of such a runway will be suitable for future Code 4C operations, and the Narrow Runway Supplement can be adopted by the SWEK for runway operations. GHD recommended that the SWEK adopt this model as it would represent significant cost savings in the Runway Extension Project. GHD notes that both Qantas and Virgin Australia were consulted, and they both indicated that there were no foreseeable issues with EKRA having a 30-metre-wide runway. Both Airlines have implemented the Aeroplane Flight Manual (AFM) in support of the narrow runway operations currently in place.

The GHD pre-feasibility study also took into consideration a pavement investigation for the proposed runway extension on Runway 12/30 and an investigation of the capability of existing Taxiways A, B and C and the RPT apron with regard to future aircraft traffic and design. To carry the loading of the design aircraft, the extended runway will require a 60-millimetre asphalt mix on a 150-millimetre crushed rock base, on a 250-millimetre cement-modified sub-base, on a 700-millimetre river shingle, on 100-millimetres of sand. This pavement thickness is the same as for the existing runway pavement.

For Taxiways A, B and C, strengthening is required, which would consist of 260-millimetres of cement-modified base placed on the existing pavement with 60-millimetre asphalt surfacing. The existing RPT apron pavement will only require a 60-millimetre asphalt overlay for strengthening and shape correction.

The GHD study evaluated four possible runway-extension concepts and chose option four, with a proposed runway length of 2,430 metres, as the best option for the future runway length for EKRA. The GHD study provides an overview of lighting and pavements for the runway and taxiway upgrade, in addition to an overview of considerations that should be taken into account in the detailed design phase. Further, to comply with relevant standards for runway-strip width to support Code 4C operations, land acquisition may be required and has been allowed for in the indicative cost estimate. At present, it is expected that the current 150-metre runway strip is suitable to meet both airlines and CASA requirements, but the requirements to allow for a 300-metre strip for Code 4C aircraft in future is good forward planning. The indicative capital expenditure costs for land acquisition have been included for airport safeguarding purposes.

GHD's recommended runway parameters are outlined in Table 1.

Table 1: Overview of proposed runway works at EKRA

	Required works
Western end extension	540m pavement extension
Eastern end extension	61m pavement extension

Total new 12/30 runway length	2,430m
Runway width	30m
Runway shoulders	3m each side
Runway strip width	300m (150m without land acquisition)
Taxiway width	15m

Other considerations for the SWEK in this process and when progressing to detailed design are:

- relocation of an illuminated wind-direction indicator; and
- land acquisition.

2.6.1. Cost estimate

The indicative preliminary cost estimate to complete the Runway 12/30 extension and pavement upgrade based on the pre-feasibility study is in the order of **$17.4 million** (incl. GST). The cost estimates will be confirmed through the detailed design phase.

The cost estimate used in the GHD pre-feasibility study is a preliminary indicative estimate. Actual costs and other variables may be different from those used in developing the estimate and may change.

The GHD cost estimate assumed:

- An overall contingency of 30% has been applied to the construction cost estimate. This is considered appropriate for this level of study.
- A total runway pavement extension of 601 metres (Option 4) has been costed, with the pavement-layer thickness and asphalt overlay material as outlined in Section 6.
- The runway remains 30 metres wide.
- All runway pavement fill material will be sourced and imported from suitable local borrow pits.
- Replacement of the existing runway edge lights and associated pit and duct, and two single-sided PAPIs (precision approach path indicators) have been included in the indicative construction cost estimate.
- Inclusive of engineering design and tender preparation fees.
- Contract administration, project management and supervision fees by the SWEK are included.

Additional geotechnical investigation at a cost of $50,000 has been included.

This estimate was presented in the GHD's pre-feasibility study in 2016. For this report, those costs have been escalated to allow for the time for funding approval; and the expected time of commencement is outlined in Section 2.6.1. Hence, the future project value when the Runway Extension Project is expected to be under construction is estimated to be **$19,268,938** or **$19.3 million.**

2.6.2. Implementation

A high-level implementation schedule for the runway extension has been prepared. It is based on the assumptions outlined below and underpins the financial model that has been prepared for the Runway Extension Project. The implementation process includes the procurement, design and construction phases, as well as the capital expenditure requirements for the Project. The implementation plan is indicative only and includes contingences subject to funding applications and approvals, as well as confirmation of design and construct timeframes. It may be found that the construction of the runway can be completed in less than 12 months.

This value has been escalated at actual CPI (consumer price index) values for Western Australia for historical years and future years at 2.5% to FY2021, the future value of when the Runway Extension Project is expected to be under construction, and incurring costs. The capital expenditure required for the Project is $19.3 million

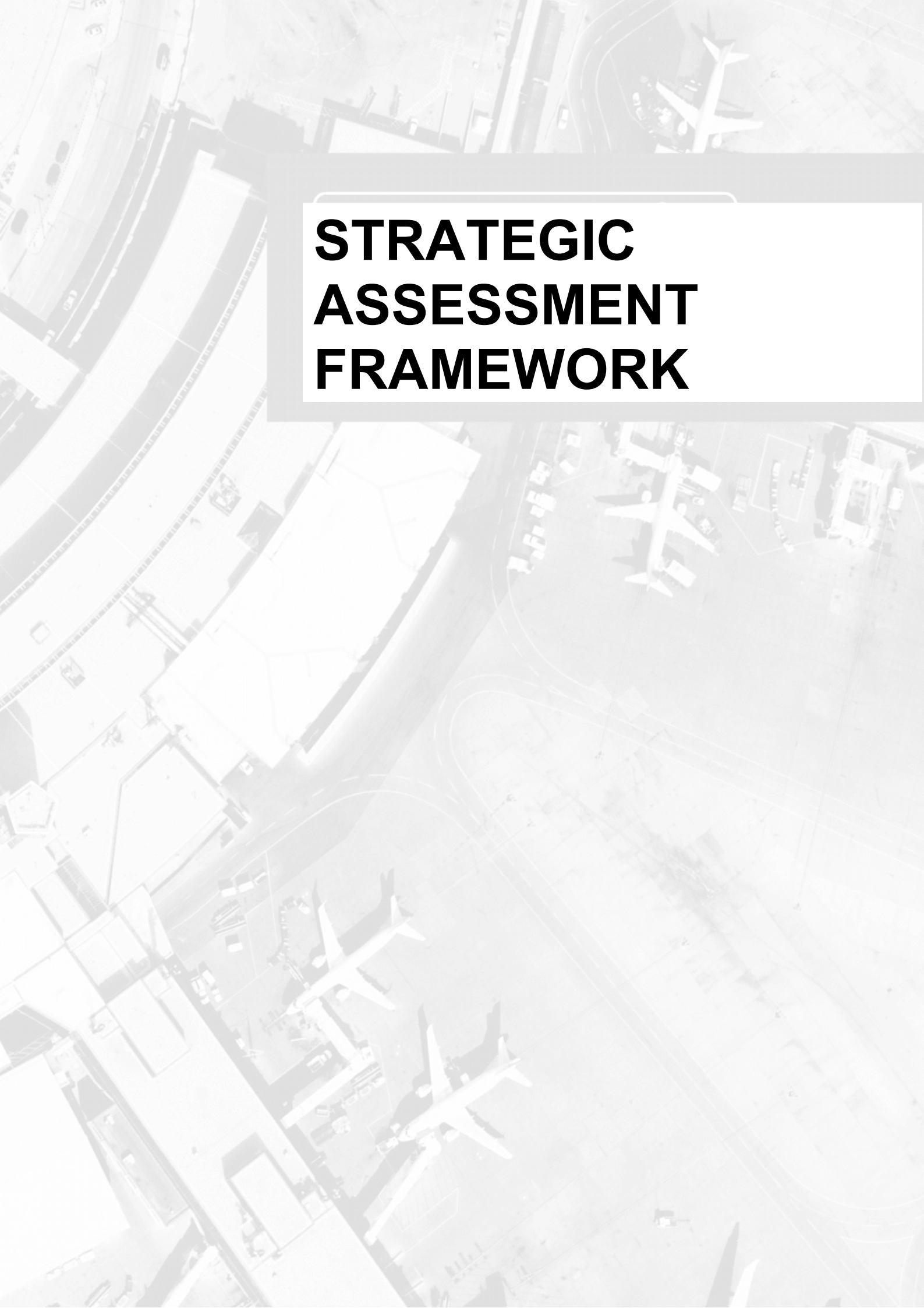
The implementation plan is based on the above future escalated capital expenditure costs excluding GST (goods and services tax). The implementation plan makes the following assumptions:

- Funding approval is granted by the end of FY2020.

- The SWEK engages in a design and construct procurement process.
- Capital expenditure values are as per the breakdown in the GHD report (escalated to identify future value).
- The completion of construction and opening of the runway occurs by 1 July 2022.
- The consequential costs and benefits thereafter are as modelled in the scenarios.

	FY 20		FY21		FY 22	
Actions	**July - Dec**	**Jan - June**	**July - Dec**	**Jan - June**	**July - Dec**	**Jan - June**
Funding application						
Funding approved						
Procure design and construct contract						
Runway design development						
Runway construction						
Capital expenditure						
Design consultants				$1,549,740		
Construction					$17,719,198.26	

Figure 5: Indicative implementation timeframe for the Project and capital expenditure



STRATEGIC ASSESSMENT FRAMEWORK

3. STRATEGIC ASSESSMENT FRAMEWORK

The Western Australian State Government recognises that regional airports play a crucial role in increasing connectivity and driving local economic growth. The strategic importance of each airport to the state can be difficult to measure. During 2017, TAG was engaged by the Western Australia Department of Transport and the Western Australian Department of Regional Development to develop a criteria-based strategic assessment framework.

The purpose of the assessment framework was to provide the state government with a tool to prioritise state funding in support of regional economic development.

Four key criteria were adopted to assess the level of strategic importance of each of 15 WA regional airports, which are as follows:

- potential for interstate and international linkages
- potential as a tourism destination
- potential as a freight hub
- potential to aid regional industry development.

Each criterion has assessment elements associated with it that are used to gauge the extent to which each airport meets a criterion.

Based on the criteria and assessment elements outlined above, the strategic development potential of 15 WA regional airports was assessed as either **'high'**, **'moderate'**, or **'low'** .

The airports that were assessed and ranked in the study are listed in Table 2, below.

Table 2: Strategic Assessment Airports

Region	Regional Airport	Local Government
Gascoyne	Carnarvon	Shire of Carnarvon
	Learmonth (Exmouth)	Shire of Exmouth
Goldfields-Esperance	Esperance	Shire of Esperance
	Kalgoorlie-Boulder	City of Kalgoorlie-Boulder
Great Southern	Albany	City of Albany
Kimberley	Broome	Shire of Broome
	Derby	Shire of Derby – West Kimberley
	Derby-Curtin	Shire of Derby – West Kimberley
	East Kimberley Regional Airport (Kununurra)	Shire of Wyndham – East Kimberley
Mid West	Geraldton	City of Greater Geraldton
Pilbara	Karratha	City of Karratha
	Newman	Shire of East Pilbara
	Onslow	Shire of Ashburton
	Port Hedland	City of Port Hedland
South West	Busselton-Margaret River	City of Busselton

Potential for interstate and international linkages

The potential for interstate and international linkages was assessed through the proximity to a major airport (Perth), the existence of commercially viable interstate or international linkages, and visitation to the region by air travel.

EKRA is the only airport in public ownership and operation to be ranked as having **high** development potential for interstate and international linkages.

Potential as a tourism destination

The airports were assessed to identify their ability to aid the region in becoming a tourism destination. A ranking of 'significant tourism offer' in each region was identified, including internationally, nationally, and locally recognised tourism offers. In addition, the visitation to the region by air travel was reviewed for each airport and the strategically significant airports, as identified by Tourism WA.

EKRA was one of two local government airports found to have **high** strategic development potential to aid tourism destination and development.

Potential as a freight hub

The consideration of the potential of each airport as a freight hub considered the proximity to Asian centres and Perth, the existence of interstate or international RPT services, and the existence of a project requiring airfreight in the region.

Given the existence of international connections, only Port Hedland International Airport was ranked as having a **high** development potential for a freight hub.

However, of the 15 local government airports in the study, EKRA was one of seven identified as having **moderate** strategic development potential.

Potential to aid regional industry development

The ability of the airports to aid regional industry development was assessed based on their existing services, including intrastate, interstate, and international linkages.

EKRA was one of two local government airports found to have a **high** level of strategic development potential to facilitate and/or aid industry development.

In summary, EKRA was the only local-government-owned airport of the 15 airports assessed that was found to have high strategic development potential in three of the four categories, and moderate in the fourth.

OBJECTIVES

4. OBJECTIVES OF THE PROJECT

4.1. The main issue

The length of the existing runway at EKRA imposes a constraint on the type of aircraft that can operate into and out of the airport. This constraint imposes an economic cost on the East Kimberley region. The length of runway restricts the aircraft that can operate to a size of no more than 100 passengers.

The aircraft types currently operating to EKRA have significantly reduced freight capacity, as well as operating range, and in the current operating environment, EKRA is currently unable to service dedicated Code 4C freight aircraft. RPT and commercial aircraft operating to EKRA are limited by their inability to fly directly to the important East Coast ports of Australia with reasonable loads. These ports are an integral connection for the growing number of inbound international tourists to Australia.

The current route network operating from EKRA is to Darwin, Perth and Broome. Passengers originating from the East Coast need to connect via these ports, which adds significant time and cost penalties.

4.2. Increased economic efficiency of air services to East Kimberley if constraint removed

The implementation of the runway extension would remove the constraint imposed by the length of the current runway at EKRA. This would increase the efficiency of airport and airline operations supplied at EKRA and facilitate:

- **For airlines and aircraft using EKRA:** increased productivity for airline operators through enabling and facilitating the use of a more technically and economically efficient domestic aircraft (B737/A320) and decreasing the operating costs of existing regional aircraft (Fokker 100; ERJ170).
- **For airport users and freight operators:** efficient consumption of airline services would be improved by lower costs, significantly reduced travel time, and the addition of direct connections to the East Coast of Australia and potentially South East Asia.
- **Emergency management:** the capacity for EKRA to provide support for aircraft on emergency management projects including bushfires and flooding.
- **Alternative airport:** EKRA becoming an alternative airport to Darwin International Airport for emergencies and when the runway at Darwin is unavailable.
- **Growing Australia's north:** EKRA becoming the gateway to the northwest of Australia through increased capacity and a wider route network.
- **Freight:** time-critical, high-value agriculture and aquaculture freight exports from EKRA to Australia and South East Asia, including potential for future facilitation of dedicated freighter aircraft. An overview of aircraft range from EKRA can be seen in Figure 5. This map provides the context for opportunities for future direct connectivity from EKRA.

Each of these potential efficiency gains can alter the volume and value of airline and airport services supplied at EKRA. Additional benefits could occur through:

- increased flexibility of airports and airlines to adjust to future changes in the economic environment (i.e. by increasing 'dynamic efficiency'), including the ability to expand the supply of airport and airline services to meet unexpected future increases in demand, as well as the ability to adjust to changes in technology (e.g. aircraft types) and costs (e.g. the cost of fuel, labour and aircraft costs);
- increased sales of goods and services to tourists who would not have visited the Kimberley region without the efficiency gains in airline services;
- increased competition in the markets for airline services;
- improving distributional equity by improving the access of individuals and businesses in the East Kimberley region to affordable, convenient, and demand-responsive passenger airline and airfreight services;
- increasing connectivity and opportunities for air travel availability to the regional community and other social and welfare benefits through connectivity to family and friends, as well as healthcare.

Achieving these benefits would promote outcomes sought by local, state and federal governments, including those contained in the:

- Wyndham East Kimberley Shire Council's Strategic Community Plan 2017–27;
- National Infrastructure Plan 2015;
- Western Australia's Tourism Plan 2025; and
- Tourism 2020.

In the following sections, this report will discuss the opportunities and potential for increases in:

- production efficiency (i.e. reduce the costs of providing airline services at EKRA);
- consumption of airlines services (i.e. additional passengers using airline services at EKRA);
- generalised cost of airline services to users;
- dynamic efficiency (changes in the operating environment); and
- external costs and benefits of the Runway Extension Project, including social benefits.

PRODUCTION EFFICIENCY

5. INCREASING PRODUCTION EFFICIENCY

5.1. Reduce the cost of providing existing airline services

The current length of the runway at the East Kimberley Regional Airport (EKRA) reduces the technical efficiency of operating to EKRA and increases the costs of operating aircraft to EKRA. The airport's current infrastructure constrains the departure loads of Fokker 100 aircraft. Outbound flights from EKRA are constrained by 15% all year around, as well as constraints during hot weather where F100 aircraft commonly have to wait to depart from EKRA until the weather cools down and then have to stop to refuel in Newman before proceeding to Perth. This increases the unit cost of those services and increases pressure on inbound services where there are no operational restrictions. Extending the runway will provide adequate runway length for aircraft to generate enough speed to take off with reasonable passenger loads and freight.

