Kāpiti Airport: An Estimation of its Economic Value to the Kāpiti District

A report prepared for Kāpiti Coast District Council

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tdb.co.nz

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1. Executive summary

In this report, TDB estimates the net economic benefit of Kāpiti Airport to the Kāpiti district. The report takes a conventional welfare economics approach to assess the net contribution Kāpiti Airport makes to the district economy. This analysis is undertaken by estimating the contribution the airport makes to Producer Surplus (PS) and Consumer Surplus (CS) in the district[1].

We assess several components that make up the CS and the PS. We then identify and quantify the components that are both material and measurable. In the CS we consider the value of time savings to Kāpiti residents of having the airport available to travel from, the value of recreation to local residents, noise costs associated with the airport operations, the benefit the airport brings to an emergency in-terms of response capability and any benefit from freight that the airport could potentially bring. Not all of these are able to be quantified.

In-terms of the PS, we consider the additional profits and wages that are directly reliant on the airport and would be lost to the district if the airport were to cease operating. We also consider visitor expenditure that is linked directly to the airport and we consider any gain that would be brought by creating a business park.

Overall, we estimate the net economic benefit of Kāpiti Airport to Kāpiti residents to be around $4.3m per year. This equates to a present value (PV) of all future net benefits of $71.4m[2]. The results are summarised in Table 1 below.

Table 1: Total net benefits (costs) to the district

Consumer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Travel/time savings	$3.4	$57.5
Recreational value	$0.4	$7.3
Noise	Not measured	
Emergency response	Not measured	
Trade/freight	$0	$0
Total CS	**$3.9**	**$64.8**

Producer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Profits/wages of airport	$0.2	$3.4
Visitor expenditure	$0.2	$3.2
Potential for business park	Not measured	
Total PS	**$0.4**	**$6.6**

Net economic benefits (costs)	**$4.3**	**$71.4**

[1] CS is the difference between the costs to consumers of goods and services related to the airport and the amount they are willing to pay for them. PS comprises additional (or excess) profit and wages from business that are directly associated with the airport and additional profits and wages retained in the district resulting from incremental visitors the airport brings to the district.
[2] Applying a discount rate of 6% (real) consistent with the NZ Treasury's default rate, see p11 of Creedy & Passi (2017). A higher (lower) discount rate would result in lower (higher) PV of net benefits.

As presented in Table 1, we estimate that the annual net benefit to Kāpiti residents from having access to the airport for travel is $3.4m. This annual net benefit equates to a PV of all future annual benefits of $57.5m. We estimate that the recreational value to Kāpiti residents of the airport is $0.4m p.a. (a PV of $7.3m). Our review indicates that the noise cost does not appear to be material in the case of Kāpiti Airport.

We understand that Kāpiti Airport has been identified as a critical component of the Wellington Earthquake National Initial Response Plan (WENIRP) 2017 and in an emergency situation it would be an important staging and supply point for residents. However, given the low probability of a sizeable event, the uncertainty of how an event will occur and what effect a given event will have we have not attempted to quantify the net benefits. Finally, while Kāpiti airport may capture freight and trade benefits in the future, at present it does not transfer freight and we are not aware of any firm plans to do so.

In terms of the producer surplus, we find little evidence to suggest that businesses which are directly reliant on the airport make super profits and bring in material additional spending that would not be captured if the airport did not exist. However, we estimate that wages captured by residents that would be lost to other regions/districts if the airport did not exist total to approximately $0.2m per year (a PV of $3.4m).

We estimate the value of non-resident travellers to the district adds approximately an additional $0.2m per year (a PV of $3.2m). Finally, we consider the economic potential for a business park, but note that there is land available, both on the airport site and elsewhere which could be used for this purpose if the demand exists. Therefore we adopt a conservative approach and do not attribute value from a business park to the airport.

We note that the intangible components, and the components that are more subjective to measure that have been excluded from this analysis, may still be of importance to the district and should be considered when assessing future decisions relating to the airport.

