Secondary Runway 04/22
Master Planning Evaluation
Consultation Report

Date: Mar - August 2014

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Executive Summary

Council is completing a master planning evaluation to determine the future use of Runway 04/22 (the Secondary Runway) at Rockhampton Airport. The provision of a facility that meets stakeholders' needs is being evaluated to justify future budget commitment, the Airports' overall operations, and the potential to improve the use of adjacent areas and facilities.

In terms of Council's community engagement procedure this engagement was rated as a high local engagement as significant changes were being evaluated that would potentially impact on the usage of the Secondary Runway 04/22. As such the engagement included:

- Direct stakeholder discussions;
- Direct discussions with general aviation;
- A meeting for of all stakeholders and general aviation; &
- A formal submission process.

In March/April 2014, Airport Management engaged Rehbein Airport Consulting to complete stakeholder engagement and to prepare engineered options for potential changes to the runway configuration. These options were presented and discussed at a stakeholder and general aviation meeting on the 21 July 2014 at the Rockhampton Aero club for all to voice their opinions. 29 people attended this meeting. This Secondary Runway 04/22 Master plan Evaluation was then released to the wider community calling for submissions to be made. Communications were undertaken through direct letters/emails to general aviation that use the facility, a media release, RRC website posts, Be In the Know daily newsfeed and the Council's Regional Voice membership was notified. In total, 16 submissions were received.

Main messages from participants…

Larger commercial operators outline that the runway 04/22 not critical to their operations

- QantasLink, Virgin Australia, Freight Operators (Pel-Air, Toll and GAM) all agreed that the Secondary Runway 04/22 is not critical to their operations at the Rockhampton Airport
- There is limited use of the Secondary Runway 04/22 by larger passenger operators and if this runway is reduced further this would limit their future use of the runway.
- Freight operators indicated that their preference is if the Secondary Runway 04/22 is to be reduced for their purposes 1400m in length is their preference.

Royal Flying Doctor Service prefers if the runway is to be reduced – 1200m minimum

- RFDS are regular uses of the Secondary Runway 04/22 as 25-30% of their operations are to and from Emerald.
- RFDS agrees that runway that Secondary Runway 04/22 is helpful but not crucial.

Rockhampton Aero Club - we are ok are with reduction but 04/22 must remain

- Closure of runway 04/22 is deemed *unacceptable* as it provides direct access to the training area.
- If the runway was to be reduced in length it is preferred that it is only to a minimum of 1,000 metres.

Airservices Australia – reduction to 1200m would maintain flexibility for general aviation

- Engineering supports these proposals so long as the integrity of restricted areas for the Rockhampton Communication, Navigation Surveillance facilities is maintained.

16 submissions received - recreational, commercial, emergency services and enthusiasts

- Mixed response on the Secondary Runway 04/22 Master plan Evaluation
- Many recreational aviators / all enthusiasts wanted the runway to remain as is.
- Smaller scale commercial operators had no issues with the reduction of the runway to 1200m

Aviation community sees the Secondary Runway 04/22 as an asset for the airport

- The main reasons were: in case of an emergency, for training purposes, cross winds making the secondary runway more favourable and the economic benefit of retaining the secondary runway.

Findings – Major stakeholder discussions

QantasLink and Virgin Australia
Both airlines engage in limited use of 04/22 due to its marginal length and unavailability of instrument approaches or PAPI. Preferred sequence for ATC is runway 15/33 for high capacity RPT operations. Airlines have been instructed by management to utilise only the main runway 15/33 due to its more extensive facilities. Any reduction in length would prevent limited use from occurring. Both airlines agree that runway 04/22 is not classified as critical to its operations at Rockhampton Airport.

Freight Operators (Pel-Air, Toll and GAM)
Freight operators are occasional users of runway 04/22 but the frequency of night operations require them to utilise runway 15/33 due to its instrument approach facilities. If the secondary runway was to be reduced in length, it is preferred that it only comes down to a minimum of 1,400 metres. All operators agree that runway 04/22 is not classified as critical for their operations at Rockhampton Airport.