EKRA's ability to handle larger aircraft types, and not have to deal with the operating restrictions on the existing aircraft (Fokker 100s), would significantly increase efficiency of operating to EKRA, reducing unit-operating costs. In practice, these operating cost reductions have usually passed through to lower consumer ticket prices, benefiting consumers. The inherent operating efficiency of the Code 4C B737 aircraft is illustrated in the table below. Table 4 compares the fuel consumption cost per seat of the existing aircraft serving EKRA (ERJ170, F100) and the B737. The cost-per-seat saving ranges from 25% to 43%. Fuel cost is one of the major flight operating costs of an aircraft. Across-the-board savings in wages and maintenance are also realised by using newer, more efficient aircraft; these savings are then passed on to the customer, leading to lower airfares and route stimulation.

Table 3: Aircraft operating cost per seat

Aircraft type	No. of seats	Cost per seat ($)
ERJ170	76	$40.26
F100	85 (outbound)	$51.76
	100 (inbound)	$44.00
B737	170	$29.76

In addition, there will be cost savings to the airport operations as it is more cost effective for screening and other terminal services to be performed on larger aircraft.

5.2. Provide access to industry-standard aircraft (B737/A320)

Increasing the length of the runway by the proposed 601 metres for a future total runway length of 2,430 metres would allow for B737/A320 type aircraft to operate into EKRA. These aircraft are the industry standard and workhorse of the industry due to their capacity (approx. 170 passengers), low-operating costs, and range. They are used by airlines for domestic services in Australia, as well as some international services to New Zealand and the Pacific. The B737/A320 are the design aircraft for the proposed runway extension.

The runway extension provides the opportunity to facilitate the operations of aircraft, which can provide non-stop services to Australian East Coast capital cities. This provides a point-to-point connection for tourism, visiting friends and relatives, and other common reasons for travel, and reduces the time and cost associated with transfers or stopovers on domestic travel.

The proposed runway extension at EKRA will allow aircraft arrivals and departures from interstate airports and some airports within South East Asia. A comparison of the restricted range of the aircraft that currently services EKRA, Fokker aircraft (red ring), versus the extended range B737 (blue ring) aircraft is outlined in Figure 5.

Figure 6: Range of B737 and Fokker aircraft from EKRA
Source: GHD 2016

The runway extension will enable EKRA to extend its route network and destination opportunities to the East Coast and South East Asia. Airbiz (2012) found that destinations can increase and develop its international visitor numbers without initially attracting a direct international air service and that the ongoing importance of domestic flights to enable connectivity for regional airports beyond the nation's gateway airports will continue to be the enabler for growth.

There is an ongoing opportunity for EKRA to increase its network connectivity within the blue ring once it is Code 4C-aircraft capable, the opportunities for which are outlined below. In addition, the social value of new services is high for passengers and businesses located in regional/remote areas (Merkert & Beck, 2017). The quality of services from EKRA to capital cities and regional centres is closely linked to quality of life and resilient social networks (Baker et al., 2015).

The runway extension provides an ongoing opportunity for more routes to EKRA, which can also stimulate tourism and accessibility for locals through new routes to and from EKRA. The current situation with two RPT airline services at EKRA does not guarantee a competitive environment nor provide assurance that market forces are delivering price restraint (West Australia Legislative Assembly 2017), some of which may not be evident within the planning period for the financial modelling undertaken in the Business Case Report.

The benefit of operating the Code 4C (B737) aircraft is illustrated in Table 5, below, which compares the operating fuel cost per seat. Code 4C is significantly cheaper, which provides the operator with the opportunity to create budget ticket prices and stimulate demand.

Table 4: Aircraft range and cost per seat/hour

Aircraft type	No. of seats	Aircraft range (km)	Fuel burn (kg/hour)	Cost per seat ($/hour)
ERJ170	76	3,982	1,350	$20.13
F100	100	3,170	2,200	$22.00
B737	170	5,449	2,530	$14.88

5.3. Increasing consumption efficiency

In addition to improving the efficiency with which airport and airline services are supplied, the proposed runway extension is also intended to improve the efficiency for which those services are used by:

- reducing the generalised cost of airline services at EKRA to both passengers and airfreight users.
- increasing the efficiency with which airline services are used.

5.4. Generalised cost of airline services to users

The technical efficiency of operations to EKRA is constrained by the current runway length, which increases the unit cost of operations at the airport. This is generally passed on to consumers, which increases the 'generalised cost' of travel, including:

- naturally higher cost of airfares to the regions experienced in Australia due to less competition;
- higher airfares and passenger charges at regional airports to compensate for the higher costs of suppling airline services at EKRA;
- additional costs of airfares for linking or in transit flights to reach EKRA from the East Coast such as via Perth or Darwin;
- the opportunity cost of the additional time that passengers and freight have to spend in transit to reach EKRA.

The scale of generalised costs for flights to and from EKRA can be seen in the review of lowest available airfares in Table 5. This also includes a comparison for the driving time and estimated cost for travel via car to these destinations. As a whole, generally one-way fares to all capital cities are in excess of $600, excluding Darwin. The review of airfares makes the following assumptions:

- Booking on Wednesday 10 October 2018 for travel on Wednesday 31 October 2018 (three weeks ahead of date of travel).
- Indicative one-way cost is the lowest available fare on Skyscanner, regardless of the airline.
- The study is for how the routing would operate on the study day only and does not take into consideration the time of the flight during that day.
- More preferable times and airlines may be more expensive.
- Airfares are per person whilst driving cost is per vehicle.

Table 5: Travel to capital cities from Kununurra and lowest available airfares

Capital city destination	Distance from Kununurra	Flight time (and routing)	Indictive cost ($/one way)	Driving time	Indicative cost ($/one way)
Darwin	828km	0h 55m	$275.00	9h 38m	$185.46
Perth	3,212km	7h 30m (via Broome)	$653.00	33h	$570.97
Brisbane	3,618km	9h 30m (via Darwin)	$584.00	41h	$643.14
Adelaide	3,222km	15h (Via Darwin)	$590.00	36h	$572.74
Sydney	4,198km	9h 25m (via Darwin)	$608.00	47	$746.24
Melbourne	3,948km	10h 10m (via Darwin)	$605.00	44h	$701.80

Source: Skyscanner, 2018; Google Maps, 2018; Petrol Cost Calculator, 2015

Kununurra is currently one of the most expensive origins and destinations in Australia, both with regard to airfares and fee structure for airline operations; the latter is usually passed along with the airfares. The higher generalised costs experienced at EKRA also influences the demand for services to and from the airport.

It is expected that the decreasing technical costs for operations as a result of the runway extension will also decrease the generalised costs for operations to EKRA or more effective price strategies from airlines, which are likely to flow on to consumers and potential exporters for freight capacity. The operation of larger aircraft will also reduce airport and terminal service costs such as screening, where staffing requirements are linked to regulations, not aircraft type or passenger numbers.

5.5. Dynamic efficiency

The constraints experienced at EKRA are a limitation to the operations of the airport, the aircraft type, and the airlines servicing the airport. They limit EKRA's flexibility and capacity to respond and adjust to changes in the economic environment, including:

- demand for services;
- the cost of suppling those services; and
- changes in aircraft technology.

A significant threat to future operations at EKRA is the unknown future landscape for the operations of the Fokker 100 in regional domestic Australian operations. The average age of the Fokker 100 aircraft in Australian aircraft fleets is 26.1 years and the Fokker 28 fleet has an average age of 22.7 years. In addition, both of these aircraft are out of production, which limits existing fleets to be rejuvenated with younger or new aircraft of that type. Within the coming four years, the age of the F100 fleet will be in excess of 30 years and it should be assumed that this aircraft type will likely be retired within the next 10 years.

With an average age of just 10.9 years, the other Code 3C aircraft type currently operated to EKRA, the Embraer 170, operated by Airnorth, is relatively young, so has sufficient cycles and years left to be seen as a medium to long-term solution for EKRA. It should be noted, however, that Airnorth has no published plans to add new components to their fleet. In summary, of the two types currently used at EKRA, only one can be considered to serve beyond the coming 10-year period and there are no plans to increase the fleet.

Australian domestic operations are dominated by the operation of Code 4C aircraft (B737/A320), which are the expected future replacement aircraft for Australian domestic aircraft fleets, as can be seen in Table 6. The table outlines the current and future aircraft types of Australian carriers. From this it can be seen that Code 3C aircraft are in the minority of those operated within Australia.

Table 6: Code 3C and 4C aircraft fleets by Australian carriers (June 2018)

Aircraft code	**Code 4C**				**Code 3C**				
Airline	B737	MAX*	A320	NEO*	F100	B717	E170	F70	Total
Qantas Group	71		2		17	20			110
Virgin Group	82	40*	3		13				138
Jetstar			60	99*					159
Alliance Airlines					18			9	27
Tigerair	3		12						15
Airnorth							5		5
Skippers Aviation					2				2
Grand Total	156	40	77	99	50	20	5	9	456

* Current aircraft orders for B737-MAX and A320-NEO

Source: CAPA Fleets and CASA's aircraft registry

Being limited to Code 3C operations will cause significant strategic disadvantages in future and is a constraint to future operations. Firstly, over the short to medium term, it is expected that only one Code 3C operator, Airnorth, will remain, which will result in further market concentration, removing competition from EKRA's passenger market, likely leading to higher fares and traffic stagnation. Secondly, over the medium to long term, the vital importance of aviation to the East Kimberley region dictates that the airport is designed along the most commonly used aircraft type rather than along a type that must be regarded as the exception in Australia's narrow-body jet fleet.

The proposed runway extension at EKRA and future design aircraft will facilitate airlines' response to the ever-changing aviation market demand in Australia, as well as changes in the economic and technological environment through the support of common aircraft types.

The Runway Extension Project is an opportunity for EKRA to respond to the likely retirement of Fokker aircraft from Australian aircraft fleets and safeguard the future scope of its operations through enabling Code 4C aircraft, which will provide accessibility and connectivity to the Australian network.

5.6. External costs and benefits of the Runway Extension Project

The proposed runway extension at EKRA will benefit those in supply and use of the airport such as airlines and passengers as well as the airport operator, the SWEK and any future users of the airport. It is expected that the costs and benefits of the Runway Extension Project will also have wider external benefits and will underpin significant economic and social growth and development benefits to the remote SWEK community, both economically and socially.

The external economic and social benefits arising from the proposed runway extension include:

- tourism industry and product offerings around the region (hotels, activities and retail);
- job creation (tourism, hospitality and retail);
- liveability of the region;
- connectivity; and
- benefits beyond the construction phase.

The role of external economic costs and benefits of the Runway Extension Project are important considerations in the analysis of this Project, even if they can't be quantified in dollar terms. The quantifiable and non-quantifiable costs and benefits are reviewed in greater detail in Section 9.

OPTIONS

6. OPTIONS

Two broad options have been analysed, each with sub-options: Base Case and Growth options, which are based on the ongoing current situation at EKRA or the impact of the Runway Extension Project. These passenger figures have been extrapolated from the EKRA Master Plan 2017.

6.1. Base Case options

The Base Case option considers the base-case scenario at EKRA and asks, 'What would happen if this investment decision was not made?' Do we follow the 'business as usual' approach and supply air services at EKRA without the benefit of a longer runway? This option focuses on the ongoing operation and maintenance of Kununurra Airport's current infrastructure.

The sub-options are:

- **Base Case scenario 1.0**: the current aircraft type and schedule remain unchanged for the period of the cost-benefit analysis, being 20 years. This is highly unlikely given the age of the current F100 fleet.
- **Base Case scenario 2.0**: the F100 is withdrawn from service around 2025. Whilst the timing may be one for conjecture, the actuality of the event is most likely. The business case and the cost-benefit analysis assume this will occur in 2025.

The passenger forecasts for the Base Case have been extrapolated from the low-growth scenarios of the EKRA Master Plan 2017.

6.2. Growth options

The Growth options model the business case and the cost benefit of undertaking the runway extension, as outlined in the EKRA Master Plan 2017. Importantly, these options include the potential provided by the extended runway of direct flights to the East Coast.

The sub-options, modelled around varying passenger growth forecasts, are as follows:

- Low Growth
- Medium Growth
- High Growth.

The passenger forecasts for the growth options are based on the unconstrainted forecasts prepared in the supplementary aviation strategy report by three consulting under the premise of a runway extension being completed. These values are incorporated into each model from 2023 when the completion of the runway extension is expected. Prior to this, it is expected that the passenger throughputs at EKRA will be in line with the forecast Base Case 1.0, which represents the current operating context.

FUTURE DEMAND

7. FUTURE DEMAND

The future demand for services to EKRA underpin the potential for the Runway Extension Project. To identify demand, three consulting undertook a terminal and passenger survey, as well as forecast passenger movements. The forecasts take into consideration the options described in Section 6. This section will review the terminal survey and the passenger forecasts produced for EKRA.

Base Case options

Within the Base Case scenario, two forecast options have been modelled: Base Case 1.0 and 2.0. Base Case 2.0 assumes the cessation of services by the F100 aircraft in 2025 and that they are not replaced. There is a consequential reduction in passenger numbers.

Growth options

Within the Growth options, low-, medium- and high-growth scenarios have been developed for the passenger forecasts based on the implementation of a runway extension.

7.1. Data collection

In addition to the forecasts and with the help of the SWEK, an on-site survey was conducted in the passenger terminal at Kununurra Airport to obtain information from passengers passing through the facility. The survey ran between Tuesday 29 May and Sunday 17 June, with every weekday covered twice during this period. In total, 451 responses were completed. Whilst the survey produced extremely valuable insights, the following limitations are worth noting:

- As an on-site survey, it could not pick up latent travel demand by current non-passengers.
- Consequently, the survey cannot now be used to determine the reasons why these potential passengers don't travel (e.g. current airfare levels, lack of convenient schedules, required layovers).
- As the survey was conducted in the RPT passenger terminal, there are no data relating to charter passengers (both inter-regional and intra-regional predominantly for sightseeing).

Despite these limitations, the on-site survey provided important insights, which are outlined in this section. This information has been utilised in the preparation of the CBA and the passenger forecasts for EKRA's growth option.

Further detail of the site survey can be found in the supplementary report produced by three consulting.

7.1.1. Passenger profile

Of the 451 total respondents, 69% identified themselves as visitors to EKRA, 22% were residents, and 9% were fly-in, fly-out (FIFO) workers. This is presented in Figure 7, below.

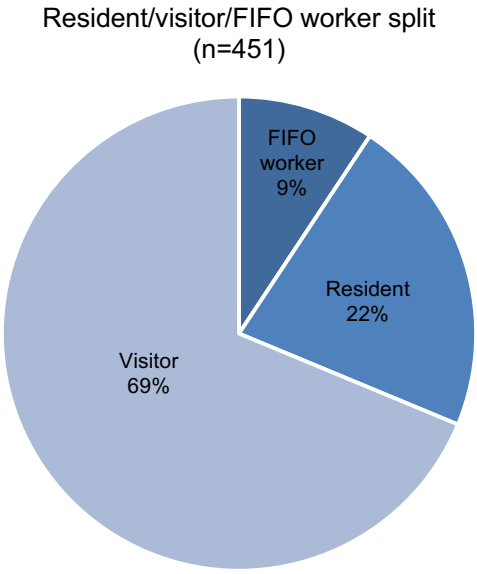


Figure 7: On-Site Survey passenger split

The purpose of travel is split by residents and visitors in Figure 8. It highlights the role of EKRA as a lifeline to two state capitals, the rest of Australia, and the rest of the world. Overall, non-discretionary travel outweighs holiday travel, with business and VFR (visiting friends and relatives) purposes appearing as strong for both residents and visitors.

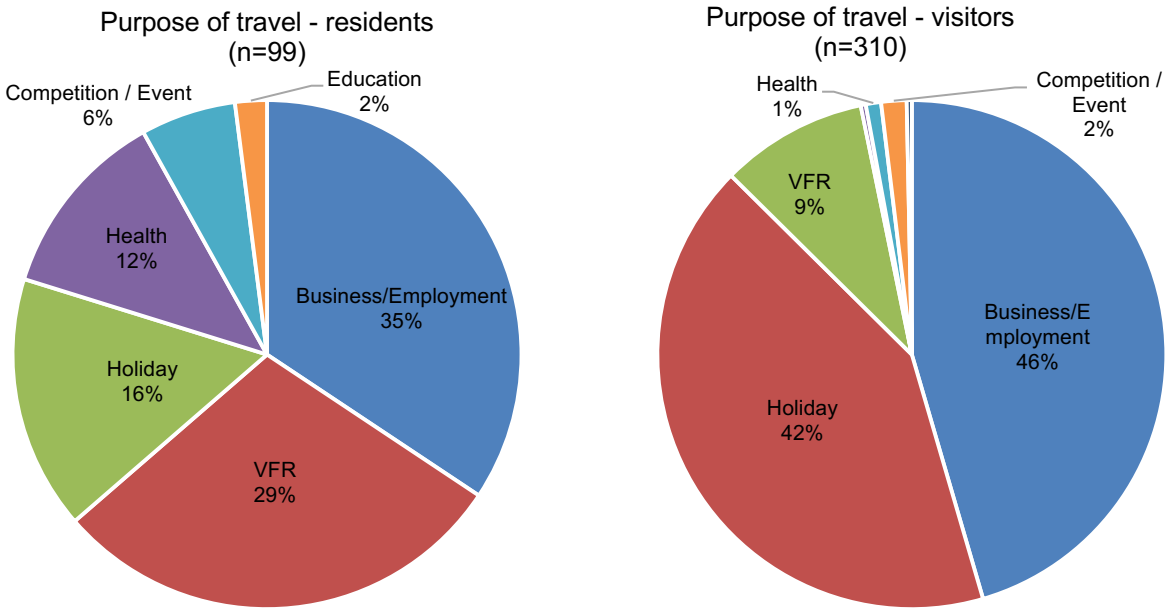


Figure 8: On-Site Survey passenger purpose of travel split

The age distribution of travellers appears skewed towards the 50+ brackets (around 47%), driven by inbound visitors. This corresponds well to information drawn from the NVS, highlighting that 54% of holiday visitors to the East Kimberley region are more than 50 years old.