In conclusion, there are sizeable net economic benefits to the district arising from the Kāpiti Airport. The economic benefits largely accrue to the users of the airport through savings in travel time and costs, to recreational users of the airport as well as its employees.

2. Background

The purpose of this report is to provide a high-level evaluation of the economic benefits and costs of the Kāpiti Airport to the Kāpiti district. The economic value of an airport can include both typical observable (or monetary) benefits/costs, such as tourist expenditure and airport profits, as well as less observable (or non-monetary) benefits, such as travel/time savings. Not all identified benefits/costs in this report are quantifiable. Some benefits/costs are deemed too immaterial to quantify, although they may still exist to some degree. Others are too speculative and based on future hypothetical changes to the current airport operations and the use of its land. Where we cannot quantify a benefit/cost we discuss reasons why.

2.1.1 Kāpiti Airport

Until early 2018, Kāpiti Airport had three operating commercial routes. Air New Zealand flew an approximately 50-seat daily service to and from Auckland that it began in 2011. Sounds Air and Air2there also fly regular 10-14 seat flights to and from Nelson and Blenheim. However, Air New Zealand cancelled its Auckland to Kāpiti service as of 3 April 2018[3]. Air New Zealand stated that it cancelled the route to make "domestic schedule adjustments to better match its aircraft seat capacity to areas of growing customer demand and is committed to continuing to grow the wider regional network."[4]

The basis for this study is the district-wide economic value of the Kāpiti airport with a fully functioning daily Auckland route. While currently not the case with the Air New Zealand withdrawal, Air Chathams have signalled their interest in taking over the route[5]. So, we do not consider it an unreasonable expectation that such a route will resume at some point in the future.

Information provided to TDB estimates that Kāpiti Airport facilitates approximately 53,000 passenger trips per annum. Our estimates, based on aircraft size and number of annual trips, suggest that 75 percent of these passengers are to or from Auckland, 14 percent to or from Blenheim and 12 percent to or from Nelson. We understand that there are approximately 25,000 aircraft movements (landings or take-offs) per annum. TDB estimates that total movements comprise 3,000 commercial movements, 16,000 by Kāpiti Aero Club (recreational flying) and the remainder presumably made up of helicopter flights and/or other chartered flights.

The airport is located on 124 hectares of land, of which only 43 hectares is considered 'core' airport land. The remaining land can be developed for other purposes under certain zoning/land-use regulations. Due to noise restrictions imposed on nearby airport land, approximately only 12 hectares can be developed (after receiving resource consent) into residential/retail land. The remainder of non-core land that is currently under noise-restriction zoning can only be developed into industrial land (after receiving resource consent).

[3] http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12024731
[4] https://www.airnewzealand.co.nz/press-release-2018-air-nz-suspends-kapiti-coast-service
[5] https://www.stuff.co.nz/travel/news/102410541/air-chathams-very-interested-in-taking-over-kpitiauckland-route

2.1.2 Relevant studies

There have been some attempts in the past to quantify the economic and/or social contribution that an airport (or number of airports) contributes to the local or national economy. In the New Zealand context, Market Economics (2013) estimated the gross output and value added of most of New Zealand's commercially operating airports. Market Economics considers that, broadly speaking, airports can contribute to the local economy in two ways. Firstly, airports are often a medium to large-scale business in their own right. And secondly, airports act as facilitators of other business in the region/district via trade (imports and exports), domestic and international tourism and business travel. For context, Market Economics estimate that approximately 18 percent of all airport related benefits are from the airport's direct and related businesses, 43 percent are from tourism, 34 percent are from trade and 6 percent are from business travel.

Market Economics also discuss some key 'social contributions' that airports make on top of the economic benefits mentioned above. These include social connectivity (ie, being able to more easily visit family/friends), facilitation of greater sporting and cultural events, international education, community wellbeing (ie, medical transport) and military capability. Where relevant we will discuss these features in regard to Kāpiti Airport.