Royal Flying Doctor Service (RFDS)
The RFDS are regular users of runway 04/22 as 25-30% of their operations are to and from Emerald. Runway 04/22 is rarely utilised for movements to and from the eastern direction. Runway 15/33 could always be used for operations although, due to its direction, runway 04/22 is considered to be more convenient for facilitation on the ground. If the secondary runway was to be reduced in length it is preferred that it only comes down to a minimum of 1,200 metres in length. The RFDS agrees that runway 04/22 is classified as helpful to operations to Rockhampton Airport, but not essential.

Capricorn Helicopter Rescue Service (CHRS)
The reduction of the secondary runway will have little to no impact on CHRS - no fixed-wing operations.

Rockhampton Aero Club (President)
The closure of runway 04/22 is deemed *unacceptable* as the runway provides direct access to the training area. If the runway was to be reduced in length it is preferred that it is only reduced to a minimum of 1,000 metres in length for charter aircraft.

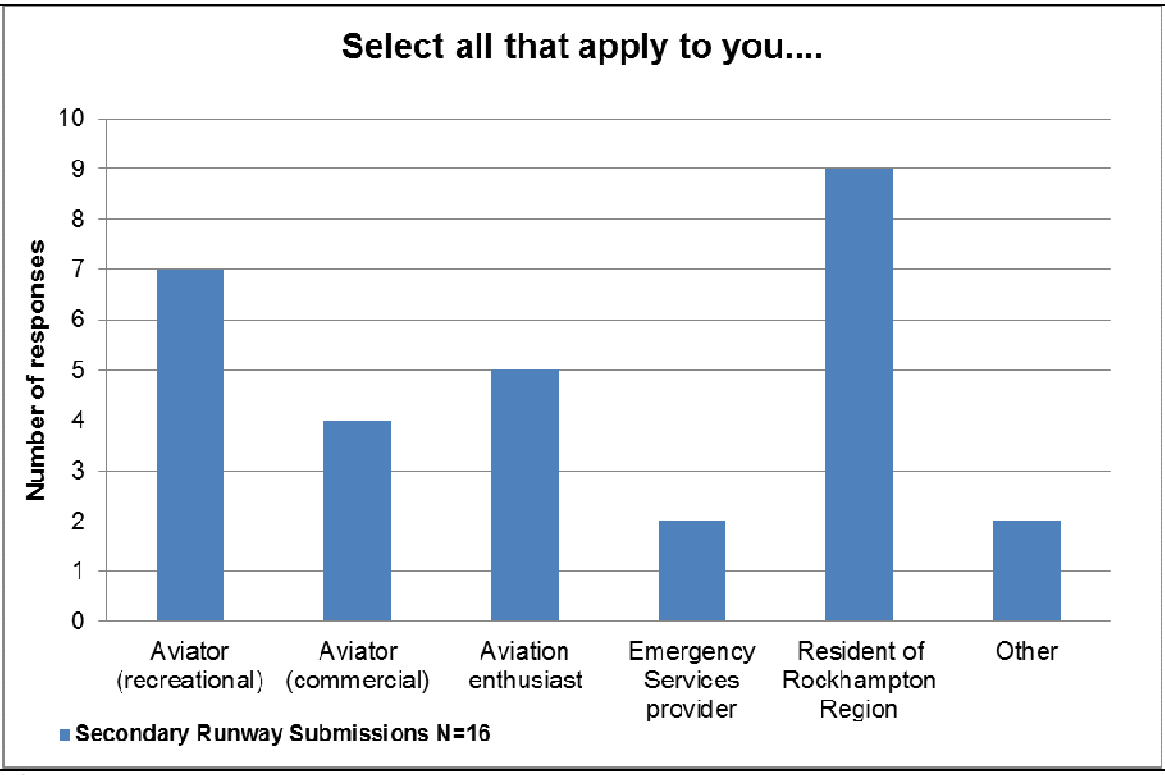
Airservices Australia (Air Traffic Control)
A strong preference to retain the secondary runway in some form for smaller aircraft operations, preferably to be reduced to only 1,200 metres. This alternative would maintain flexibility for GA traffic and would avoid increasing traffic on the main runway. The consistency of the displaced threshold would avoid confusion for operational procedures for helicopter operations at the 22 threshold.