7.1.2. Passenger destinations

Approximately 57% of travel destinations for residents and FIFO workers are to current markets (Perth, Darwin, and Broome), indicating the potential for widening Kununurra Airport's destination portfolio. In contrast, less than 50% of the visitor travellers surveyed were from Western Australia, with

approximately 45% of passengers from East Coast states (Queensland, New South Wales and Victoria) (Figure 9).

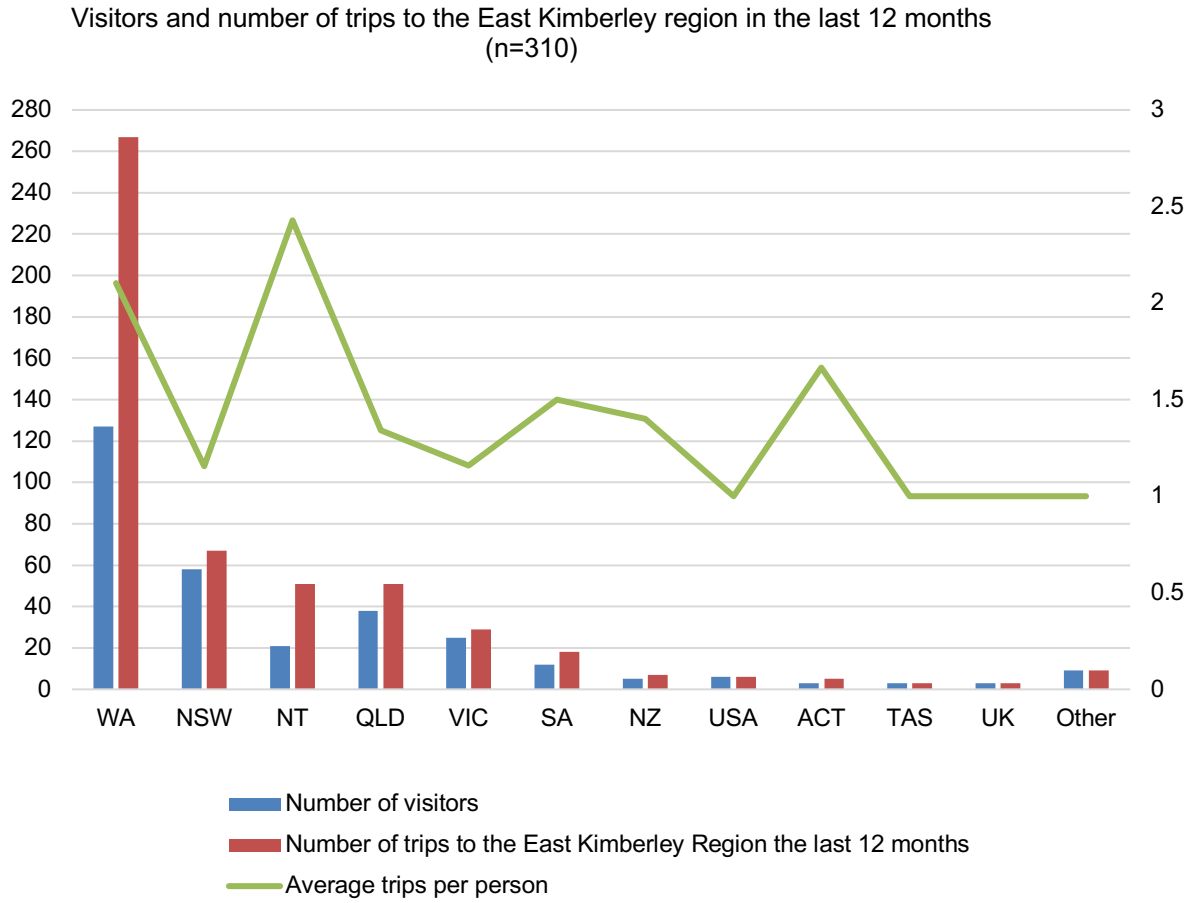


Figure 9: Kununurra Airport Visitor Home Portfolio

A significant number of respondents to the survey identified Perth as their final destination on the day (37%). After Perth, Darwin was the second most common response (31%), followed by Broome (16%). Combined East Coast destinations accumulated to 15% of respondents' final destinations (Figure 10).

Overall, demand to and from East Coast destinations based on the On-Site Survey are in line with findings from past research projects.

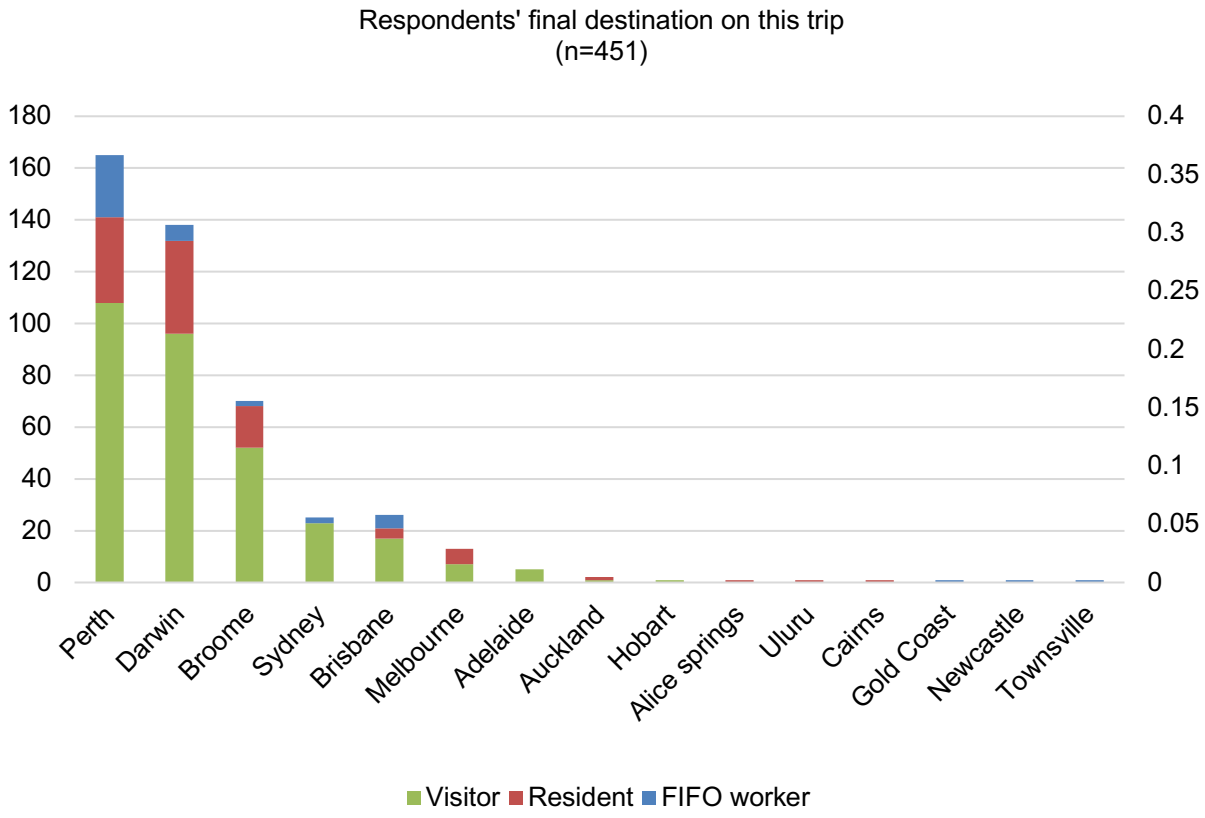


Figure 10: Kununurra Airport Origin and Destination portfolio

7.1.3. Cost of travel

In order to reach their final destination, almost 30% of Kununurra Airport passengers surveyed needed to connect through another port. The highest proportion connected through Darwin, followed by Broome. This can likely be correlated to the lack of daily service from Kununurra Airport to Perth, forcing passengers to fly through Broome. This may also be representative of passenger affiliations with a preferred airline and their code-share partners (i.e. Air North and Qantas).

From the survey, 51% of travellers had paid more than $800 for the round-trip. The average roundtrip fare is estimated at $1,170 and the median fare at $1,030. These fares make Kununurra Airport one of the more expensive origins and destinations around Australia. At the time of writing the supplementary report, fare scraping[2] was undertaken on the websites of Airnorth, Virgin Australia and Qantas, and a blended market fare was determined to be $456 +GST for Kununurra to Perth and $320 +GST for EKRA to Darwin. At 72 cents per flown kilometre between Kununurra Airport and Darwin, access to Kununurra's most important connection port comes at very high cost.

An investigation of price elasticity of demand by current Kununurra Airport passengers shows that almost one-half of travellers seem fairly inelastic, pointing to the utility function of the airport. Cross-referencing price elasticity with purpose of travel information confirms that price inelastic travel mostly relates to passengers who do not pay for their travel arrangements (e.g. FIFO workers, government representatives).

Having said this, around 40% of travellers would react positively to a 25% decrease in fares, pointing to pent-up demand among current users. It can therefore be assumed that pent-up demand levels are even higher by potential Kununurra Airport users, both residents and visitors, deterred by the current airfare environment.

[2] Undertaken independently to the fares review overviewed in Section 5.4 and based on alternative assumptions.

7.1.4. Route demand

Apart from airline pricing aspects, travellers are split evenly between those that are satisfied with Kununurra Airport's current aviation offer and those that are not. The most common requested areas of improvement are direct flights to the Australian East Coast, more flights to Perth, as well as more frequencies on weekdays. Another frequent request relates to better connections via Darwin, with current connect times on itineraries between Kununurra Airport and the Australian East Coast routinely as long as 7 to 10 hours. At the moment there are a number of passengers connecting via Broome, Darwin and Perth to reach EKRA, as can be seen in Figure 16.

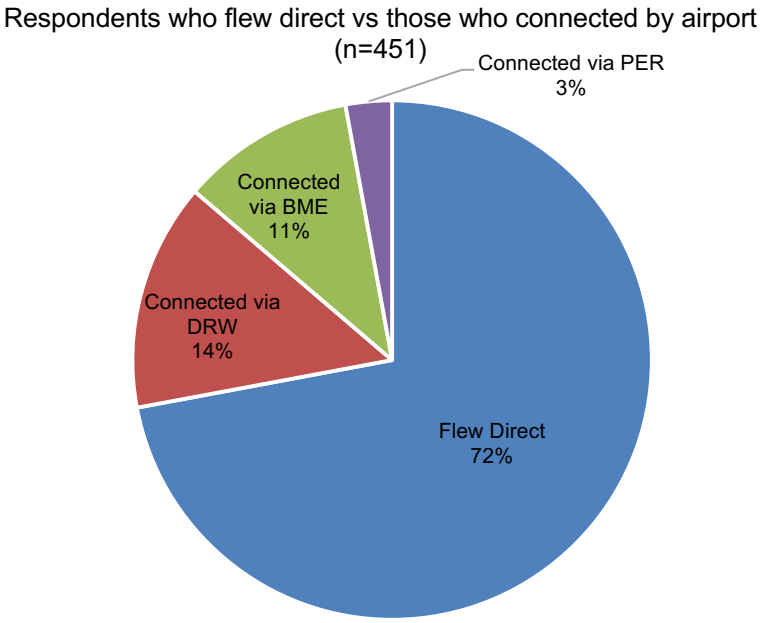


Figure 11: Non-stop and connection proportion

When asked directly about their interest in direct (non-stop) flights between Kununurra Airport and Australia's East Coast (where this could be flights to Brisbane, Sydney, or Melbourne), 91% of residents and 58% of visitors, or 65% of all travellers, indicated such interest (Figure 17).

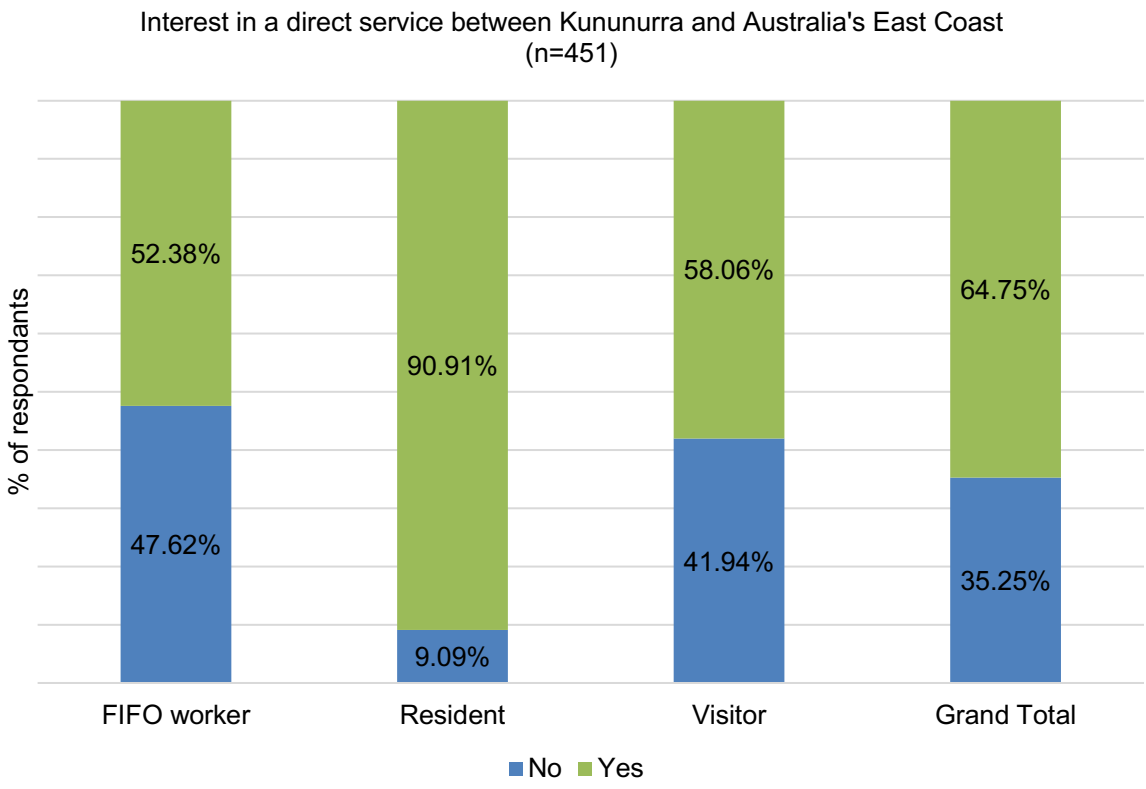


Figure 12: Passenger interest in services to East Coast

7.2. Passenger forecast overview

The passenger forecasts to 2038 take into consideration the following growth scenarios:

- Base Case 1.0
- Base Case 2.0
- Low Growth (growth scenario)
- Medium Growth (growth scenario)
- High Growth (growth scenario)

An overview of the five forecast scenarios can be seen in Figure 13, as well as the year-on-year values for the passenger forecasts used in the financial model. This is based on Base Case 1.0 (existing situation) eventuating until the expected completion of the Runway Extension Project in 2023 where the unconstrained forecasts for the growth scenarios are able to be facilitated as a result of the Project's completion. Additional insight into the background of the options can be seen in Section 6.