Market Economics use an input-output model to estimate the 'contribution' each airport makes to their local economy. The major limitation we see with this approach is it does not involve a 'with or without' assessment. It does not consider the net contribution an airport makes over and above what would occur in the airports absence. For example, an input-output model will consider all tourism that enters through an airport as a contribution the airport makes to the local economy. A 'with and without' approach would only consider the airports net tourism contribution, as those tourists that would not have entered the district in absence of an airport. If a tourist would have visited a district in spite of there being no airport (ie, via car/bus/train) then they will not be considered a net benefit to the airport. We prefer the 'with or without' approach as it provides a better indication of the actual effect the airport has on the local economy and does not overinflate estimated effects.

As well as reviewing the contribution of New Zealand airports at a high-level, Market Economics have also conducted individual airport analysis. As a point of reference, Market Economics estimated that the closure of the Whakatane Airport (which at the time of the study - 2014 - had approximately 33,000 people per year on the Auckland route) would reduce GDP by $2.9m (note this is a national – as opposed to regional/district-wide – economic impact).

In an international context, Deloitte (2018) analysed the economic contribution of Australia's airports to the local and national economies. With regard to all of the airports' direct and related business activity, Deloitte estimate that Australian airport's facilitated (not induced) international and domestic tourism worth $32.2B AUD in value added to the national economy. However, once again this id airport facilitated not induced tourism. While it is reasonable to assume that all international tourism is airport induced (at least in a sea-locked nation like Australia or New Zealand) it is not reasonable to assume that all domestic tourism is airport induced. We do not make such assumptions in this report.

3. Methodology

This section describes the methodology we have adopted to measure the district-wide economic value of Kāpiti airport to the Kāpiti district. We begin by describing the methodology – namely a conventional welfare economics approach – at a high level and why we have chosen such a method. This is followed by a more detailed description of how we measure each component of welfare and, where we cannot measure or quantify a particular component, why not and what effect this is likely to have on the final results.

3.1 Conventional welfare economics approach

The primary method we use to assess the net contribution the Kāpiti Airport generates for the Kāpiti district is known as a conventional regional welfare economics approach. Total regional/district-wide welfare is comprised of both producer and consumer surplus. Producer surplus (PS) is defined as the difference between the amount producers in the district receive for their goods and services and the costs of producing them, plus any additional wages generated for local residents. Consumer surplus (CS) is defined as the difference between the costs to consumers of the goods or services they receive and the amount they are willing to pay for them. In its broadest form, the net welfare generated by the Kāpiti airport is:

Equation 1: Change in welfare to the district

$$\Delta W = \Delta PS + \Delta CS$$

Where ΔW is the change in total welfare, ΔPS is the change in producer surplus and ΔCS is the change in consumer surplus. Perhaps the most important feature of this approach to understand is what the counterfactual is (ie, what is the change contingent on). It would be mistaken to simply count all economic activity associated to the airport as a net welfare gain because the counterfactual – ie, no airport – does not imply all those resources related to the airport will be wasted.

We are, in essence, measuring the benefits and costs to the district that are attributable to the airport. Another way of thinking about it is to measure the cost to the district in replicating the current utility profile in the absence of the airport. We consider opportunity cost in the narrower sense of replicating the airports services. However we do not strictly account for the opportunity cost in the sense that the airport consumes resources (ie, land and labour) that would otherwise be utilised in some other capacity that would add to economic value in the district. Conceptually, we are measuring the difference in the district's economic value compared to a hypothetical counterfactual of the district not having an airport.

The second major feature of the approach we have undertaken is that it is a measure of *regional* (or district) welfare as opposed to *national* welfare. Any benefits or costs the airport generates that 'spillover' to regions/districts outside of Kāpiti are not counted. Naturally, this implies a narrower scope than a national welfare analysis. The key practical implication of this approach is that we do not count non-local residents' consumer surplus from time/travel savings (more is discussed of this in Section 3.1).