Upon reviewing the initial feedback from key stakeholders a preferred option was formulated for a category **2B** runway (non-instrument and daylight operations only) with a length of 1,200 metres, a width of 23 metres and a pavement area of 27,600 square metres. This would provide for 1,200m take-off distance for runway 22 and landing distance for runway 04. A permanent displaced threshold for runway 22 would exist which would result in 800m in landing length at runway 22 and 800m in take-off length at runway 04. The disused runway length would later be converted to a taxiway to provide access to the GA area. This option is very similar to the arrangements set in place during military operations which is an indication that the option is effective.

The reduction of runway 04/22 presents many benefits to Council including:

- Reduced pavement overlay costs
- Lighting upgrade and maintenance costs avoided
- Solutions driven by enabling aviation related growth opportunities for GA, air freight, charter, FIFO and associated activity through;
    - ✈ Taxiway access to GA precinct for larger aircraft
    - ✈ Additional aviation support facilities (hangars) at eastern end of GA precinct
    - ✈ Future aircraft parking bays
    - ✈ Air freight distribution facilities

Findings – Submissions



Analysis:

In total, there were 16 submissions received by the due date.

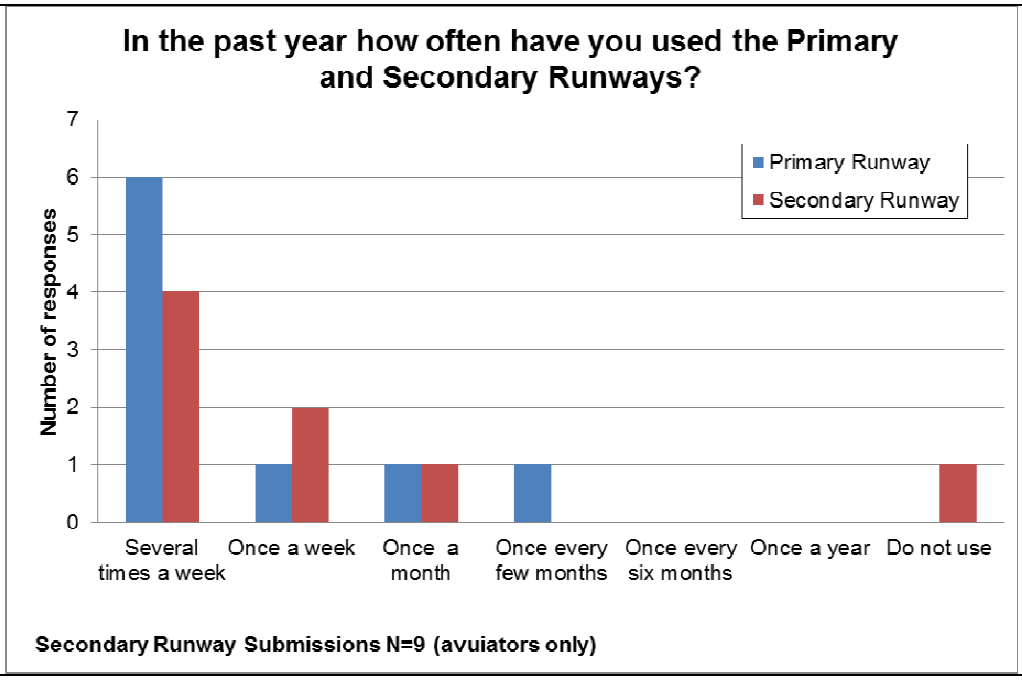
As can be seen above submissions were received from a small cross section of the aviation community (recreation and commercial), those interested in aviation, emergency service providers and also Air Services Australia (labelled as other).

In terms of recreational aviators the majority of these persons seemed to have extensive experience whilst one submitter was a novice/beginner. As for commercial aviators these tended to be smaller commercial outfits.