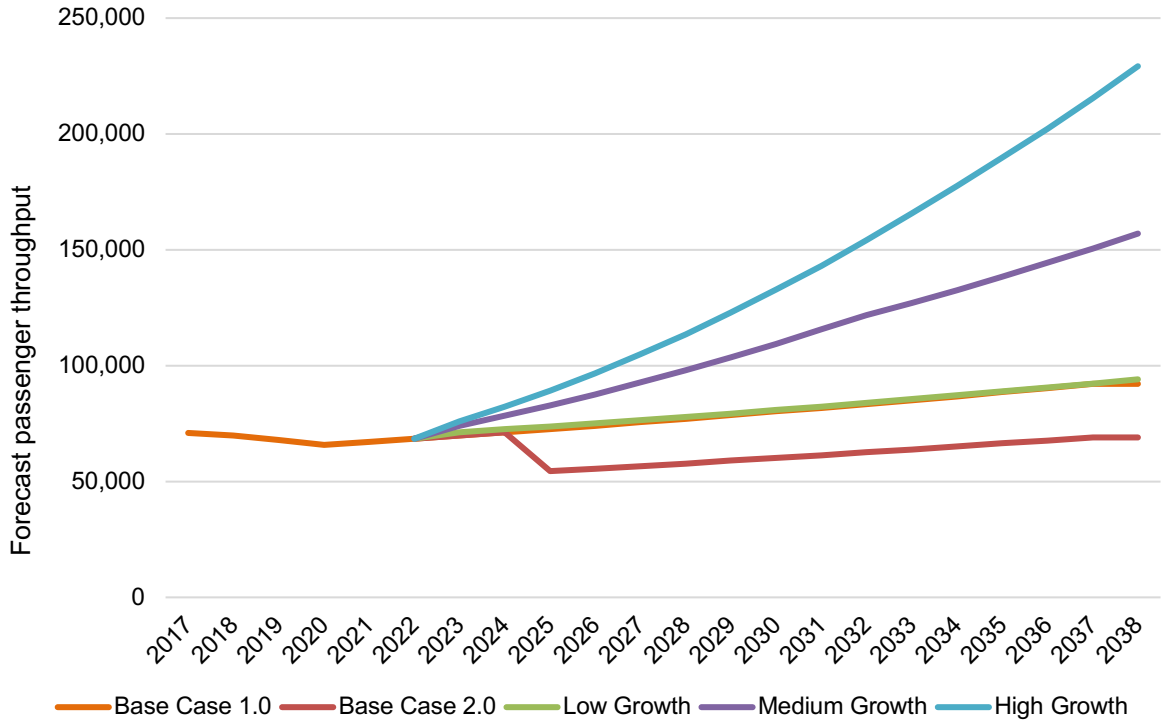


Figure 13: Forecast passengers at EKRA

7.2.1. Forecast scenario breakdown

The forecast passenger scenarios that underpin the review of the Runway Extension Project at EKRA are based on the options overview in Section 6.

7.2.1.1. Option One (Base Case)

The base-case passenger forecasts have been extrapolated from the EKRA Master Plan 2017 produced by TAG. These forecasts have been split into Base Case 1.0 and Base Case 2.0, a summary of which can be seen in Table 7.

The difference between Base Case 1.0 and Base Case 2.0 is the 25% drop in 2025 as a result of a decrease in the frequency of Fokker 100 aircraft service to EKRA, which are not replaced and consequently decrease passenger throughput.

Table 7: Summary of Base Case passenger forecasts

Calendar year	Base Case 1.0	Base Case 2.0
2017	70038	70038
2027	75592	56694
2037	92146	69110

Source: TAG, 2018

7.2.1.2. Option Two (growth)

The low-, medium- and high-growth scenarios have been produced based on the runway being extended. These forecasts have been produced by three consulting as part of the Aviation Strategy for EKRA This report breaks down the passenger segments, which are discussed as follows.

The forecasts take into consideration the economic drivers for the shire, and draw upon outcomes from stakeholder engagement and the terminal survey at EKRA.

These forecasts are made up of four distinct market segments: resident outbound, visitor inbound non-leisure-FIFO, visitor inbound non-leisure, and visitor inbound leisure. Overviews of each of these market segments and how they apply to the forecasts are outlined below. The detail for how each market segment has been forecast is discussed in three consulting's Aviation Strategy for EKRA.

A summary of the total passenger throughput forecasts, which is made up of the above four passenger segments, is outlined in Table 8. The low-, medium- and high-growth scenarios are implemented from the year 2023 to coincide with the estimated completion of the runway extension as per the implementation plan (Section 2.6.2). Prior to this, all growth scenarios are based on the forecast passenger throughput in Base Case 1.0.

Table 8: Growth scenario passenger forecast summary

Calendar Year	Low	Medium	High
2018	69,941	69,941	69,941
2028	76,518	97,984	113,564
2038	92,309	157,005	229,228

FINANCIAL ANALYSIS

8. FINANCIAL ANALYSIS OF THE RUNWAY EXTENSION PROJECT

This section undertakes a financial analysis of the Runway Extension Project within the context of airport business only. The analysis takes into consideration the outcomes of the terminal survey (summarised in Section 7.1), the historical financial accounts of the Kununurra Airport, and its forecast passenger growth (see Section 7.2). Cash flows for each scenario have been produced, which have been attached as appendices in Section 13. The cash flow models are based on the assumptions outlined in this section.

8.1. Overview of business performance

A review of the previous three financial years' performance at EKRA, as extracted from Council, has been undertaken. An overview can be seen in Table 9 on the next page.

The financial highlights are:

- Total revenue has remained relatively flat at roughly $4 million per annum. (Showing a slight overall year-on-year growth of approximately 1.5%).
- Close to $5 million was incurred in CAPEX in FY2015 (mostly attributable to the runway surface overlay), with this dropping to $0.5 million for the following two years.
- Employee costs have been increasing each year by 7–8%.
- There was a significant increase in central overhead allocation from FY2015 to FY2016 of 50%.

8.2. Financial plans and projections

Summary of key outcomes

- Noting the critical importance of the assumptions and the forecasts outlined in this report and the impact that changes in these assumptions could have on the value, TAG estimates the net benefit of the runway extension to be approximately $14.6 million (medium scenario).
- This has been calculated on an NPV of the incremental future cash flows in terms of landing fees and charges including the capital expenditure of the runway construction and grant funding.
- This does not take into account any of the non-financial benefits that the enhanced airport would generate, nor does it model any of the wider economic contributions that the increased passenger numbers would deliver to the region.
- Nor, importantly, does it take into account any terminal value that the upgraded runway will have after the 20-year modelling period.
- The passenger growth forecast numbers were also developed on high- and low-growth scenarios in addition to the most likely medium growth used above.
- Using a weighted average outcome for the low-, medium- and high-growth scenarios, the weighted average NPV is $15.04 million.

Table 9: EKRA Financials 2014–15 – 2016–17

	2014–2015 Actual	2015–2016 Actual	2016–2017 Actual
Revenue			
Contributions, reimb., donations	$ 28,332	$ 16,074	$ 40,349
Fees and charges – PAX	$ 3,723,718	$ 3,827,744	$ 1,422,316
Aircraft landing fees			$ 1,580,345
Passenger screening			$ 716,542
Other revenue	$ 27,963	$ 20,694	$ 227,923
Profit on disposal of asset	$ -	$ 19,569	$ -
Interest on reserve	$ 190,886	$ 146,432	$ 114,610
Total Revenue	**$ 3,970,899**	**$ 4,030,513**	**$ 4,102,085**
Expenses			
AB distribution	$ 543,366	$ 825,474	$ 825,188
Employee costs	$ 1,503,530	$ 1,608,124	$ 1,733,250
Insurance	$ 188,911	$ 170,757	$ 166,107
Loss on disposal of assets		$ 11,586	
Materials and contracts	$ 452,645	$ 548,439	$ 331,060
Other	$ 1,434	$ 16,824	$ (44)
Utilities	$ 157,902	$ 190,460	$ 179,444
Total expenses	**$ 2,847,788**	**$ 3,371,664**	**$ 3,235,005**
EBITDA	**$ 1,123,111**	**$ 658,849**	**$ 867,080**
Depreciation	$ 607,590	$ 907,936	$ 930,682
PBIT	**$ 515,521**	**$ (249,087)**	**$ (63,602)**
Capital expenditure	$ (4,867,836)	$ (537,960)	$ (400,493)
Grant income	$ 2,260,616	$ 278,703	$ -
Net CAPEX	$ (2,607,220)	$ (259,257)	$ (400,493)

8.3. Budget 2018–19

At the time of writing, the 2018–19 financial year was underway and the EKRA financial model uses the 2016–17 actual data as a base for future year financial assumptions. Assumptions are applied to the end of the 20-year modelling period to 2038.

Table 10 highlights that EKRA's revenue is largely derived from the passenger service charge and landing fees paid by the major airlines, while its major expenses are employee costs, administration, and maintenance costs.

Table 10: EKRA Budgeted Income Statement 2018–19

Item	($Am)
Revenue	
Passenger service charges	1.42
Passenger screening charges	0.72
Landing charges RPT	1.18
Landing charges non RPT/Charter	0.40
Retail leases	0.31
Other revenue	0.07
Operating revenue	**4.10**
Operating costs	
Employee	0.94
Security screening	0.68
Administration and other	1.29
Maintenance	0.33
Operating costs	**3.24**
EBITDA	**3.7**

8.4. Financial model assumptions

8.4.1. Global assumptions

The financial model uses a number of global assumptions, which provide a platform to develop long-term revenue and expenditure assumptions. These assumptions reflect general public and market expectations for the direction of the Australian economy over the next 20 years.

Table 11: Global assumptions

Assumption	%
Consumer Price Index (CPI)	2.5%
Discount rate	5.0%

It is acknowledged that there is no universally correct discount rate. Government agencies will adopt a rate of 7%, with 3% and 10% used for sensitivity testing.

Given, however, the prevailing low interest rates and lower expected equity, returns would give rise to a weighted average cost of capital, upon which a discount should be determined of approximately 5%. This would comprise a nominal discount rate (3.3%) and a real discount (inflationary adjusted) rate of 1.7%. Regional airports have a higher risk profile than capital city airports. A discount rate of 5.0% has been used as the base case as this represents a more conservative position.

8.4.2. Revenue assumptions

The financial model develops total revenue estimates for all aeronautical, retail and other revenues by estimating these revenues based on the forecasting done by TAG (base case) and by three consulting (new runway growth scenarios) on a per-passenger basis. Therefore, total revenues from these sources are affected by both the change in price of the revenue source and also by the change in the number of passengers and aircraft who use Kununurra Airport.

Table 12: Revenue assumptions

Price Growth Area	Rate assumption
Passenger service charge	CPI
Landing fees	CPI
Retail	Tied to passenger growth to reflect the turnover provisions
Rental cars	Tied to passenger growth to reflect the turnover provisions
Other revenue	CPI

8.4.3. Operating cost assumptions

The financial models include the following operating cost assumptions (Table 13).

Table 13: Operating cost assumptions

Price Growth Area	Rate assumption
Employee costs	CPI and refer to 8.4.4.2
Services & utilities	CPI
Administration & other	CPI
Operations maintenance	CPI
Capital expenditure	Refer to 8.4.4.1

8.4.4. Other assumptions

There are a number of other considerations that have also been included in the financial model — capital expenditure, resourcing and airline marketing incentives — and their inclusion assumptions will be discussed in this section.

8.4.4.1. Capital expenditure

Runway Extension Project capital expenditure

The cost of the runway extension has been based on the indicative implementation plan outlined in Section 2.6.2. The implementation plan has been based on the GHD (2016) report's cost estimate of $17.4 million (exclusive of GST), which is overviewed in Section 2.6.1.

This value has been escalated at actual CPI values for Western Australia for historical years and future years at 2.5% to FY2021, the future value of when the Runway Extension Project is expected to be under construction, and incurring costs. This estimates the future capital expenditure for the Project to be **$19.3 million** at the time of construction.

Ongoing capital expenditure

The financial model allows for the Base Case options to adopt the actual cost, the forecasts included in the shire's accounts and the EKRA asset management plan, including the estimated budget of $762,000 for 2021, which are then escalated at CPI. This does not include any capital expenditure requirements required for the Runway Extension Project but focuses on the ongoing and consequential capital expenditure for maintenance at EKRA.

8.4.4.2. Passenger throughput

The financial model assumes the passenger throughout for each scenario, as outlined in Section 7.2.

8.4.4.3. Additional staff member

The low-, medium- and high-growth scenarios have allowed for an additional staff member at $90,000 per annum to be included from FY2023.

8.4.4.4. Airline marketing incentive

As a strategy and tool for the encouraging of new airline or service entrants, a financial allowance for airline incentives has been included in the financial model.

Table 14: Overview of airline incentive strategies

Airline incentive strategy	Overview
Marketing	A marketing strategy for new flights or routes may be implemented. This could include dollar-for-dollar investment in marketing the new routes where the shire would match the airlines in marketing the new route. The marketing support would run for a period of three years to assist the airline in establishing the route. The costs incurred by the shire have been forecast and are included in the financial assessment as follows: Year 1 – $250,000 Year 2 – $150,000 Year 3 – $150,000
Airport fee rebates	An airport fee rebate has been applied to the whole passenger throughput. This approach levies the same price on all airlines, rewarding them for growing throughput over the existing base level of passengers (approx. 70,000 passengers per annum) at a value of $10 per passenger. The model assumes the fee rebate is reduced to $7.5 from 2030 onwards until the end of the modelling period in this financial assessment of 2038. In reality, a route-specific incentive may be more effective, i.e. providing an incentive exclusively to an airline to develop a new route.

8.5. Financial analysis summary

The financial model summary of outcomes is outlined in Table *15*, for each Base Case and Growth scenario. The weighted average NPV for the three growth scenarios is $15,040,501. This is based on the assumption that the medium scenario is 50% likely, whilst the low and the high scenarios are 25% likely. The medium scenario has an NPV of net cash flows (EBITDA – CAPEX) of $14,652,430.

Table 15*: Summary of Business C*ase

Summary	NPV of Net Cash Flows (EBITDA – CAPEX)
Weighted average Base Case	$5,310,623
Medium Growth	$14,652,430
Weighted Average Growth	$15,040,501

EVALUATION OF THE OPTIONS

9. EVALUATION OF THE OPTIONS

This section reviews the economic costs and benefits for the Runway Extension Project at EKRA. There are also a number of non-quantifiable costs and benefits, which will be overviewed qualitatively in Sections 9.3 and 9.4, respectively.

Each of the costs and benefits have been quantified to, and are accompanied by, discussion surrounding assumptions made to calculate these values.

The NPV is the value of the cash flow from each item over a number of periods, in present value, based on a discount rate. NPV is regularly used to analyse profitability of project investments or projects to understand the return over the review period. For this CBA, the period is until 2037 using a discount rate of 5% throughout. The financial analysis model (overviewed in Section 8) does not include a terminal value for the infrastructure.

9.1. Economic costs of the Runway Extension Project

9.1.1. Construction of the runway extension

The NPV for the capital expenditure estimates for the runway extension has been based on the indicative implementation plan outlined in Section 2.6.2. and is used for calculating the benefit-to-cost ratios (BCRs). The implementation plan has been based on the GHD (2016) report's cost estimate of $17.4 million (exclusive of GST), which is overviewed in Section 2.6.1. This value has been escalated at actual CPI values for Western Australia for historical years and future years at 2.5% to FY2021, the future value of when the Runway Extension Project is expected to be under construction, and incurring costs. This estimates the future capital expenditure requirements for the runway extension to be **$19.3 million.**

The implementation timeframe for the Project and capital expenditure is outlined in Section 2.6.2. The NPV for this is the same for each scenario, and only applies to Option Two.

Table 16: NPV for project capital expenditure requirements

	Growth scenario		
	Low	**Medium**	**High**
NPV	$17,547,778		

9.1.2. Ongoing capital expenditure and consequential maintenance requirements

The financial model allows for the Base Case options to adopt the actual cost, the forecasts included in the shire's accounts and the EKRA Asset Management Plan, including the estimated budget of $762,000 for 2021, which are then escalated at CPI. This does not include any capital expenditure requirements for the Runway Extension Project but focuses on the ongoing and consequential capital expenditure for maintenance at EKRA.

Table 17 provides the NPV of the forecast airport operating costs for capital expenditure and maintenance (excluding the runway extension).

Table 17: NPV for ongoing capital expenditure spending

	Growth scenario		
	Low	**Medium**	**High**
NPV	10,212,857		

9.1.3. Other EKRA operating expenses

There are a number of operating expenses excluding those associated with maintenance and capital expenditure requirements. Apart from the increase in maintenance expenses (which are covered by CAPEX — see Section 9.1.2 above), we estimate an additional full-time staff member to be included for the Growth options.

Table 18: NPV for EKRA operating expenses

	Growth scenario		
	Low	Medium	High
NPV		$48,185,051	

9.1.4. Airline business development

To encourage and facilitate the introduction of new routes or services into EKRA, it is most likely airlines will require financial support for underwriting the costs of establishing the services. The structure of the support can be provided in varying ways; for the purposes of the Business Case, an incentive and marketing strategy has been adopted. This includes an initial marketing support contribution and an airport fee rebate, as is outlined in more detail in Section 8.4.4.4. The cost of implementing these strategies has been included in the financial model as a cost of the Runway Extension Project, with year 1 being 2023.

The outcomes of the NPV review for the marketing and incentives in the cash flow model for each scenario are summarised in Table 19.