After identifying and measuring all benefits and costs that the Kāpiti airport generates we then discount all future benefits (and costs) to give a net present value of the total welfare attributable to the airport.

The discount rate we apply for the purposes of estimating the net present value of the airport's district-wide economic value is 6%. This is the Treasury's current recommended default discount rate for public sector cost-benefit analyses[6], which we deem appropriate here. In the following section we apply sensitivity analysis of the discount rate.

3.2 Consumer surplus

The major identifiable effects that Kāpiti airport has on consumer surplus in the district are:

- time and travel cost savings for local Kāpiti residents (connectivity) relative to the next best option (travel to Wellington or Palmerston North);
- recreational value of Aero Club and Helicopter services;
- noise (negative cost reflected in lower housing values in vicinity of airport);
- emergency response capability; and
- freight (trade).

3.3 Producer surplus

The major identifiable effects that the Kāpiti airport has on producer surplus in the district are:

- excess profits and wages of the Airport operations itself;
- visitor expenditure from airport induced visitors (business visitors, tourist visitors and visitors of family/friends). Expenditure is measured as the increase in local profits and wages from direct, indirect and induced effects; and
- potential for business park.

The following sections explains in detail how we measure each component of producer and consumer surplus above and provides our estimates of their contribution to Kāpiti's district-wide welfare.

[6] P11 Creedy & Passi (2017).

4. Economic value to the district: consumer surplus

4.1 Travel/time savings

One clear benefit of the Kāpiti airport to local residents is the reduced time (and in some instances cost) from having to travel to a further away airport. If there were no Kāpiti airport then residents who wish to fly to Auckland, Nelson or Blenheim would have to travel to Wellington or Palmerston North airport instead. We measure the value of this benefit by measuring the value of the time saving of having to travel to Wellington/Palmerston North, the value of petrol saving under the assumption that all passengers will alternatively drive to either Wellington or Palmerston North, minus (plus) the lower (higher) airfare between Kāpiti airport and Wellington or Palmerston North.

The basic formula of the consumer surplus attributable to the travel savings is:

Equation 2: Consumer surplus of travel/time savings

$$CS_{time} = (n_{local} \times t_{saved} \times v_{time}) + petrol_{saved} + mainten_{saved} + carpark_{saved} - (Kap_{airfare} - Wel_{airfare})$$

Where n_{local} is the number of local (Kāpiti) passengers who use the Kāpiti airport per year; t_{saved} is the average time saved of having to travel to the next alternative airport (either Wellington or Palmerston North); v_{time} is the average value of passengers time; $petrol_{saved}$ is the saved cost of petrol to travel to alternative airport (which is a function of fuel efficiency/price of fuel/distance to airport); $carpark_{saved}$ is the saved cost of car park fees at the alternative airport; and $(Kap_{airfare} - Well_{airfare})$ is the airfare differential between Kāpiti and the next best alternative airport (in this case Wellington).

Applying this formula requires distinguishing between people that opt to fly out of Wellington or Palmerston North airport as well as the associated differences between these respective airports in time saved, petrol costs saved and average airfare differentials. The key information/assumptions required for the estimate of travel/time savings are:

- 52,900 passenger trips in/out of Kāpiti airport each year. This number comes from the NZ Airports Association and we therefore deem it to be a good estimate. Of these passengers, we assume that 80 percent[7] are local residents. Once again, we are only concerned with measuring the consumer surplus of local residents. Our estimates suggest approximately 75 percent of passenger trips are to/from Auckland, 12 percent to/from Nelson and 14 percent to/from Blenheim;

- we assume that if Kāpiti airport were no longer operating commercial flights then all passengers would alternatively use Wellington Airport to fly to/from Auckland and none would opt to use Palmerston North. We assume this because Wellington is approximately half an hour closer to Paraparaumu. This is an oversimplification of the true nature of the likely choices and actions of users, however, this assumption reduces the number of assumptions that we would need to make if we were to include Palmerston North as a viable option as well. We realise that users