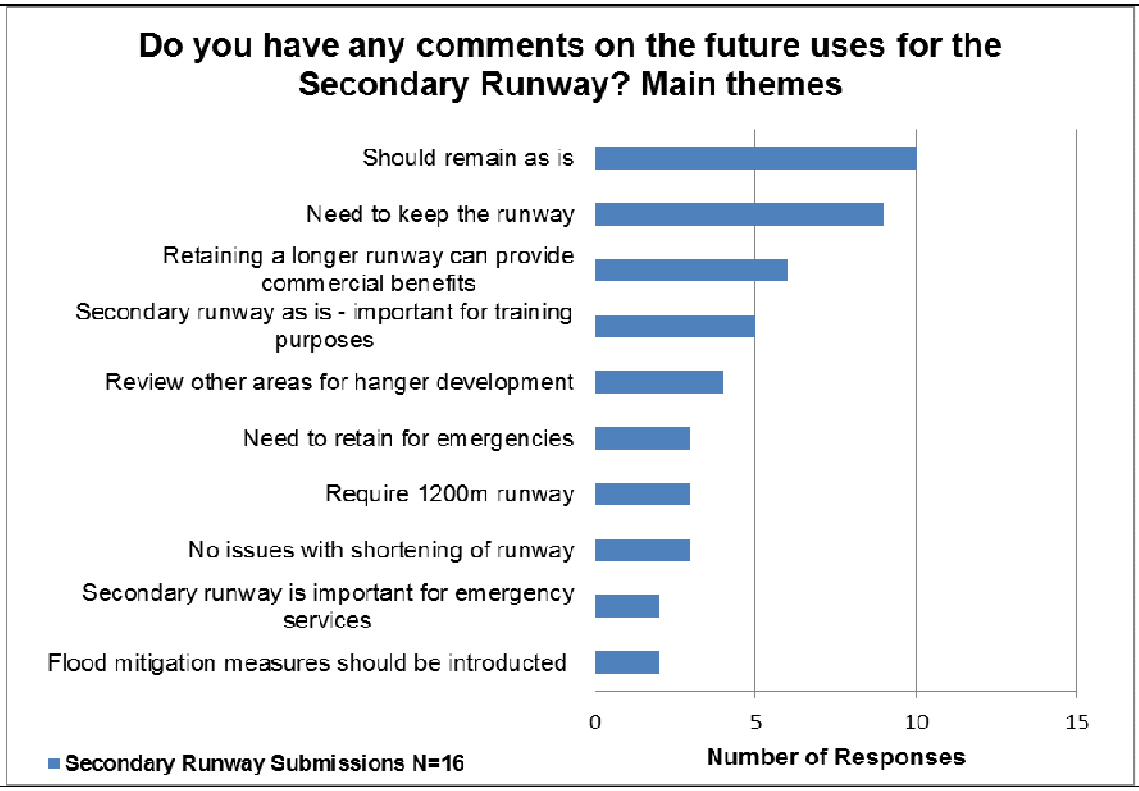
Note: that Jemena (owners and operators of the QLD pipeline) had requested more information as to nature of the Secondary Runway 04/22 Master plan evaluation, once understanding that there would be no impact on the QLD Gas Pipeline asset area Jemena indicated that there was no need from their perspective to place in a submission.

Type of aircraft respondents indicated they operated

C 150		
C 172		
Bell 412		
EMB - 135		
Beechcraft King Air		



Analysis: The primary runway was the most often used runway by both commercial and recreational aviators. However the secondary runway was also frequently used by smaller commercial operators and recreational aviators. Many detailed this was for several reasons but mainly because of favourable wind conditions for the secondary runway.



Analysis: 10 out of the 16 that provided a submission indicated that the runway should remain as it is – this came from some recreation aviators and aviation enthusiasts. Commercial operators/ emergency services had no issues with reducing the Secondary Runway 04/22 to 1200m. Those that wanted the runway retained indicated that longer secondary runways can provide commercial benefits, it was important for training purposes, emergency situations and that other areas for hanger development could be reviewed rather than reducing the runway.

Do you have comments on the future uses for the Secondary Runway Actual Submissions

1. Yes it should be left as it is this is obviously to pander to the FIFO market which is almost at the moment dead on its legs with little chance of its recovering. We as a local company require a minimum of 1200 metres. The Council is just trying to relinquish its responsibility regarding maintaining the airport and while I feel this is a futile protest and the meeting was like watching a rerun of Yes Minister, I believe this is a forgone conclusion and again this is just cosmetic to look like there has been consultation XXXXXXXXXXXXX.

2. Whilst I am clearly in favour of encouraging reasonable, sustainable, commercial development opportunities for Rockhampton Airport, I strongly believe that the proposal to shorten the existing operational length of runway 04/22 is regressive rather than progressive.