Table 19: Cost of marketing and operating incentives for airlines

Incentive Type		Growth scenario		
		Low	Medium	High
NPV	**Landing fee rebates**	$737,393	$2,646,194	$4,395,325
	Marketing	$503,725		

9.2. Economic benefits of the Runway Extension Project

This section provides an overview of the quantifiable economic benefits of the Project and the calculation of the relevant BCR. In order to quantify the benefits and determine the BCR, the NPV for the potential of that item needs to be calculated and divided by the NPV of the capital expenditure required for the Project. The NPV, as well as the BCR, is indicated for each benefit reviewed in this section.

9.2.1. Fare reduction on existing routes

The technical efficiency of airline operations that occurs through the Runway Extension Project will reduce the cost of airfares from 2023, once the Project has been completed. The fare reduction will be through the improved efficiency of the aircraft operating on the route (as outlined in sections 5.1 and 5.2 above), which enables the airlines to stimulate demand through lower fares. TAG estimates that this saving could be $60.00 per passenger (excluding passengers who are connecting) and will benefit the existing passengers in the market.

This is a beneficial reduction in the generalised cost of travel for this market and indicates a positive BCR, as can be seen in Table 20.

Table 20: Cost savings on airfares for existing market and local community

CBA	Cost	Benefits	BCR
Low, medium and high scenarios	$17,547,778	$28,401,145	1.61:1

9.2.2. Value of a direct route to the East Coast

The terminal survey identified that 30% of the existing market had to connect to reach their final destination; the majority of passengers were travelling to the East Coast. Clearly, there is latent demand that would support the introduction of a direct service to a major capital city port on the East Coast of Australia.

A direct East Coast connection would be extremely beneficial to the existing passenger market who are accessing Kununurra via Perth or Darwin.

The analysis below estimates the economic value primarily through reduced costs of travel; however, existing time to travel is also a major barrier for non-essential inbound visitors from the East Coast.

Table 21 illustrates a typical journey for a traveller wishing to visit Kununurra from Brisbane flying Virgin Australia Airlines. As can be seen, departing on a Friday morning the journey requires three legs and takes 12 hours and two connections.

Table 21: Overview of typical travel time between Brisbane and EKRA

Depart		Arrive	
0500	Brisbane	0820	Melbourne
0915	Melbourne	1030	Perth
1200	Perth	1510	Kununurra

Reducing the legs flown will also reduce the cost of travel. It is estimated that by being able to fly direct, passengers in the market will be able to save at least $100.00. This has been calculated undertaking fare scrapes for an East Coast–Kununurra flight in mid 2019 versus an East Coast–Darwin flight, which is a similar distance. The price differential is over $200, and the time difference is eight hours.

The value for the existing market is in the decreased generalised cost of travel for passengers who are flying to the East Coast and will be able to have the opportunity to fly direct. The economic benefit to passengers that currently travel between Kununurra and the East Coast is estimated below, based on each connecting passenger's ability to save $100 on airfares.

The BCR is outlined in Table 22 and indicates that travellers to the East Coast will benefit from a reduction in fares through the implementation of direct services.

Table 22: Economic benefit to travellers to Kununurra from the East Coast through reduced airfares

CBA	Cost	Benefits	BCR
Low, medium and high scenarios	$17,547,778	$20,286,532	1.15:1

9.2.3. Inbound leisure visitation

Inbound leisure demand is driven by the attractiveness and affordability of the destination tourism region, as well as access considerations; for these reasons, it is a dynamic market (three consulting, 2018). The benefits from inbound leisure visitation to the region are both direct and indirect, and influence various industry stakeholders such as hotels, airlines, tour operators and activities within the region.

The average length of stay is 8.1 nights, with international guests more likely to have longer stays of 15.4 nights on average to the Kimberley region from Tourism WA (2018b). The breakdown by intrastate, interstate and international average length of stay and number of visitors is outlined in Table 23.

Table 23: Visitation to the Kimberley

Visitor group	Average length of stay (nights)	No. of visitors (average from 2015/16/17)
Intrastate	5.2	234,800
Interstate	11.4	122,900
International	15.4	37,700
Total (average)	**8.1**	**395,400**

Source: Tourism WA 2018b

The average spend per visit to the regional areas of Western Australian per visitor average $718.00/visit (Tourism Research Australia 2017b). This figure includes:

- trip-related items to reach the region before and after the trip (e.g. airfares; bus and train; vehicle)
- vehicle hire
- accommodation; and
- activities.

The potential value to tourism and visitation from inbound leisure segment from the implementation of the runway in 2023 has been estimated based on the assumption that 55% of the $718.00 spend per tourist is spent within the region and 45% is the cost of travel to reach the region (e.g. airfares), which is not a benefit factored into this CBA. The 55% of spend in the region ($395/visit) has been assumed to be spent within the region for this analysis during the forecast period.

The in-terminal survey concluded:

- Inbound and outbound demand levels are higher than current passenger carriage suggests.
- Capacity constraints, leading to an elevated air fare environment, are the main reasons for demand spill.
- The limited destination portfolio forces significant connect traffic through Darwin, and even Broome.

Based on market survey and analysis, three consulting (2018) forecasted the size of the inbound tourism market. Assumptions of demand growth due to service and price stimulation post-Runway Extension Project have been used to calculate the marginal increase in spending per inbound leisure passengers and visitors to Kununurra and the region.

The marginal increase in the number of passengers is the benefit to the shire to which the average assumed spend per visitor per visit has been applied, and is calculated below in Table 24. It should be noted that this is purely based on the benefits that aviation capacity can bring and does not consider other methods of travel for the region, nor does it consider the tourism product capacity of the region.

Table 24: BCRs for the economic benefit to the Kununurra region through increased inbound tourism expenditure

CBA	Cost	Benefits	BCR
Low-growth scenario	$17,547,778	$22,613,519	1.29:1
Medium-growth scenario	$17,547,778	$70,296,256	4.01:1
High-growth scenario	$17,547,778	$130,696,193	7.45:1

9.2.4. Airport revenue

EKRA is a significant infrastructure investment for the shire. It is important that it continues to provide revenue back to the shire and endeavour to be a more sustainable operation. The Runway Extension Project will stimulate increases in revenue through aviation portals, such as passenger and security fees, as well as landing fees and charges, as a result of increased passenger movements and the ability to handle larger aircraft types with greater maximum take-off weights (MTOW).

The leases for the cafe and rental car operators at EKRA have turnover provisions linking rent paid to their gross sales. The gross sales are directly linked to the number of passengers using EKRA. This means that every financial year the relevant airport lessee pays EKRA a particular percentage of their turnover as part of their lease agreement. Additional passengers to EKRA, and subsequent patrons or customers for these operators, will increase EKR's revenue from operations. The model assumes that these turnover provisions increase by an additional 10% at their current expiry dates in 2021.

This NPV is only of EKRA's gross revenue relative to the forecast number of passengers in each scenario and does not take into consideration the earnings before interest, taxes and authorisation (EBITA).

The NPV of forecast airport revenue for both scenarios is outlined in Table 25.

Table 25: Scenario BCRs for improved EKRA revenue

CBA	Cost	Benefits	BCR
Low-growth scenario	$17,547,778	$64,916,611	3.83 :1
Medium-growth scenario	$17,547,778	$75,851,185	4.38 :1
High-growth scenario	$17,547,778	$87,893,384	5.03 :1

9.3. Non-quantifiable costs

There are a number of costs of the Runway Extension Project that are unable to be quantified and hence monetised. These will be discussed in this section. These aspects should be considered in relation to the financial costs and benefits presented in the CBA overview in Section 10. Overall, it should be noted that the non-quantifiable costs of the Project are negligible for the East Kimberley community and are environmental or aesthetic in nature.

9.3.1. Noise

Aviation noise is a consideration for the costs of this proposed Project, although it is unable to be quantified. The Project will underpin the facilitation of larger aircraft, which have higher decibel noise outputs when performing take-off and landing operations. Based on the Australian Noise Exposure Forecast system, it can be said that this will affect the surrounding community — although, in light of EKRA being driven by a leisure market, these services are most likely to be seasonal and operate during daylight hours rather than at night, which limits the disturbance to ambient noise.

9.3.2. Visitation numbers

The completion of the Runway Extension Project is likely to stimulate an increase in visitor numbers to the Kimberley region with the opening up and ease of accessibility to flights, particularly direct flights, to the region. This may incur a cost to the natural environment. As the scope is unknown and may vary based on visitor dispersal, the effect has not been quantified. It should be considered in light of the Indigenous and cultural heritage that is prevalent in this region.

9.3.3. Roads

The impact of the additional air services, larger aircraft and consequently more people arriving per flight on the region's road systems surrounding the airport is not considered to be material. The expected volume of traffic generated is unlikely to create substantive loads on the existing road system in the vicinity of the airport and within the area of Kununurra.

9.3.4. Maintaining the 'status quo'

The cost to the existing network of travellers by not undertaking this Project would result in increasing costs of generalised travel for the community and other travellers. This high level of generalised cost of airfares, travel and airline operations is representative of a remote area in Australia with regard to EKRA, where there is an existing demand for increased air services and a limited supply. The costs of airfares are restrictive for leisure and community travellers.

If the existing infrastructure at EKRA were to be maintained, supporting only Code 3C aircraft, there is a risk to the operating environment both for airlines and passengers. It is likely that the restrictions on operations from EKRA for F100 aircraft and the constraint on available seat capacity and flight frequency would incur an increase in airfares for passengers as the airlines experience increasing pressure on the cost of operations.

Additional direct and economic cost will be incurred by the community as it is likely there would be a reduction in services due to retirement or redeployment of the F100 aircraft. The reduction in services would result in a reduction in passenger throughput, requiring an increase in airport landing fees and charges to maintain airport profitability. This will most likely result in an increase in the generalised cost of airline services, with ticket prices further isolating the local community and deterring leisure travellers.

Long term, there is an additional risk that operators will not purchase new-build Code 3C aircraft, focusing on the increased capacity of 4C aircraft. Currently, no Australian operator has orders or options for new-build F100 replacement aircraft, such as the E190 or A220.

It can be said that EKRA is a currently underdeveloped 27-hectare asset that has significant capacity for future development and growth. Not optimising this opportunity and potential, and maintaining the status quo, would incur significant costs for the community.

9.4. Non-quantifiable social benefits

Not all of the possible impacts could be quantified (and hence monetised), which are important to the overall study. These issues and their likely effect if they were to be included are discussed in this section. They should be considered in relation to the financial costs and benefits presented in this section. As a whole, the proposed Runway Extension Project at EKRA is likely to stimulate significant social benefits to the region.

9.4.1. Job creation

9.4.1.1. Direct

It is estimated that job creation from construction will be approximately 220 full-time equivalent (FTE) employees. This is based on industry benchmarking and best practice for runway extension projects in similar remote and regional airports around Australia and input/output analysis. During peak demand for construction workers, there may also be a negative effect on existing operations and staffing requirements.

Other jobs to be generated by the Project include: airport operations (1 FTE); security (8 FTE); cafe (1 FTE); and rental car operators (3 FTE).

Opportunities for Indigenous employment span all of the sectors above. For example, the airport cafe is operated by KGT Employment, which is a not-for-profit organisation that focuses on establishing a career pathway for Indigenous and non-Indigenous people in the Kimberley region by providing training, sustainable employment opportunities and support services (KGT, n.d.).

The main limitation within the construction phase is the extent of any specialised skills required for civil and runway construction activities. We have estimated approximately 10%–12% of the construction workforce can be provided from local Indigenous labourers.

Estimation of employment within tourism activities is difficult. Currently, 94 persons are employed in accommodation in Kununurra (2016 Census). The estimated additional inbound tourists are approximately 10% of current visitors to the Kimberley region. For this study, an estimated pro rata increase in jobs in this sector is considered.

An overview of job creation by sector can be seen in Table 26.

Table 26: Overview of job creation by sector

Sector	During construction	Post-completion	Indigenous
Construction	220		20–26
Airport operations		13	13
Regional tourism – (accommodation etc.)		9	9

9.4.1.2. Indirect

The scale to which this Project will benefit job creation in the greater region is unquantifiable due to the unknown disbursement of visitation and passenger numbers. Future increased visitor spending will stimulate regional employment development and growth. It is likely that the Project will stimulate additional jobs directly through the following sectors:

- Tourism (motels, services, tours and activities);
- Retail and hospitality;
- Construction – ongoing construction in region from increased visitation.

9.4.2. Freight

EKRA's current runway restricts aircraft use by only accommodating aircraft up to Code 3C standard, which has limited availability for freight on-board. This limits the opportunities for freight in/out of the region and its economic contribution. The future operating potential for 4C aircraft is likely to see the operation of RPT services, which have more initial freight capacity. The opportunity presented by larger aircraft in terms of freight capacity can be seen in Table 27 and represents significant increases in freight capacity and associated economic benefits. The B737 could provide a 122% increase in freight capacity compared to the Fokker 100 aircraft, which operates the minority of EKRA's RPT operations at present.

Table 27: Aircraft freight capacity

Aircraft type	MTOW (kg)	Aircraft freight capacity (kg)
Embraer 170	38,600	600
Fokker 100	51,800	900
B737	78,240	2,000
A320	77,000	2,000

Source: Embraer, 2018; Virgin Australia, n.d.

Export range

The Project stimulates increased export ranges for aircraft, and consequently freight opportunities. The range of a B737 or A320 aircraft from EKRA extends into Asia and could service hubs such as Jakarta, Singapore and Kuala Lumpur, as well as Australia's East Coast.

The Project allows EKRA to cater for dedicated freight services to Australian hubs or internationally to Asia, as the proposed future runway length will expand destination range opportunities as well as aircraft type.

Deloitte Access Economics (2018) found that regional and remote airports are more likely to be economically reliant on aviation activity such as aircraft and passenger airports, and so enabling larger aircraft operations may stimulate other operations at Kununurra Airport such as freight and logistics or charter. As the SWEK is located closer to Asian hubs than to Perth, it is more economically viable to export regional products via Darwin based on the present network (REMPLAN, 2018). In addition, from a qualitative perspective, additional freight capacity in the market allows for increased access to goods and services for the local community and offers local producers and potential exports with a closer point for airfreight exports, either domestically or internationally.

Specific opportunities for freight routes and export opportunities are outlined below.

Project Sea Dragon

Project Sea Dragon is a proposed large-scale prawn farming and processing project, which has much of its activity within the Kimberley region (some activity is located in the Northern Territory). The project has a long-term development timeframe with full capacity reached 10 years after first production.

The project crosses the WA–NT boundary, with all WA activity being undertaken in the Kimberley region. Key locations supporting the first stage of development are outlined in Figure 14 and are:

- Quarantine and founder centre (Exmouth, WA);
- Hatchery and Broodstock facilities (Darwin, NT);
- Power Station (Legune, NT/supply from WA – To be determined);
- Processing Plant (Kununurra, WA);
- Storage (Kununurra, WA, and Legune, NT);
- Export facilities (WA, NT, or SA – TBD); and
- Workforce accommodation (Kununurra, WA, and Legune, NT).

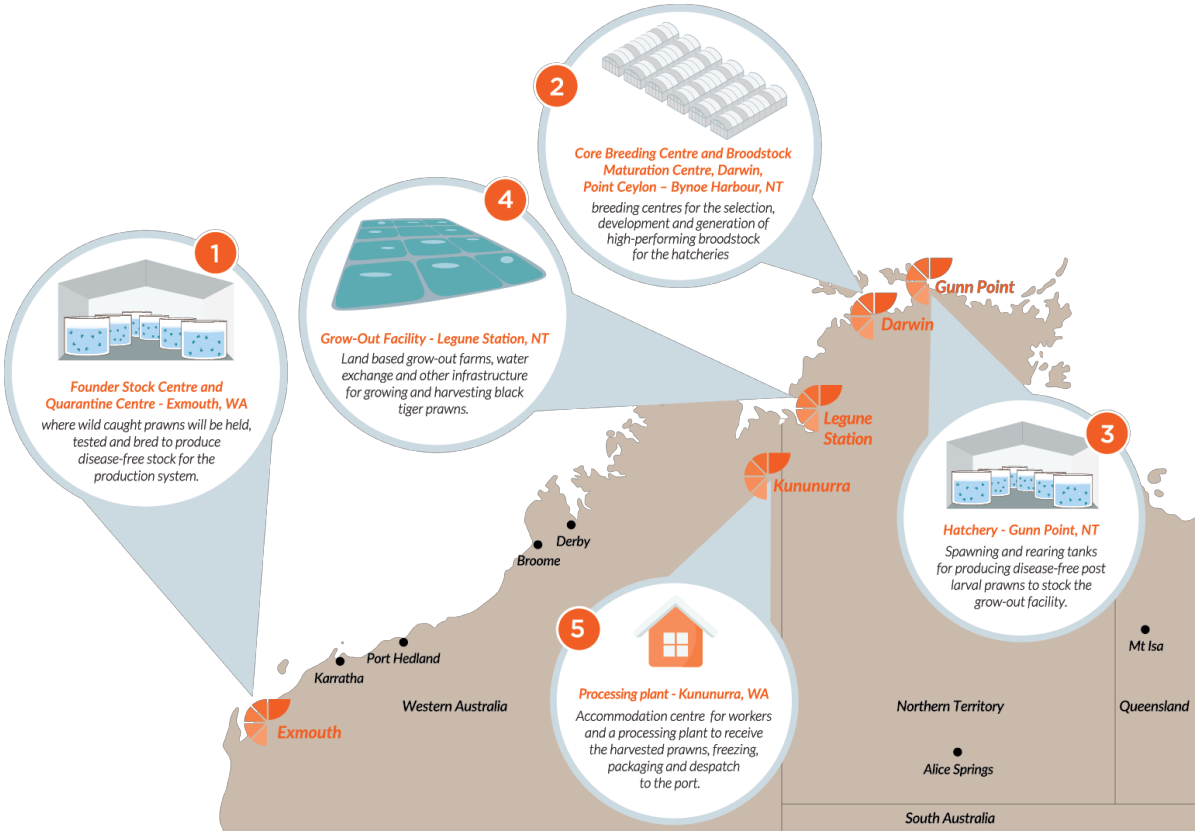


Figure 14: Project Sea Dragon indicative components

Stage 1 of the project is anticipated to deliver 10,000 to 12,000 tonnes of produce annually. Once the project is operating at full capacity (approximately 10 years from first production), production is anticipated at more than 100,000 tonnes per annum.