[7] Due to a lack of information this assumption/estimate has been guided by the general understanding of third parties.

from Otaki are further from Wellington and have poorer access to public transport than Paraparaumu or Paekakariki based users. Without having access to more detailed data on the users of the Auckland flights we deem this a prudent assumption. All passengers to/from Nelson/Blenheim would use Wellington Airport as there are no direct flights to/from Palmerston North;

- the average travel time from Kāpiti (Paraparaumu) to Wellington Airport is 70 minutes[8] with a distance of 60.8km and from Kāpiti to Palmerston North Airport is 83 minutes with a distance of 96km[9];

- we use a time value of passengers of $46 per hour. This is the average wage in New Zealand ($30.74 per hour as at January 2018[10]) plus a 50% premium. The 50% premium is an attempt to account for the likely disproportionately large number of high-wage passengers who use the Kāpiti airport. TDB believes that using the average wage would likely underestimate the true time cost of airport users. We assume a disproportionately high number of high-wage earners given the nature of the Kāpiti to Auckland service being primarily used by people in the business sector. Nevertheless, we provide sensitivity analysis of the time value of passengers;

- for simplicity, we assume that passengers will drive to the alternative airport and do not use, for example, public transport. We use an average fuel consumption of 0.085 litres per km[11] at a petrol price of $2.11[12], which results in a petrol cost of 18 cents per km;

- we use a cost of vehicle maintenance of 58 cents per km. This is derived from the average of all vehicle types in AA's estimate of the operating cost per km[13] less petrol costs (as calculated above). The IRD recommend using 73 cents per km[14] for standard petrol/diesel vehicles (which includes petrol). Removing petrol from the IRD recommendation would reduce this figure to 55 cents per km (or 3 cents per km less than what we use);

- the daily cost of parking (we assume the average stay is a full day parking) at Wellington Airport is $29[15] and at Palmerston North Airport is $16[16]. Because each trip is only one-way, and parking would imply a return trip, we divide the cost of parking per trip by two;

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[8] Google Maps quotes the expected travel time from Paraparaumu to Wellington Airport at low congestion periods is approximately between 50-70mins. During higher congestion times the expected time is 65mins and 120mins. The same appears to be the case in the other direction. We derive our estimate by noting that 30% of the Air Chathams flights are likely during peak times and 70% can be timed to coincide with low congestion periods. By taking the average of each of the ranges and applying the distribution we get 96.75 or 70mins.

[9] Sourced from Google Maps

[10] https://tradingeconomics.com/new-zealand/wages

[11] Average fuel consumption per km across Small, Compact, Medium and Large cars: https://www.aa.co.nz/assets/site-information/running-costs/2013-Petrol-Running-Costs.pdf

[12] Price of 91 Octane as at 15 December 2017: https://www.aa.co.nz/cars/motoring-blog/december-2017-petrol-and-diesel-prices/

[13] https://www.aa.co.nz/assets/site-information/running-costs/2013-Petrol-Running-Costs.pdf

[14] http://www.ird.govt.nz/business-income-tax/expenses/mileage-rates/

[15] https://www.wellingtonairport.co.nz/parking/long-term-parking/

[16] https://pnairport.co.nz/parking-pricing/

- the average Kāpiti-Auckland flight is $147.20[17] (each way) compared to an estimated average price of $104.2[18] (each way) for the Wellington-Auckland flight;

- the average Kāpiti-Nelson flight is $105 (each way) compared to $113 for Wellington-Nelson[19]; and

- the average Kāpiti-Blenheim flight is $96 (each way) compared to $137 for Wellington-Blenheim[20].

Applying these inputs and assumptions results in an annual CS from travel/time savings equivalent to $3.4m. Assuming this remains constant in real terms every year into the future, the PV of the consumer surplus of travel/time savings is $57.5m.