   Once buildings are established within the area proposed to be made available by the shortening of this runway, the full operational length is **lost forever**. It has been stated that such a reduction in length would bring Rockhampton Airport in line with other regional centres. Better long term commercial outcomes can be achieved if Rockhampton Airport positions itself above other regional centres. Other development sites and opportunities around the airfield should be continuously explored rather than shorten this asset (runway 04/22) which our local predecessors had the foresight to establish as far back as 1930. If its present operational length is retained, it will be best suited to help the airport cope with future long term regional development.

   Certainly maintenance costs relevant to this runway are a major factor to be considered and these may dictate the standard to which it is maintained, but the full operational length should not be sacrificed permanently for short term gain.

   To date there has been a strong focus on options relating to reductions in the length of this runway. Some of the points offered in support of those propositions may have merit but warrant clarification and/or substantiation.

   1. A Figure of $9 million has been suggested in relation to the cost of upgrading runway 04/22 lighting. What is the basis of this estimation?

   2. What is the total area of land that would be “freed up” for airside development should a reduction in runway length be undertaken? Is it intended to provide roadside commercial blocks for general use as well?

   3. Should additional airside development space be provided, what would the projected cost be for additional aprons and taxiways to access such sites?

   4. Would the pavement strength of the eastern end of 04/22 need to be upgraded to cater for tug and taxi operations of the “large” aircraft that have been suggested by management i.e. Dash 8 and Fokker Jets?
      If so, what cost would this involve?

   5. In the past, operators of aircraft of the calibre mentioned have carried out maintenance in capital cities which are “hubs” of their networks. There is now a developing trend to outsource this maintenance overseas. How strong is the likelihood of “bucking this trend” and attracting this style of operation to a regional centre such as Rockhampton?

   6. Would it be a practical and feasible to access large aircraft maintenance hangars by tugging or taxiing the type of aircraft mentioned, along 04/22 during exercises when the area is usually occupied by military helicopters?

	Whilst the number of aircraft using this runway has declined in recent times, it is still of considerable value to training organisations, agricultural and firebombing operators and many other light aircraft owners during their normal operations and more particularly when wind and weather conditions do not favour use of the main runway.
3.	I believe 04-22 as an established operating legal runway is an asset to Rockhampton City and Region and should remain, as is, to be used at all times by RFDS, G.A. and flying training. Yes I believe in progress if more land adjoining runways, lower flood prone ground closer to 15-33 could be filled with land fill (eg) alot of material that foes to the city dump could be redirected to lower land areas at airport. A flood levee could b commenced in the same manner with city waste fill on some sections near the flood prone runways! Examples = rugby Park - landfill, Example -15 Bowen Street - Landfill (All good at minimum cost)
4.	XXXXX is a regional jet operator that will shortly be commencing scheduled airline services in addition to our FIFO and charter operations. The founding shareholders are Rockhampton residents and originally planned to base the company at Rockhampton however for several reasons at the time it was not feasible. XXXXX currently conducts ad-hoc charter operations to and from Rockhampton numerous times a year however performance limits preclude the operation of our jets on 04/22 the majority of the time. The proposed shortening of the runway will not affect XXXX operations. XXXXX has discussed the options for construction of a hanger and maintenance facility at the airport with Council. The business case for this project has continually been strengthened as potential users have all expressed their desire for such a facility to be available as presently there are very limited options. Council has proposed several sites for this facility some of which would be built adjacent to the current threshold of Runway 22 and require the councils proposed runway reduction to be completed in order to maintain acceptable obstacle clearance.
5.	Changing the existing arrangements to 1200m and 2B code would not adversely affect our operations. 1200mk take-off and landing on 04 and 22 would be required for safe operations. The use of 15/33 would be preferable for students in the early hours of solo training.
6.	* Emergency landings * Training * Alternate landings * General aviation traffic The secondary runway at Rockhampton is very important for GA in the Rockhampton Area. It can also be of benefit to airline operators as a standby runway (or commuter type aircraft). As the asset is already in place (at the community's expense) we believe it should remain. It is a unique facility for the Rockhampton Area and the cost of replacement would be unachievable in today's economy. There are many alternate sites on the vicinity of the airfield to erect additional hangers.