The project is anticipated to employ an estimated workforce of 300 construction jobs, with just under half (122) located in WA. Some of these employees may be FIFO workers, and may require airport facilities in Kununurra for their commute. Once the project is fully operational, it is expected to employ almost 1,600 employees (directly) with approximately 725 located in the Kimberley region.

The proponents are aiming to support local participation in the labour force, but it should be expected that some labour will be imported into the region for the purposes of the project, supporting demand for local air services at EKRA.

Ord–East Kimberley Expansion Project

The Ord–East Kimberley Expansion Project is a significant investment in the Kimberley region, and has the potential to have far-reaching impacts for the region in terms of both social and economic outcomes. The project is primarily centred on providing agricultural lands (8,000 hectares in addition to the existing 14,000 hectares) and required supporting infrastructure to locations along the Ord River in the Kimberley region. However, the project also delivers a range of socioeconomic infrastructure to the region, including education and training, health, community, accommodation, and transport infrastructure (WA Government, n.d.). The transport infrastructure component incorporates the completed Patient Transfer Facility at Kununurra Airport and refurbishment of the existing terminal. The long-term aim of the project is to develop Kununurra into a major regional centre for WA. There are agreements in place for the release of more than 7,000 hectares of land in the region (WA Government, 2013).

Export of agricultural product associated with the project is likely to be to Asia, with key proponents of the project being Chinese-owned companies. The proponents have signed an MOU (memorandum of understanding) with the WA Government (WA Government, 2014) relating to live cattle exports from WA. These agreements will allow for the export of live cattle to Hainan Island, China, as a trial.

Key impacts for local air services are likely to arise from increased activity related to the project and tourism activity arising from improved amenity in the region. In addition, there is potential for increased air services activity stemming from increased agricultural activities in the region. The key imports potentially requiring airport services are the arrival of labour for the operations and management of the agricultural lands. There is also the potential for these goods to be exported via dedicated freighter aircraft from EKRA, which would require the Kununurra Airport to be Code 4C capable.

Future produce opportunities

The report *Growing the North – Market opportunities for irrigated agricultural produce from Northern Western Australia* (Department of Agriculture and Food, 2015) identifies high potential products that can be produced in WA and meet the demand from international markets such as Asia and the Middle East. The report identifies 18 potential products as opportunities for irrigated agriculture in northern WA, including walnuts and lucerne hay to cotton and sorghum.

Future agriculture development and exports originating in WA have the potential to stimulate air services to the region or dedicated freight services to ensure that time-critical freight reaches its final destination whilst maximising product quality.

Increasing airfreight opportunities both through infrastructure requirements and regional development will provide a greater benefit to the connectivity of the region as it provides the opportunity for more efficient airfreight for high-value goods to and from Australia's hubs to the regions. Overall, the operational capacity for EKRA to become a Code 4C airport from a Code 3C will represent significant opportunities for increases in throughput for airfreight as well the capacity that comes with the operation of a Code 4C aircraft to EKRA.

9.4.3. Liveability

The liveability of a remote region is intrinsically linked to its connectivity and the range of services and facilities available within the remote community and in other centres. Airports play an important role in offsetting the geographical disadvantages of living in remote parts of Australia by delivering essential and emergency services (Deloitte Access Economics, 2018).

The smaller populations of remote communities, with slow growth, require regular air services to maintain connectivity to goods, services and trade. Generally, airport services have a positive relationship with economic growth (GDP). Increases in GDP can be affiliated with increased air services, and population growth (Baker et al., 2015). A runway extension for EKRA, in conjunction with other regional projects, may be a catalyst for population growth in the region, which will fuel additional air services and social connectivity for the community.

In addition to population growth, there are a number of non-quantifiable benefits to the Runway Extension Project that are likely to increase the liveability in Kununurra and throughout the SWEK.

- **Accessibility**
  - More affordable airfares to travel from EKRA
  - More destination options for travellers to/from SWEK.
- **Healthcare**
  - Link the community to specialist medical treatment that may not be available in existing network or destinations available from EKRA
  - Provide more efficient accessibility and connectivity to specialist medical services in East Coast capital cities through direct point-to-point services to the specialist
  - Provide increased access opportunities for medical professionals to visit Kununurra and the Kimberley region and the surrounding very remote communities.
- **Services and facilities**
  - Growth in retail, hospitality, health and other sectors within existing townships
  - Increased visitation to the region to support local services and businesses.

9.4.3.1. Airports and population growth

Remote airports usually service smaller populations that are often growing slowly but at the same time are dispersed across large distances, which makes regular air services critical. Generally, airport services have a positive relationship with economic growth (GDP). Increases in GDP can be affiliated

with increased air services and population growth (Baker et al., 2015). A runway extension for EKRA, in conjunction with other regional projects may be a catalyst for population growth in the region, which will fuel additional air services and social connectivity for the community.

9.4.4. Connectivity

Kununurra is a remote community, and its connectivity to other cities and the rest of Australia is imperative for regional development, the economy and the livelihoods of the community. As such, there are a number of qualitative benefits for the community, business travellers and tourists that are unable to be quantified. They are discussed as follows.

Local community

In addition to the liveability components outlined in Section 9.4.2, this Project would also be the stimulant for increasing connectivity and the feeling of connectedness for the local community. It is vital for remote communities to be able to access medical services in other cities or visit friends and family. Social connectivity is particularly valuable in a nation such as Australia, known for its considerable distances between major urban hubs and isolated remote regions like Kununurra (Deloitte Access Economics, 2018).

Business travellers

People travel to and from EKRA for business purposes. The Kimberley is home to a number of large projects across sectors including agriculture and resources. For example, the Ord Irrigation Scheme, Project Sea Dragon etc. At present, to travel to EKRA from Australia's primary business centres on the East Coast involves a transfer flight via Peth, Darwin or Broome. The Runway Extension Project is likely to make a direct air service to an East Coast port viable, which would minimise travel-time requirements and increase connectivity for business travellers.

In addition, the Project will provide an opportunity for increases in frequency and capacity on existing routes. For example, the route from Perth to Kununurra is currently operated four times per week; ideally upgrading the service to daily would support a more diverse range of travellers.

As these flights are operated by a F100 aircraft, the Project would take out the current outbound operating restrictions on this aircraft, allowing for an increase in technical economic efficiency of these services, potentially increasing the likelihood of additional services.

Tourists

The major drawcard for the Kimberley region is tourism. REMPLAN (2018) found that the tourism output (gross revenue) for businesses and organisations within the SWEK is $106.238 million per year. Having direct services from one of Australia's primary international gateways on the East Coast, in addition to the existing gateways into Perth and Darwin, would increase the connectivity of the Kimberley for international visitors to Australia. Tourism Research Australia (2017a) estimates that approximately 15,000,000 international visitors will arrive in Australia in 2026–27. Additional frequencies on existing services are also likely to benefit the connectivity opportunities for the region.

As a whole, the Runway Extension Project will increase regional accessibility for business and tourism travellers, plus the local community travelling outbound. The improvements in connectivity would contribute to the economic performance of the wider region through enhancing productivity (Oxford Economics, 2011), as well as lessening the impact-generalised cost of travel to the region through the increase in route availability and cost of airline operations. EKRA should maintain its connectivity to the existing network, as well as strive for the implementation of additional routes, in order to be the gateway to the Kimberley.

9.4.5. Resource sector

The East Kimberley region has the potential to undergo a resurgence in the resources sector. This sector is a key employment and economic contributor for Western Australia. In 2016–17, resources in the SWEK were valued at $270 million.

Sino Nickel and Panoramic Resources (Western Australia) have signed a four-year concentrate sales agreement, which will start either on the first date of shipment or 31 March 2019. The Savannah mine is located 120 kilometres southwest of Kununurra. The mine has resources of nickel, copper and cobalt,

which have been evaluated by Panoramic as having a long mine life of 8.3 years (excluding future exploration), as well as significant supplies of nickel, which are expected to have an upward price/supply trend in the short to medium term. Increased production of electric vehicles has markedly increased the demand for and price of nickel, which is typically used in battery production.

The Browns Range project is being developed by Northern Minerals, 170 kilometres southeast of Halls Creek. An initial pilot plant, developed in 2018, will allow for the assessment of the feasibility of a larger-scale development. This project aims to produce heavy rare earth dysprosium, which is used in hybrid and electric vehicles, as well as other high-end technology applications.

Increased demand for resources and ongoing development of projects in this sector within the region may increase demand for FIFO charter or throughput on RPT operations at EKRA.

9.4.6. Defence support

EKRA is located within operating range of two Royal Australian Air Force (RAAF) bases: Tindal and Curtin. RAAF Tindal is the home of the 75 Squadron, operating the F/A 18-A 'Hornet', fulfilling a close-air-support role for the Northern Australia region. RAAF Curtin operates as a 'bare base', used predominantly for training operations. Curtin does not have permanent operational squadrons onsite, whilst further away, RAAF Learmonth is another bare base that provides operational training in northern WA. Learmonth is also recognised as a key alternative landing site for large aircraft.

Tindal, Curtin and Learmonth are already capable of handling 4C aircraft, with Learmonth and Curtin capable of supporting 4E operations (A330/777/747). Upgrading EKRA would provide additional regional facilities that would allow for greater opportunities for the Department of Defence to conduct training and operations at EKRA where required.

In future, there is potential for an RAAF base to be sited to the north of the EKRA runway.

9.4.7. Commonwealth Northern Australia Initiative

The Department of Industry, Innovation and Science (through the Office of Northern Australia) has identified six key goals for Northern Australia, which can be accommodated through infrastructure projects. They are:

- Provide a trade and investment gateway.
- Facilitate a more diversified northern economy.
- Support Indigenous entrepreneurship and businesses.
- Provide world-class infrastructure.
- Improve water infrastructure investment.
- Support research and innovation.

An extension of the EKRA runway is an ideal opportunity to facilitate trade and investment, by providing improved access that will allow for economic diversification. Aviation accessibility is an important part of supporting research, innovation, business and entrepreneurship in the region, as well as providing Indigenous support and community access. Supporting Code 4C aircraft at EKRA is a major signifier of regional growth, providing freight benefits, and facilitating opportunities for economic diversification in addition to increasing the quality of the infrastructure.

9.4.8. Emergency support

The proposed Runway Extension Project at EKRA will provide higher-quality infrastructure, which will allow for improved landing access for emergency aircraft operations such as fire-bombers and airlift aircraft. Supporting Code 4C aircraft would allow easier access for key firefighting aircraft such as Coulson Aviation's 737-300 and C-130H water bombers. An extended runway would also supplement the ability for casualty evacuation by allowing for higher-capacity aircraft to operate out of EKRA. At present, the nearest Code 4C airports for public access are at Broome and Darwin, which would significantly impair the ability of aircraft to respond quickly to emergencies that are in close proximity to EKRA.

9.4.9. Potential as an alternative airport

An extension of the EKRA runway would allow for flight diversions that currently are required to use Broome, Darwin or RAAF bases Curtin, Tindal and Learmonth. Upgrading EKRA could provide

diversion or emergency facilities for key domestic services such as Perth–Darwin and international services with operator approval. Upgrading EKRA would ensure that 'workhorse' aircraft (737/A320) would still be able to operate within the region and provide alternative airport services as required in cases of severe weather events or emergencies. EKRA would be the ideal preferred alternative airport for Darwin International.

9.4.10. Benefits beyond the construction phase

Large-scale infrastructure projects, such as the proposed runway extension at EKRA, bring long-term benefits to the airport and the greater region for an extended period. As these are diverse and are reliant on the outcomes of the Project, they have not been quantified.

Some of the general benefits are:

- population growth;
- stimulation of demand for residential and industrial uses in the regions townships;
- job creation and industry development in the region (e.g. airport, tourism, retail and hospitality);
- opportunity for the airport to have the capacity to accommodate larger aircraft and greater passenger numbers and appropriately respond to changes in demand;
- inbound and outbound region accessibility;
- ensuring airport aviation infrastructure is not a constraint to future opportunities.
- encouraging new airlines and operators to choose Kununurra as a destination.

10. SUMMARY OF THE CBA

This section provides an overview of the quantifiable economic costs and benefits of the Runway Extension Project at Kununurra. This includes the benefits-to-cost ratio (BCR), which has been calculated by dividing the benefits by the total costs. A BCR greater than 1 indicates that a project is economically viable whilst a BCR less than 1 indicates that a project is not viable. The ratio of net benefits to net capital expenditure is the dividing of the total benefits by the capital expenditure costs for the project only.

10.1. Economic costs

The economic costs, as discussed in this CBA report, are overviewed in Table 28.

Table 28: Overview of costs of the Runway Extension Project

Project Cost	Net Present Values		
	Low	**Medium**	**High**
Construction of the Runway Extension		$17,547,778	
Ongoing capital expenditure and consequential maintenance requirements		$10,212,857	
Other EKRA operating expenses		$48,185,051	
Airline business development – landing fee rebates	$737,393	$2,646,194	$4,395,325
Airline Business development – marketing		$503,725	
TOTAL ECONOMIC COSTS	**$77,186,805**	**$79,095,605**	**$80,844,736**

10.2. Economic benefits

The economic benefits of the Runway Extension Project discussed in this report are overviewed in Table 29, as well as their BCR relative to the capital expenditure required for the Project only. It can be seen that each of the quantifiable benefit items overviewed in this table provide positive BCR values and indicate that the Project would be commercially viable.

Table 29: Overview of benefits of the Runway Extension Project

	NPVs and BCRs		
	Low	***Medium***	***High***
Fare reduction on existing routes		$28,401,145	
BCR		*1.62:1*	
Value for existing passengers to travel on a direct flight to the East Coast		$20,286,532	
BCR		*1.16:1*	
Incremental increase in inbound leisure visitors spend in the region	$22,613,519	$70,296,256	$130,696,193
BCR	*1.29:1*	*4.01:1*	*7.45:1*
Airport revenue	$67,249,466	$76,807,883	$88,219,873
BCR	*3.83:1*	*4.38:1*	*5.03:1*
Total economic benefits	**$138,550,666**	**$195,791,823**	**$267,603,753**

10.3. Project overview

The review of the costs and benefits for the Runway Extension Project has seen the calculation of NPVs for all costs and benefits, as well as holistic BCRs for the Project and a BCR relative to the runway extension capital expenditure requirements only. It can be seen in Table 30 that each scenario has a positive BCR, both to the total project costs as well as relative to the runway extension capital expenditure requirements only. This indicates that the Project is likely to have a 2.5:1 return on investment in the medium (most likely) scenario and 11.2:1 return on the capital expenditure requirements for the Project by itself.

Table 30: Summary of NPVs and BCR for costs and benefits of the Runway Extension Project

	Low	Medium	High
TOTAL ECONOMIC COSTS	$77,186,805	$79,095,605	$80,844,736
TOTAL ECONOMIC BENFITS	$138,550,662	$195,791,816	$267,603,743
BCR	1.8:1	2.5:1	3.3:1
Ratio of net benefits to project capital expenditure	7.9:1	11.2:1	15.3:1

11. CONCLUSION

Kununurra is a remote community and the air services and operations of East Kimberley Regional Airport are key for its connectivity to the rest of Australia. The Kununurra Airport provides a point of access for the greater Kimberley region. Ensuring this facility is fit for purpose to maximise the opportunities for the community, as well as regional growth through tourism and other areas, is important.

The proposed extension of Runway 12/30 at the Kununurra Airport, which would facilitate the operation of Code 4C aircraft rather than the current design aircraft (being Code 3C), would represent a significant opportunity to increase the production efficiency of the facility and the operations that it supports and consequently reduce the generalised cost of travel for passengers.