4.1.1 Sensitivity to consumer surplus of travel/time savings

Figure 1 below summarises the effect that various sensitivity tests to key inputs and assumptions has on the estimated consumer surplus attributable to the travel/time savings of the airport.

Figure 1: Sensitivity of consumer surplus to key inputs associated with travel savings

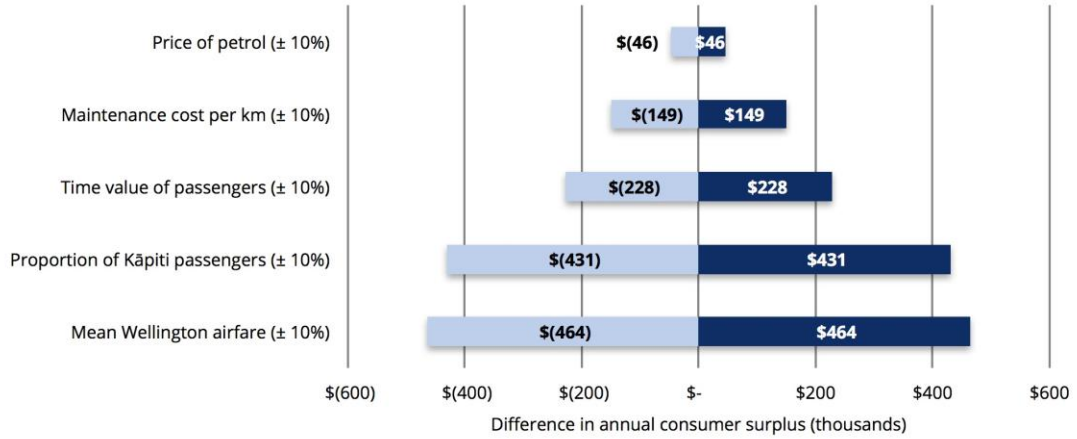


Figure 1 above shows the two most influential variables are the expected price per ticket on the Auckland to Wellington route and the proportion of Kāpiti resident passengers. The final travel savings estimate is the least sensitive to changes in the price of petrol and vehicle maintenance costs, with a 10

[17] Air Chathams has informed us that its target price for the route will be $128+gst per ticket.

[18] This is estimated by assuming the flights are consistent with that of AirChathams Auckland-Whanganui route (https://www.airchathams.co.nz/Airline-Info/whanganui-schedule/ - which we understand to be the case). We define flights that would need to be replaced with 'high-value' flights from Wellington and flights that could reasonably be replaced by 'lower value' flights from Wellington. We note that two of the weekday flights would be high value making just under 30% of the flights 'high value' as they occur at peak times that would affect Kāpiti residents (morning flight to Akl and evening flight from Akl).On a series searches on the AirNZ website over a period of time based on booking approximately one week in advance, we note that the high value fares consistently appeared to be $133, $154, $185, $211, $236 or $278 (while noting there were higher and lower prices observed). While most morning departing flights we observed were in the upper part of the distribution returning evening/night flights could be timed by the passenger, so we adopted the mid-point of $198 as a fair estimate. The 'lower value' fares appeared to be $49, $59, $69 or $89 and again we took the mid-point of $64.

[19] The average airfares from Kāpiti are taken from an average of all Sounds Air flights over a month period as viewed on the Sounds Air website. All Wellington and Palmerston North airfares are taken from an average of all airfares within two hours of the replaced Kāpiti flights. All airfares are for a single adult in economy class.

[20] See footnote above.

percent increase (decrease) in the price of either cost implying an increase (decrease) in the estimated travel saving of $46K and $149K for each cost respectively. A 10 percent increase (decrease) in the time value of passengers' results in an increase (decrease) in the travel savings of $228K (approx. 7 percent change in the outcome).

Changes in the proportion of Kāpiti resident passengers and the average airfare from Wellington has the largest effect on the final estimated travel savings. If the proportion of passengers that fly from Kāpiti was 90 percent and not 80 the overall travel savings estimate increases by $431K (representing a 12.5 percent change). Similarly, an increase in the average fare from Wellington airport will increase the travel saving estimate by $464K (representing a 13.5 percent increase).