7.	1/ 04/22 in its current form is valuable as an alternative runway for Dash 8 sized aircraft if the main 15/33 runway is ever damage due to a jet misadventure. However the current length would need to be retained to be suitable for this possibility. 2/ 04/22 is ideal for cross wind training when the wind is unfavourable for 15 or 33. It is also invaluable when the wind favours 04/22 and a student is having difficulty learning to fly or is about to go solo. 3/ 04/22 in its current form is ideal for students. Experienced pilots can land in a much shorter length, but students often cannot control rates of descent requiring the normal strip length. They also struggle with directional control requiring a wide runway to be considered safe. As we already have such an asset in place it would be disappointing to downgrade it "to be in line with other Regional Centres". 4/ The North East and of 04/22 is ideal for instructors to get a good look at student flying technique. This is invaluable when some students have difficulty learning how to fly. 5/ 04/22 is useful as students progress as instructions to change runways mid flights require concentration to execute well. 6/ Retention of 04/22 in its current format (i.e. same length, same width) would be invaluable in the future when aircraft movements increase significantly. For instance light and medium could line up on 04/22 and depart in between heavy aircraft on 15/33 thereby aiding traffic movement. The more 04/22 is reduced in length and width the less useful this option would become. The experience at Brisbane and Sydney airports highlights the folly of not planning well in advance for the future. 7/ If something has to go to reduce expenditure then forgo the lights on 04/22 when they become too expensive to maintain, but please maintain the length and width. Of length and width, length is the most important.
8.	The full operational length of Runway 04/22 should be retained for many safety reasons but particularly so that aircraft arriving at Rockhampton with minimum but legal fuel reserves are given every opportunity of a safe arrival particularly during adverse weather conditions. Additional it is important that the fill length of this runway remains available as an alternative should the main runway 15/33 be unusable due to operational problems or mishaps.

9. **Air Traffic Control**

Rockhampton ATC was approached by Rehbein consultancy (engaged by airport) and provided the following comments (as per the attached):
• Preference to retain RWY 04/22 in some form
• 1,200m would maintain flexibility for GA traffic and avoid increasing traffic on RWY 15/33
• Consistency of displaced thresholds would be supported (Comment: threshold is often displaced in support of military exercises to provide additional aircraft parking areas).
• Helicopter ops to current RWY 22 threshold could continue

CNS – (Communications, Navigation, Surveillance)

Engineering supports these proposals so long as the integrity of restricted areas for the Rockhampton CNS facilities is maintained.

The CNS facilities at Rockhampton Airport currently include:
• NDB,
• DVOR,
• DME,
• VHF,
• Radio links and
• SGS.

The shortening of RWY 22 threshold end for expansion purposes may impact on the NDB, DVOR/DME, VHF and SGS. Shortening of the RWY 04 threshold end could potentially impact on the DVOR/DME, VHF and the Rockhampton – Table Mountain Link.

The below area (red circle) would be of most interest to Airservices Engineering should any works be planned for this area. Any works would need to be submitted for assessment via the usual DA process.

Airservices encourages QLD airport operators to refer to the QLD SPP Guideline for Strategic Airports Aviation Facilities (released July 2014) http://www.dsdip.qld.gov.au/resources/guideline/spp/spp-guideline-strategic-airports-aviation-facilities.pdf for information on the protection of building restricted areas associated with CNS facilities.

CONTINUED OVER PAGE WITH MAP

Airservices Environment

Airservices Environment Division seek engagement on any associated changes to existing RWY15/33 procedures or any consequential redistribution of aircraft traffic/changes to flight paths if apparent from changes made to RWY 04/22.

Aviation Rescue and Fire Fighting (ARFF)

ARFF have no issue with any proposed changes to RWY 04/22.

10. The consultation process was poor in that information was not provided to stakeholders sooner.
    The Runway 04/22 should not be less than 1200m as suggested by the majority of stakeholders.
    I don't have any issues with looking at ways of generating revenue - I do have issues with of reducing an asset because the Council don't want to spend money on maintenance.
    There does not appear to be many people in the Council / Airport that know that the Secondary Runway use is generally directed the ATC (Tower) according to the wind direction.