A financial model was prepared to assess the value and financial opportunity that may exist from the Runway Extension Project. The financial model was constructed based on the historical financial accounts for Kununurra Airport, the terminal survey, passenger forecasts as well as the estimated capital expenditure for the Runway Extension Project. The financial assessment for the Project included modelling that identified that the medium growth scenario has an NPV of net cash flows (EBITDA – CAPEX) of $14,652,430 and an NPV (EBITDA only) of $19,488,597. Additionally, the weighted average NPV for the three growth scenarios (low, medium, high) is $15,040,501. This is based on the assumption that the medium scenario is 50% likely to occur whilst the low and the high scenarios are 25% likely.

This CBA report took into consideration various project costs and benefits, based on the financial modelling in the financial review (Section 8). The project costs assessed in the CBA include capital expenditure for the Runway Extension Project, ongoing airport maintenance and capital expenditure, other airport operating expenses, and airline business development.

The quantifiable benefits assessed in this CBA take into consideration the potential for reduced fares on existing routes, the implementation of a new route to the East Coast of Australia and additional capacity on existing routes with a code 4C aircraft, the potential for increased inbound visitation and tourism spend, freight and airport revenue. The BCR of each of these items relative to the capital expenditure requirements for the Project indicated positive outcomes. These benefits should be considered in conjunction with the non-quantifiable benefits of the Project to provide a more detailed understanding of the financial and social benefits the Project may stimulate for East Kimberley.

The non-quantifiable costs discussed in this report include costs associated with noise, visitation numbers and the potential damage to the natural environment, roads and the capacity of Kununurra Airport to maintain the status quo. The non-quantifiable benefits discussed in the report include job creation, liveability, connectivity, resource sector, Defence support, Commonwealth Northern Australia Initiatives, support in emergency situations, potential as an alternative airport, and the benefits beyond the construction phase.

The operation of the Base Case at EKRA for the future may be somewhat financially sustainable but is subject to the influence of future airline fleets' operation of Code 3C aircraft. There is a risk that the number of Code 3C aircraft operating in Australia in future will be extremely limited as the average age of aircraft increases and are more likely to be retired. This is an important consideration throughout this CBA and a limitation to the future scope of operations at Kununurra.

It can be seen that there are significant direct benefits that can be attributed to the undertaking of the Project at EKRA. The BCRs for the four primary project benefits, relative to the capital expenditure requirements, are positive, particularly for future airport revenue streams and increased visitation and spend in the region. As a whole, the Project in the medium scenario has a BCR of 2.5:1. When considering benefits to runway extension capital expenditure only, the BCR is 11.2:1, which suggests that the Project is feasible.

The outcomes of the quantitative measures of the CBA should be considered in light of the discussion surrounding the non-quantifiable benefits, which provide extensive social value to the Kununurra and regional community through facilitating increased connectivity and accessibility to integral services and facilities, and overarching liveability for residents. There is an extensive opportunity for regional development through sectors such as freight and exporting of high-value and time-critical agricultural goods from the region in addition to increased visitation to the region, both of which support long-term job creation through services and facilities to support the sectors.

Overall, EKRA is uniquely positioned to be a hub for Australia's northwest with existing and future opportunities that would benefit from the proposed runway extension at EKRA, including tourism, Ord Irrigation, resources sector, resident community, and support for Defence. Thus, it can be said that the financial assessment and evaluation of the options has indicated that the extension of the runway at EKRA is likely to be a feasible opportunity for the Airport and the community.

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APPENDICES

13. APPENDICES

Appendix A: Cash flows for low scenario

INPUTS

Years	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Inputs																					
Passenger numbers	69,941	67,843	65,807	67,124	68,466	71,258	72,516	73,811	75,145	76,518	77,930	79,382	80,875	82,409	83,984	85,563	87,185	88,849	90,557	92,309	94,105
Passenger Landing Charges	$ 20.82	$ 21.34	$ 21.87	$ 22.42	$ 22.98	$ 23.55	$ 24.14	$ 24.74	$ 25.36	$ 26.00	$ 26.65	$ 27.31	$ 27.99	$ 28.69	$ 29.41	$ 30.15	$ 30.90	$ 31.67	$ 32.47	$ 33.28	$ 34.11
Total MTOW						23,317	23,900	25,597	26,236	27,411	28,097	30,280	31,037	50,103	51,355	$ 52,639	$ 53,955	$ 55,304	$ 56,687	$ 58,104	$ 59,556
Landing Charge per KG MTOW						$27.00	$ 27.68	$ 28.37	$ 29.08	$ 29.80	$ 30.55	$ 31.31	$ 32.09	$ 32.90	$ 33.72	$ 34.56	$ 35.43	$ 36.31	$ 37.22	$ 38.15	$ 39.10

CASHFLOW

Years	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Cumulative Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Revenue																					
Passenger Landing Fees	$ 1,455,855	$ 1,447,489	$ 1,439,150	$ 1,504,651	$ 1,573,101	$ 1,678,192	$ 1,750,505	$ 1,826,319	$ 1,905,804	$ 1,989,132	$ 2,076,487	$ 2,168,060	$ 2,264,048	$ 2,364,659	$ 2,470,109	$ 2,579,472	$ 2,694,070	$ 2,814,143	$ 2,939,945	$ 3,071,736	$ 3,209,792
Aircraft landing -RPT	$ 1,209,854	$ 1,240,100	$ 1,271,102	$ 1,302,880	$ 1,335,452	$ 629,551	$ 661,422	$ 726,093	$ 762,852	$ 816,937	$ 858,295	$ 948,108	$ 996,106	$ 1,648,222	$ 1,731,663	$ 1,819,329	$ 1,911,432	$ 2,008,199	$ 2,109,864	$ 2,216,676	$ 2,272,092
Aircraft landing - non RPT	$ 410,000	$ 420,250	$ 430,756	$ 441,525	$ 452,563	$ 463,877	$ 475,474	$ 487,361	$ 499,545	$ 512,034	$ 524,835	$ 537,956	$ 551,404	$ 565,190	$ 579,319	$ 593,802	$ 608,647	$ 623,863	$ 639,460	$ 655,447	$ 671,833
Passenger screening	$ 734,456	$ 752,817	$ 771,637	$ 790,928	$ 810,702	$ 830,969	$ 851,743	$ 873,037	$ 894,863	$ 917,234	$ 940,165	$ 963,669	$ 987,761	$ 1,012,455	$ 1,037,766	$ 1,063,711	$ 1,090,303	$ 1,117,561	$ 1,145,500	$ 1,174,138	$ 1,203,491
Other	$ 391,911	$ 389,658	$ 387,414	$ 436,306	$ 456,155	$ 486,628	$ 507,597	$ 529,581	$ 552,629	$ 576,792	$ 602,122	$ 628,676	$ 656,510	$ 685,684	$ 716,262	$ 747,974	$ 781,204	$ 816,022	$ 852,501	$ 890,716	$ 930,749
	$ -	$ -	$ -	$ 6.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	$ 4,202,074	$ 4,250,314	$ 4,300,060	$ 4,476,290	$ 4,627,973	$ 4,089,217	$ 4,246,741	$ 4,442,392	$ 4,615,692	$ 4,812,129	$ 5,001,904	$ 5,246,469	$ 5,455,830	$ 6,276,210	$ 6,535,120	$ 6,804,288	$ 7,085,656	$ 7,379,788	$ 7,687,269	$ 8,008,712	$ 8,287,957
Expenses																					
Expenses																					
AB Distribution	$ 845,818	$ 866,963	$ 888,637	$ 910,853	$ 933,624	$ 956,965	$ 980,889	$ 1,005,411	$ 1,030,547	$ 1,056,310	$ 1,082,718	$ 1,109,786	$ 1,137,531	$ 1,165,969	$ 1,195,118	$ 1,224,996	$ 1,255,621	$ 1,287,012	$ 1,319,187	$ 1,352,167	$ 1,385,971
Employee Costs	$ 1,776,581	$ 1,820,996	$ 1,866,521	$ 1,913,184	$ 1,961,013	$ 2,100,039	$ 2,152,540	$ 2,206,353	$ 2,261,512	$ 2,318,050	$ 2,376,001	$ 2,435,401	$ 2,496,286	$ 2,558,693	$ 2,622,660	$ 2,688,227	$ 2,755,433	$ 2,824,318	$ 2,894,926	$ 2,967,300	$ 3,041,482
Insurance	$ 170,260	$ 174,516	$ 178,879	$ 183,351	$ 187,935	$ 192,633	$ 197,449	$ 202,385	$ 207,445	$ 212,631	$ 217,947	$ 223,395	$ 228,980	$ 234,705	$ 240,572	$ 246,587	$ 252,751	$ 259,070	$ 265,547	$ 272,186	$ 278,990
Loss on disposal of assets	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Materials and contracts	$ 339,337	$ 347,820	$ 356,515	$ 365,428	$ 374,564	$ 383,928	$ 393,526	$ 403,364	$ 413,449	$ 423,785	$ 434,379	$ 445,239	$ 456,370	$ 467,779	$ 479,474	$ 491,460	$ 503,747	$ 516,341	$ 529,249	$ 542,480	$ 556,042
Other	$ (45)	$ (46)	$ (47)	$ (49)	$ (50)	$ (51)	$ (52)	$ (54)	$ (55)	$ (56)	$ (58)	$ (59)	$ (61)	$ (62)	$ (64)	$ (65)	$ (67)	$ (69)	$ (70)	$ (72)	$ (74)
Utilities	$ 183,930	$ 188,528	$ 193,242	$ 198,073	$ 203,024	$ 208,100	$ 213,303	$ 218,635	$ 224,101	$ 229,703	$ 235,446	$ 241,332	$ 247,366	$ 253,550	$ 259,888	$ 266,386	$ 273,045	$ 279,871	$ 286,868	$ 294,040	$ 301,391
airline incentives	$ -	$ -	$ -	$ -	$ -	$ 12,584	$ 25,160	$ 38,114	$ 51,452	$ 65,178	$ 79,300	$ 93,821	$ 108,748	$ 93,064	$ 104,879	$ 116,723	$ 128,886	$ 141,370	$ 154,180	$ 167,318	$ 180,789
airline marketing						$ 250,000	$ 150,000	$ 150,000													
Total Expenses	**$ 3,315,880**	**$ 3,398,777**	**$ 3,483,747**	**$ 3,570,840**	**$ 3,660,111**	**$ 4,104,198**	**$ 4,112,814**	**$ 4,224,210**	**$ 4,188,450**	**$ 4,305,601**	**$ 4,425,733**	**$ 4,548,915**	**$ 4,675,220**	**$ 4,773,697**	**$ 4,902,528**	**$ 5,034,314**	**$ 5,169,416**	**$ 5,307,914**	**$ 5,449,887**	**$ 5,595,418**	**$ 5,744,591**
EBITDA	**$ 886,194**	**$ 851,537**	**$ 816,313**	**$ 905,450**	**$ 967,861**	**$ (14,981)**	**$ 133,926**	**$ 218,182**	**$ 427,243**	**$ 506,528**	**$ 576,171**	**$ 697,554**	**$ 780,610**	**$ 1,502,513**	**$ 1,632,591**	**$ 1,769,974**	**$ 1,916,240**	**$ 2,071,874**	**$ 2,237,382**	**$ 2,413,295**	**$ 2,543,366**
Depreciation	$ 953,949	$ 977,798	$ 1,002,243	$ 1,027,299	$ 1,052,981	$ 1,079,306	$ 1,106,288	$ 1,133,946	$ 1,162,294	$ 1,191,352	$ 1,221,135	$ 1,251,664	$ 1,282,955	$ 1,315,029	$ 1,347,905	$ 1,381,603	$ 1,416,143	$ 1,451,546	$ 1,487,835	$ 1,525,031	$ 1,563,157
PBIT	**$ (67,755)**	**$ (126,261)**	**$ (185,930)**	**$ (121,849)**	**$ (85,120)**	**$ (1,094,287)**	**$ (972,362)**	**$ (915,764)**	**$ (735,052)**	**$ (684,824)**	**$ (644,964)**	**$ (554,110)**	**$ (502,345)**	**$ 187,483**	**$ 284,686**	**$ 388,371**	**$ 500,097**	**$ 620,328**	**$ 749,547**	**$ 888,264**	**$ 980,209**
Capital expenditure	$ -	$ -	$ -	$ 396,572	$ 406,486	$ 416,648	$ 427,064	$ 437,741	$ 448,684	$ 459,902	$ 471,399	$ 483,184	$ 495,264	$ 507,645	$ 520,336	$ 533,345	$ 546,678	$ 560,345	$ 574,354	$ 588,713	$ 603,431
RWY Capex			-	1,549,740	17,719,198																
Grant income plus loan	-		-	(1,549,740)	(17,719,198)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Loan repayment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Capex	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431
EBITDA	886,194	851,537	816,313	905,450	967,861	(14,981)	133,926	218,182	427,243	506,528	576,171	697,554	780,610	1,502,513	1,632,591	1,769,974	1,916,240	2,071,874	2,237,382	2,413,295	2,543,366
Less Net Capex	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431
Net Cash flows	886,194	851,537	816,313	508,878	561,375	(431,629)	(293,138)	(219,559)	(21,442)	46,626	104,772	214,370	285,347	994,867	1,112,255	1,236,629	1,369,562	1,511,529	1,663,028	1,824,582	1,939,935

Appendix B: Cash flows for medium scenario

INPUTS																							
Years	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038		
Inputs																							
Passenger numbers	69,941	67,843	65,807	67,124	68,466	74,078	78,353	82,872	87,644	92,678	97,984	103,570	109,444	115,615	121,812	127,110	132,630	138,377	144,353	150,561	157,005		
Passenger Landing Charges	$ 20.82	$ 21.34	$ 21.87	$ 22.42	$ 22.98	$ 23.55	$ 24.14	$ 24.74	$ 25.36	$ 26.00	$ 26.65	$ 27.31	$ 27.99	$ 28.69	$ 29.41	$ 30.15	$ 30.90	$ 31.67	$ 32.47	$ 33.28	$ 34.11		
Total MTOW						30,567	31,331	33,867	34,714	40,544	41,558	45,660	46,802	42,529	43,592	44,682	45,799	46,944	48,117	49,320	50,553		
Landing Charge per KG MTOW						$27.00	$ 27.68	$ 28.37	$ 29.08	$ 29.80	$ 30.55	$ 31.31	$ 32.09	$ 32.90	$ 33.72	$ 34.56	$ 35.43	$ 36.31	$ 37.22	$ 38.15	$ 39.10		