4.2 Recreational value

The Kāpiti Aero Club are a major user of the Kāpiti Airport and any evaluation of the economic value to the district must include these recreational users. We have contacted the Kāpiti Aero Club to obtain information on their usage of the airport and membership numbers. Below is a description of the Aero Club's key features:

> *"The Aero Club provides both fixed and rotary wing training for members (through to Private Pilot Licence and Commercial Pilot Licence) and specialised training for those who wish to fly aerobatics. The Club provides a range of aircraft for members to fly both locally and for cross country trips. The Club has an active social agenda, which includes Club trips, Pilot's educational evenings and competitions. We are often visited by pilots from other parts of the country who call in to refuel and to enjoy a cup of coffee in either our club rooms or down at the local beach cafes. Some also stay overnight. We have an active youth membership, which currently comprises 35 tertiary and university students. We are also in the process of implementing a Young Eagles program (see the Flying NZ website for more details)."*

We are primarily interested in the consumer surplus that Kāpiti residents receive from the Kāpiti airports recreational facilities. Kāpiti Aero Club estimates that approximately half of its members reside on the Kāpiti Coast and half reside outside of the district[21]. The Club has approximately 16,000 aircraft movements each year (a movement is a landing or a take-off)[22]. The Club has 283 members at present and in the last year conducted 336 trial flights, of which a small percentage went on to become members. In the year to March 2018, the Club had revenues that we have estimated to be over $700k, employs ten staff, which comprise a mixture of full time, part time and contractors. In the last year the Club flew 3,250 hours.

The formula we apply to estimate the CS attributable to the recreational users of the Kāpiti airport is as follows:

Equation 3: Consumer surplus of airport recreational use

$$CS_{rec} = (WTP_{rec} - P_{rec}) - (WTP_{rec} - P_{rec-alternative})$$

[21] The majority of non-Kāpiti members are presumed to reside in Wellington, where the Aero Club is in a commercial fly zone and therefore less attractive to recreational flyers.

[22] "The Club is not charged for multiple landings by the same pilot while operating in the aerodrome circuit. For example, if a pilot is practicing their take-offs and landings and during the same flight made six take-offs and landings, the Club (and the pilot) is only charged for one landing." (Information provided by Kāpiti Aero Club).

$$CS_{rec} = (P_{rec-alternative} - P_{rec})$$

Where WTP_{rec} is the willingness to pay of Kāpiti residents' for recreational use of Kāpiti airport; P_{rec} is the price actually paid for recreational use of Kāpiti airport; and $P_{alternative}$ is the price that Kāpiti residents would have to pay for the next best alternative recreational airport use (ie, the opportunity cost). Therefore the equation above will provide the consumer surplus of the recreational use of the Kāpiti airport whilst accounting for opportunity cost. We consider the opportunity cost to be the next closest recreational use airport. TDB understands that the closest alternative recreational airport is Fielding Airport (the Manawatu Aero Club). To our understanding the Manawatu Aero Club is similar enough in function to the Kāpiti Aero Club to be considered the next best alternative. The price of the alternative will have to take into consideration the time and cost of travel when using an alternative airport.

Because the willingness to pay variable cancels out when accounting for the opportunity cost, we only require two variables: the price of recreational use at Kāpiti airport (P_{rec}); and the price of recreational use at the next best alternative airport ($P_{alternative}$). We then multiply the difference by the number of current local recreational users to obtain the lost consumer surplus if Kāpiti airport were no longer in operation.