Hence your form is badly designed. My suggestion would be to utilize the southern end for redevelopment and the military precinct.
11. To remain unchanged until 2021 for resealing Tender for maximum fixed pricing for runway weighting. There is no requirement to be in line with other Regional Centres by retaining 04/22 Runway we are ahead of other centres. Maintain 04/22 Runway as is valuable asset to the community.
12. Rockhampton is indeed fortunate to be blessed with arguably the best regional airport in Australia in terms of runway infrastructure. The remarkable asset was bequeathed to the city by farsighted forefathers and something Rocky should be immensely proud of. It would be a travesty if the second runway's operational capacity was diminished in the interests of short term financial considerations. The present Council needs to be visionary and forward - thinking, as were those who established Connor Park Aerodrome all those years ago. Picture the city and its aviation needs 50 plus years from now. What would the Rockhampton City Council in 2070 make of a decision by their predecessors in 2014, that limited the scope and viability of this magnificent airport, which has so much potential.
13. OK to remove lighting on 04/22 but not happy with reduction in length proposal. Very useful for training and extra length gives novice / student pilots more room for error and allows multiple touch and go / crop dust runs for training. Useful to take advantage of crosswind for training or avoid crosswind due to strong SW winds. Do not shorten 04/22 OK if lighting is removed. Landing fee concessions for student pilot / training flights.

14.

RUNWAY 04/22

Runway 04/22 should be maintained in its existing form with full operational length including runway lighting for aviation use – aircraft taking off and landing.

If maintenance costs are an issue, then all airport revenue/surplus/profit should be invested back into the airport for maintenance (including runway 04/22) and capital works.

Closing or shortening the runway would reduce the capacity of the airport for air traffic and may compromise growth opportunities.

Currently there is no demand for large/heavy aircraft to access the general aviation area although they could taxi along the existing runway. However, the existing tarmac in that precinct has weight restrictions.

Structures/hangars at the eastern end along Canoona Road would compromise safety for aircraft operating off a reduced length 04/22.
There are limited opportunities for heavy maintenance with airlines increasing maintenance off shore. There would also be reluctance to invest in hangar facilities at an airport that can be affected by flooding. Any surplus revenue from the airport could be directed at flood proofing.

Retaining the runway with existing length provides an alternate runway for larger aircraft such as Dash-8/ATR when the main runway is not serviceable due to maintenance. DC9 aircraft (weight limited) used 04/22 when the main runway was undergoing maintenance.
Because there would be occasions when the cross wind component on the main runway would exceed the maximum for light aircraft, particularly with student pilots, 04/22 should be retained. Also, this runway needs to remain at its full length to enable circuits & bumps to be conducted safely for training.

As a regional airport, Rockhampton would currently have the best runway setup available and this could be enhanced by installing an ILS (Instrument Landing System) on the main runway instead of reducing operational capacity of 04/22.
The airport was under the control of the Commonwealth when both runways were established and resulted from forward planning – something that seems to be missing at present.
Rockhampton Airport has great potential and its future is assured due to its geographical position, military activity, positive future for tourism, and also its capability to accept large aircraft.

The complete airport needs a new or revised master plan – not just runway 04/22.
Comparing this runway with the lower standards of other regional airports is not a valid reason to downgrade our airport. The current standard of Rockhampton's runways should be maintained and not lowered simply to match our neighbours.
Runway 04/22 is a valuable asset and its operational length should not be reduced based on short term financial assumptions or to avoid maintenance costs. It would never be replaced.

Closing or reducing the runway is totally unacceptable.

15. I feel reducing the length of Runway 04/22 is not acceptable as a valuable asset will be destroyed and lost forever and will never be replaced.
    At a time when Council is talking up the prospect of additional business for the airport the current capacity of the airport should be maintained and not reduced.
    In the event of Runway 15/33 becoming inoperable due to maintenance or a disabled aircraft on the main runway then 04/22 should be made available for emergency use.
    I can recall when DC9 aircraft at reduced weight operated off 04/22 while 15/33 was undergoing maintenance. In fact I was a passenger on one of those flights that arrived from Mackay.
    If the cost of maintaining the pavement and lighting is a concern then this should be covered by revenue that the Council is currently taking from the Airport.
    All revenue that is raised from the airport should be spent on the airport and not used to balance Council budget.
    Reducing the length or closing the existing runway does not provide for growth in air traffic. To cater for access for larger aircraft to G.A. area the existing taxiway should be upgraded to higher pavement strength. Runway 04/22 should not be sacrificed simply to provide real estate for aviation support facilities that may never eventuate.