CASHFLOW																							
Years	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037			
Cumulative Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -			
Revenue																							
Passenger Landing Fees	$ 1,455,855	$ 1,447,489	$ 1,439,150	$ 1,504,651	$ 1,573,101	$ 1,744,602	$ 1,891,410	$ 2,050,504	$ 2,222,792	$ 2,409,235	$ 2,610,840	$ 2,828,670	$ 3,063,837	$ 3,317,512	$ 3,582,712	$ 3,831,992	$ 4,098,372	$ 4,382,838	$ 4,686,417	$ 5,010,176	$ 5,355,220		
Aircraft landing -RPT	$ 1,209,854	$ 1,240,100	$ 1,271,102	$ 1,302,880	$ 1,335,452	$ 825,317	$ 867,099	$ 960,713	$ 1,009,349	$ 1,208,338	$ 1,269,510	$ 1,429,704	$ 1,502,083	$ 1,399,065	$ 1,469,892	$ 1,544,306	$ 1,622,486	$ 1,704,624	$ 1,790,921	$ 1,881,586	$ 1,976,842		
Aircraft landing - non RPT	$ 410,000	$ 420,250	$ 430,756	$ 441,525	$ 452,563	$ 463,877	$ 475,474	$ 487,361	$ 499,545	$ 512,034	$ 524,835	$ 537,956	$ 551,404	$ 565,190	$ 579,319	$ 593,802	$ 608,647	$ 623,863	$ 639,460	$ 655,447	$ 671,833		
Passenger screening	$ 734,456	$ 752,817	$ 771,637	$ 790,928	$ 810,702	$ 830,969	$ 851,743	$ 873,037	$ 894,863	$ 917,234	$ 940,165	$ 963,669	$ 987,761	$ 1,012,455	$ 1,037,766	$ 1,063,711	$ 1,090,303	$ 1,117,561	$ 1,145,500	$ 1,174,138	$ 1,203,491		
Other	$ 391,911	$ 389,658	$ 387,414	$ 436,306	$ 456,155	$ 505,885	$ 548,455	$ 594,588	$ 644,547	$ 698,610	$ 757,070	$ 820,234	$ 888,426	$ 961,984	$ 1,038,885	$ 1,111,169	$ 1,188,412	$ 1,270,899	$ 1,358,928	$ 1,452,809	$ 1,552,862		
	$ 5.60	$ 5.74	$ 5.89	$ 6.5	$ 6.66	$ 7.54	$ 7.00																
	27%	27%	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		
Total Revenue	$ 4,202,074	$ 4,250,314	$ 4,300,060	$ 4,476,290	$ 4,627,973	$ 4,370,651	$ 4,634,181	$ 4,966,202	$ 5,271,096	$ 5,745,451	$ 6,102,420	$ 6,580,232	$ 6,993,511	$ 7,256,206	$ 7,708,575	$ 8,144,980	$ 8,608,220	$ 9,099,785	$ 9,621,226	$ 10,174,155	$ 10,760,248		
Expenses																							
Expenses																							
AB Distribution	$ 845,818	$ 866,963	$ 888,637	$ 910,853	$ 933,624	$ 956,965	$ 980,889	$ 1,005,411	$ 1,030,547	$ 1,056,310	$ 1,082,718	$ 1,109,786	$ 1,137,531	$ 1,165,969	$ 1,195,118	$ 1,224,996	$ 1,255,621	$ 1,287,012	$ 1,319,187	$ 1,352,167	$ 1,385,971		
Employee Costs	$ 1,776,581	$ 1,820,996	$ 1,866,521	$ 1,913,184	$ 1,961,013	$ 2,100,039	$ 2,152,540	$ 2,206,353	$ 2,261,512	$ 2,318,050	$ 2,376,001	$ 2,435,401	$ 2,496,286	$ 2,558,693	$ 2,622,660	$ 2,688,227	$ 2,755,433	$ 2,824,318	$ 2,894,926	$ 2,967,300	$ 3,041,482		
Insurance	$ 170,260	$ 174,516	$ 178,879	$ 183,351	$ 187,935	$ 192,633	$ 197,449	$ 202,385	$ 207,445	$ 212,631	$ 217,947	$ 223,395	$ 228,980	$ 234,705	$ 240,572	$ 246,587	$ 252,751	$ 259,070	$ 265,547	$ 272,186	$ 278,990		
Loss on disposal of assets	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		
Materials and contracts	$ 339,337	$ 347,820	$ 356,515	$ 365,428	$ 374,564	$ 383,928	$ 393,526	$ 403,364	$ 413,449	$ 423,785	$ 434,379	$ 445,239	$ 456,370	$ 467,779	$ 479,474	$ 491,460	$ 503,747	$ 516,341	$ 529,249	$ 542,480	$ 556,042		
Other	$ (45)	$ (46)	$ (47)	$ (49)	$ (50)	$ (51)	$ (52)	$ (54)	$ (55)	$ (56)	$ (58)	$ (59)	$ (61)	$ (62)	$ (64)	$ (65)	$ (67)	$ (69)	$ (70)	$ (72)	$ (74)		
Utilities	$ 183,930	$ 188,528	$ 193,242	$ 198,073	$ 203,024	$ 208,100	$ 213,303	$ 218,635	$ 224,101	$ 229,703	$ 235,446	$ 241,332	$ 247,366	$ 253,550	$ 259,888	$ 266,386	$ 273,045	$ 279,871	$ 286,868	$ 294,040	$ 301,391		
airline incentives	$ -	$ -	$ -	$ -	$ -	$ 40,783	$ 83,531	$ 128,719	$ 176,439	$ 226,783	$ 279,841	$ 335,699	$ 394,443	$ 342,116	$ 388,593	$ 428,327	$ 469,728	$ 512,826	$ 557,646	$ 604,210	$ 652,538		
airline marketing						$ 250,000	$ 150,000	$ 150,000															
Total Expenses	**$ 3,315,880**	**$ 3,398,777**	**$ 3,483,747**	**$ 3,570,840**	**$ 3,660,111**	**$ 4,132,397**	**$ 4,171,185**	**$ 4,314,815**	**$ 4,313,437**	**$ 4,467,206**	**$ 4,626,274**	**$ 4,790,793**	**$ 4,960,915**	**$ 5,022,750**	**$ 5,186,243**	**$ 5,345,917**	**$ 5,510,259**	**$ 5,679,370**	**$ 5,853,353**	**$ 6,032,310**	**$ 6,216,341**		
EBITDA	**$ 886,194**	**$ 851,537**	**$ 816,313**	**$ 905,450**	**$ 967,861**	**$ 238,254**	**$ 462,996**	**$ 651,388**	**$ 957,659**	**$ 1,278,245**	**$ 1,476,146**	**$ 1,789,439**	**$ 2,032,597**	**$ 2,233,456**	**$ 2,522,333**	**$ 2,799,063**	**$ 3,097,961**	**$ 3,420,415**	**$ 3,767,873**	**$ 4,141,845**	**$ 4,543,907**		
Depreciation	$ 953,949	$ 977,798	$ 1,002,243	$ 1,027,299	$ 1,052,981	$ 1,079,306	$ 1,106,288	$ 1,133,946	$ 1,162,294	$ 1,191,352	$ 1,221,135	$ 1,251,664	$ 1,282,955	$ 1,315,029	$ 1,347,905	$ 1,381,603	$ 1,416,143	$ 1,451,546	$ 1,487,835	$ 1,525,031	$ 1,563,157		
PBIT	**$ (67,755)**	**$ (126,261)**	**$ (185,930)**	**$ (121,849)**	**$ (85,120)**	**$ (841,052)**	**$ (643,292)**	**$ (482,558)**	**$ (204,635)**	**$ 86,893**	**$ 255,010**	**$ 537,775**	**$ 749,641**	**$ 918,427**	**$ 1,174,428**	**$ 1,417,460**	**$ 1,681,818**	**$ 1,968,869**	**$ 2,280,038**	**$ 2,616,815**	**$ 2,980,750**		
Capital expenditure	$ -	$ -	$ -	$ 396,572	$ 406,486	$ 416,648	$ 427,064	$ 437,741	$ 448,684	$ 459,902	$ 471,399	$ 483,184	$ 495,264	$ 507,645	$ 520,336	$ 533,345	$ 546,678	$ 560,345	$ 574,354	$ 588,713	$ 603,431		
	$0		-	1,549,740	17,719,198																		
Grant income plus loan			-	(1,549,740)	(17,719,198)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Loan repayment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Net Capex	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431		
EBITDA	886,194	851,537	816,313	905,450	967,861	238,254	462,996	651,388	957,659	1,278,245	1,476,146	1,789,439	2,032,597	2,233,456	2,522,333	2,799,063	3,097,961	3,420,415	3,767,873	4,141,845	4,543,907		
Less Net Capex	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431		
Net Cash flows	886,194	851,537	816,313	508,878	561,375	(178,394)	35,932	213,647	508,975	818,343	1,004,747	1,306,255	1,537,333	1,725,811	2,001,996	2,265,718	2,551,283	2,860,070	3,193,519	3,553,132	3,940,476		

Appendix C: Cash flows for high scenario

INPUTS

Years	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Inputs																						
Passenger numbers	70,038	69,941	67,843	65,807	67,124	68,466	75,883	82,265	89,209	96,733	104,850	113,564	122,871	132,758	143,202	154,168	165,610	177,474	189,690	202,183	215,387	229,228
Passenger Landing Charges	$ 20.31	$ 20.82	$ 21.34	$ 21.87	$ 22.42	$ 22.98	$ 23.55	$ 24.14	$ 24.74	$ 25.36	$ 26.00	$ 26.65	$ 27.31	$ 27.99	$ 28.69	$ 29.41	$ 30.15	$ 30.90	$ 31.67	$ 32.47	$ 33.28	$ 34.11
Total MTOW							31,654	32,446	38,002	38,952	44,446	45,557	50,873	52,145	60,914	62,437	63,998	65,598	67,238	68,919	70,642	72,408
Landing Charge per KG MTOW							$27.00	$ 27.68	$ 28.37	$ 29.08	$ 29.80	$ 30.55	$ 31.31	$ 32.09	$ 32.90	$ 33.72	$ 34.56	$ 35.43	$ 36.31	$ 37.22	$ 38.15	$ 39.10

CASHFLOW

Years	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Cumulative Balance	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Revenue																						
Passenger Landing Fees	$ 1,422,316	$ 1,455,855	$ 1,447,489	$ 1,439,150	$ 1,504,651	$ 1,573,101	$ 1,787,096	$ 1,985,838	$ 2,207,297	$ 2,453,304	$ 2,725,636	$ 3,025,964	$ 3,355,810	$ 3,716,494	$ 4,109,082	$ 4,534,334	$ 4,992,656	$ 5,484,054	$ 6,008,096	$ 6,563,882	$ 7,167,360	$ 7,818,651
Aircraft landing -RPT	$ 1,180,345	$ 1,209,854	$ 1,240,100	$ 1,271,102	$ 1,302,880	$ 1,335,452	$ 854,667	$ 897,935	$ 1,077,999	$ 1,132,572	$ 1,324,618	$ 1,391,677	$ 1,592,922	$ 1,673,563	$ 2,003,892	$ 2,105,339	$ 2,211,922	$ 2,323,900	$ 2,441,548	$ 2,565,151	$ 2,695,012	$ 2,831,447
Aircraft landing - non RPT	$ 400,000	$ 410,000	$ 420,250	$ 430,756	$ 441,525	$ 452,563	$ 463,877	$ 475,474	$ 487,361	$ 499,545	$ 512,034	$ 524,835	$ 537,956	$ 551,404	$ 565,190	$ 579,319	$ 593,802	$ 608,647	$ 623,863	$ 639,460	$ 655,447	$ 671,833
Passenger screening	$ 716,542	$ 734,456	$ 752,817	$ 771,637	$ 790,928	$ 810,702	$ 830,969	$ 851,743	$ 873,037	$ 894,863	$ 917,234	$ 940,165	$ 963,669	$ 987,761	$ 1,012,455	$ 1,037,766	$ 1,063,711	$ 1,090,303	$ 1,117,561	$ 1,145,500	$ 1,174,138	$ 1,203,491
Other	$ 382,882	$ 391,911	$ 389,658	$ 387,414	$ 436,306	$ 456,155	$ 518,207	$ 575,837	$ 640,053	$ 711,389	$ 790,357	$ 877,444	$ 973,090	$ 1,077,678	$ 1,191,517	$ 1,314,828	$ 1,447,729	$ 1,590,220	$ 1,742,178	$ 1,903,340	$ 2,078,331	$ 2,267,187
		$ -	$ -	$ -	$ 6.50	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Revenue	$ 4,102,085	$ 4,202,074	$ 4,250,314	$ 4,300,060	$ 4,476,290	$ 4,627,973	$ 4,454,817	$ 4,786,827	$ 5,285,747	$ 5,691,673	$ 6,269,879	$ 6,760,084	$ 7,423,446	$ 8,006,900	$ 8,882,135	$ 9,571,587	$ 10,309,820	$ 11,097,126	$ 11,933,246	$ 12,817,333	$ 13,770,287	$ 14,792,608
Expenses																						
Expenses	$ -																					
AB Distribution	$ 825,188	$ 845,818	$ 866,963	$ 888,637	$ 910,853	$ 933,624	$ 956,965	$ 980,889	$ 1,005,411	$ 1,030,547	$ 1,056,310	$ 1,082,718	$ 1,109,786	$ 1,137,531	$ 1,165,969	$ 1,195,118	$ 1,224,996	$ 1,255,621	$ 1,287,012	$ 1,319,187	$ 1,352,167	$ 1,385,971
Employee Costs	$ 1,733,250	$ 1,776,581	$ 1,820,996	$ 1,866,521	$ 1,913,184	$ 1,961,013	$ 2,100,039	$ 2,152,540	$ 2,206,353	$ 2,261,512	$ 2,318,050	$ 2,376,001	$ 2,435,401	$ 2,496,286	$ 2,558,693	$ 2,622,660	$ 2,688,227	$ 2,755,433	$ 2,824,318	$ 2,894,926	$ 2,967,300	$ 3,041,482
Insurance	$ 166,107	$ 170,260	$ 174,516	$ 178,879	$ 183,351	$ 187,935	$ 192,633	$ 197,449	$ 202,385	$ 207,445	$ 212,631	$ 217,947	$ 223,395	$ 228,980	$ 234,705	$ 240,572	$ 246,587	$ 252,751	$ 259,070	$ 265,547	$ 272,186	$ 278,990
Loss on disposal of assets		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Materials and contracts	$ 331,060	$ 339,337	$ 347,820	$ 356,515	$ 365,428	$ 374,564	$ 383,928	$ 393,526	$ 403,364	$ 413,449	$ 423,785	$ 434,379	$ 445,239	$ 456,370	$ 467,779	$ 479,474	$ 491,460	$ 503,747	$ 516,341	$ 529,249	$ 542,480	$ 556,042
Other	$ (44)	$ (45)	$ (46)	$ (47)	$ (49)	$ (50)	$ (51)	$ (52)	$ (54)	$ (55)	$ (56)	$ (58)	$ (59)	$ (61)	$ (62)	$ (64)	$ (65)	$ (67)	$ (69)	$ (70)	$ (72)	$ (74)
Utilities	$ 179,444	$ 183,930	$ 188,528	$ 193,242	$ 198,073	$ 203,024	$ 208,100	$ 213,303	$ 218,635	$ 224,101	$ 229,703	$ 235,446	$ 241,332	$ 247,366	$ 253,550	$ 259,888	$ 266,386	$ 273,045	$ 279,871	$ 286,868	$ 294,040	$ 301,391
airline incentives		$ -	$ -	$ -	$ -	$ -	$ 58,826	$ 122,649	$ 192,087	$ 267,329	$ 348,496	$ 435,635	$ 528,708	$ 627,580	$ 549,013	$ 631,257	$ 717,078	$ 806,052	$ 897,677	$ 991,374	$ 1,090,403	$ 1,194,212
airline marketing							$ 250,000	$ 150,000	$ 150,000													
Total Expenses	**$ 3,235,005**	**$ 3,315,880**	**$ 3,398,777**	**$ 3,483,747**	**$ 3,570,840**	**$ 3,660,111**	**$ 4,150,440**	**$ 4,210,303**	**$ 4,378,183**	**$ 4,404,327**	**$ 4,588,919**	**$ 4,782,069**	**$ 4,983,802**	**$ 5,194,052**	**$ 5,229,647**	**$ 5,428,907**	**$ 5,634,668**	**$ 5,846,582**	**$ 6,064,220**	**$ 6,287,081**	**$ 6,518,503**	**$ 6,758,015**
EBITDA	**$ 867,080**	**$ 886,194**	**$ 851,537**	**$ 816,313**	**$ 905,450**	**$ 967,861**	**$ 304,377**	**$ 576,524**	**$ 907,564**	**$ 1,287,346**	**$ 1,680,960**	**$ 1,978,015**	**$ 2,439,644**	**$ 2,812,848**	**$ 3,652,489**	**$ 4,142,680**	**$ 4,675,151**	**$ 5,250,543**	**$ 5,869,026**	**$ 6,530,252**	**$ 7,251,784**	**$ 8,034,593**
Depreciation	$ 930,682	$ 953,949	$ 977,798	$ 1,002,243	$ 1,027,299	$ 1,052,981	$ 1,079,306	$ 1,106,288	$ 1,133,946	$ 1,162,294	$ 1,191,352	$ 1,221,135	$ 1,251,664	$ 1,282,955	$ 1,315,029	$ 1,347,905	$ 1,381,603	$ 1,416,143	$ 1,451,546	$ 1,487,835	$ 1,525,031	$ 1,563,157
PBIT	**$ (63,602)**	**$ (67,755)**	**$ (126,261)**	**$ (185,930)**	**$ (121,849)**	**$ (85,120)**	**$ (774,929)**	**$ (529,764)**	**$ (226,382)**	**$ 125,052**	**$ 489,608**	**$ 756,880**	**$ 1,187,980**	**$ 1,529,893**	**$ 2,337,459**	**$ 2,794,775**	**$ 3,293,549**	**$ 3,834,401**	**$ 4,417,479**	**$ 5,042,417**	**$ 5,726,753**	**$ 6,471,437**
Capital expenditure	$ -	$ -	$ -	$ -	$ 396,572	$ 406,486	$ 416,648	$ 427,064	$ 437,741	$ 448,684	$ 459,902	$ 471,399	$ 483,184	$ 495,264	$ 507,645	$ 520,336	$ 533,345	$ 546,678	$ 560,345	$ 574,354	$ 588,713	$ 603,431
Runway capex				-	1,549,740	17,719,198																
Grant income plus loan	-	-		-	(1,549,740)	(17,719,198)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Loan repayment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Capex	-	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431
EBITDA	867,080	886,194	851,537	816,313	905,450	967,861	304,377	576,524	907,564	1,287,346	1,680,960	1,978,015	2,439,644	2,812,848	3,652,489	4,142,680	4,675,151	5,250,543	5,869,026	6,530,252	7,251,784	8,034,593
Less Net Capex	-	-	-	-	396,572	406,486	416,648	427,064	437,741	448,684	459,902	471,399	483,184	495,264	507,645	520,336	533,345	546,678	560,345	574,354	588,713	603,431
Net Cash flows	867,080	886,194	851,537	816,313	508,878	561,375	(112,272)	149,460	469,823	838,662	1,221,058	1,506,616	1,956,460	2,317,584	3,144,843	3,622,344	4,141,806	4,703,865	5,308,680	5,955,898	6,663,071	7,431,163