Appendix

- Touch and go training exercises – minimum distances recommendation email
- Rockhampton Airport Community Meeting Runway 04/22 Master Planning

- Touch and go training exercises – minimum distances recommendation email

Trevor Heard

From: Iain Lobegeier
Sent: Monday, 21 July 2014 1:43 PM
To: Trevor Heard
Subject: Fwd: email
Attachments: image002.gif; ATT00001..htm; image003.jpg; ATT00002..htm; C-172N Take-Off Landing Distances.pdf; ATT00003..htm

Regards
Iain Lobegeier
Rockhampton Airport

Sent from my iPhone

Begin forwarded message:

From: Stephen Alley <stephen@peace.org.au>
Date: 21 July 2014 13:24:31 AEST
To: Iain Lobegeier <Iain.Lobegeier@rrc.qld.gov.au>
Subject: RE: email

Hi Iain,

As discussed, I've attached a couple of Take-off and Landing charts. They are quite easy to read, but keep in mind that all of the distances are in feet, not metres.

These charts are designed for the C-172N, which is a fairly common aircraft used for training. A Cessna 152 would use less distance again, and most training aircraft would be fairly comparable.

One thing to keep in mind is the with students conducting circuits, we would expect them to use quite a bit more runway than listed in these charts as they involve the aircraft continuing to roll down the runway while setting up for the next take-off. Also, students new to circuits quite often use more distance than someone would expect to with more experience. Because of so many variables, it is impossible to name an exact figure. My opinion based on the experiences I've had as an Instructor would be that 900m to 1000m would be about the minimum ideal length.

If the runway in use was quite short, the Instructor would by necessity help with the take-off. That would ensure that the student didn't run out of runway. This isn't ideal, but can be managed.

Finally, one other thing to take into consideration is that on a long runway, we have the ability to position our aiming point further down the runway. Rather than attempting to land at the very beginning of a runway, this creates a safer environment for the student. If the student was to suffer an engine failure on final, he would still be able to glide the aircraft safely onto the runway.

Luckily for us, we rarely use runway 04/22 for circuits. Even if it was much shorter, I'm sure we would be able to adapt even if it wasn't ideal.

Anyway, there is a number of things to take into consideration. If you have any questions, or if there is anything else that I can do, please let me know. Thanks Iain.

Stephen
Peace Aviation
0429 616 758

1

TAKEOFF DISTANCE

MAXIMUM WEIGHT 2300 LBS

SHORT FIELD

CONDITIONS:
Flaps Up
Full Throttle Prior to Brake Release
Paved, Level, Dry Runway
Zero Wind

NOTES:
1. Short field technique as specified in Section 4.
2. Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
3. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2300	52	59	S.L.	720	1300	775	1390	835	1490	895	1590	960	1700
			1000	790	1420	850	1525	915	1630	980	1745	1050	1865
			2000	865	1555	930	1670	1000	1790	1075	1915	1155	2055
			3000	950	1710	1025	1835	1100	1970	1185	2115	1270	2265
			4000	1045	1880	1125	2025	1210	2175	1300	2335	1400	2510
			5000	1150	2075	1240	2240	1335	2410	1435	2595	1540	2795
			6000	1265	2305	1365	2485	1475	2680	1585	2895	1705	3125
			7000	1400	2565	1510	2770	1630	3000	1755	3245	1890	3515
			8000	1550	2870	1675	3110	1805	3375	1945	3670	2095	3990

Figure 5-4. Takeoff Distance (Sheet 1 of 2)

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 40°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

NOTES:
1. Short field technique as specified in Section 4.
2. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots
3. For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
2300	60	S.L.	495	1205	510	1235	530	1265	545	1295	565	1330
		1000	510	1235	530	1265	550	1300	565	1330	585	1365
		2000	530	1265	550	1300	570	1335	590	1370	610	1405
		3000	550	1300	570	1335	590	1370	610	1405	630	1440
		4000	570	1335	590	1370	615	1410	635	1445	655	1480
		5000	590	1370	615	1415	635	1450	655	1485	680	1525
		6000	615	1415	640	1455	660	1490	685	1535	705	1570
		7000	640	1455	660	1495	685	1535	710	1575	730	1615
		8000	665	1500	690	1540	710	1580	735	1620	760	1665

Figure 5-10. Landing Distance

- Rockhampton Airport Community Meeting Runway 04/22 Master Planning