Fielding Airport is 105km[23] from Kāpiti Airport and - using the same price of petrol ($2.11 per litre) and fuel efficiency (0.085 litres per km) as the travel/time saving estimates above, plus the 58 cents per km maintenance cost – the total cost comes to $80 per person per return trip. We assume that users will travel in pairs so the petrol and vehicle maintenance costs are split between two. We also add the time cost of travelling to Fielding Airport. NZTA typically use 30-40 percent of the median wage[24] (35 percent gives a value of $10.70 per hour). Given a return trip travel time of approx. 2h 46m[25] this generates a time cost of $30 per person per trip.

If we assume the actual cost of the recreational activity is equal at both Aero Clubs then the lost consumer surplus attributable to the Kāpiti Airport closing is equivalent to $109 per person per use. Currently we estimate there are 8,000 flights by users of the Kāpiti Aero Club each year (ie, assuming each aircraft lands and takes off) of which 50% are by local residents. Multiplying the lost consumer surplus per trip by the number of local resident trips per year gives a total consumer surplus of approximately $438K per year.

4.2.1 Sensitivity to consumer surplus of recreation use

Figure 2 below summarises the effect that various sensitivity tests to key inputs and assumptions has on the estimated consumer surplus attributable to the recreational use of the airport.

[23] Source: Google Maps
[24] https://www.nzta.govt.nz/assets/resources/research/reports/571/docs/571.pdf
[25] Source: Google Maps

Figure 2: Sensitivity of consumer surplus to key inputs associated with recreational use

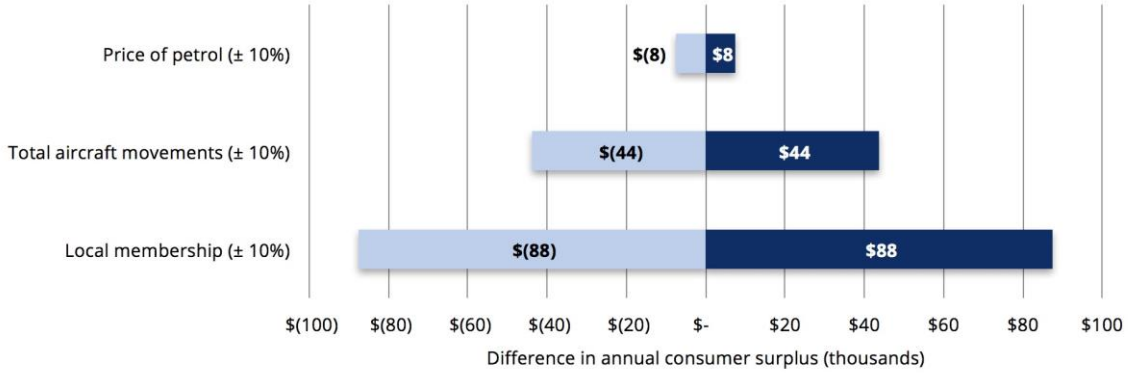


Figure 2 above illustrates how sensitive the estimated value of recreational use is to it input variables. The inputs we test for sensitivity are the price of petrol, total annual aircraft movements and the proportion of local membership. Increasing (decreasing) the proportion of local members from 50 to 60 percent (40 percent) increases (decreases) the annual CS of the airport's recreational use by approximately $88k. Increasing (decreasing) the price of petrol by 10 percent increases (decreases) the annual CS by $8k. Increasing (decreasing) total aircraft movements by 10 percent increases (decreases) the annual CS by $44k.

4.3 Noise

The noise created from the airport creates a negative externality to local residents who live, work and spend their leisure time close to the airport. In this section we look to test whether this negative externality is material by evaluating the effect that proximity to the airport has on land value. However, we first discuss the current noise restrictions imposed on the airports activity.

4.3.1 Noise monitoring

The rules that apply to noise emissions from aircraft activity and monitoring of noise at Kāpiti Airport, as outlined in the Kāpiti Coast District Plan, are outlined below:

> *D9 – 11: Noise from Aircraft Operations*
>
> *"The Day/Night noise level (L_{dn}) from aircraft operations at Paraparaumu Airport shall not exceed 65 dBA at or outside the Air Noise Boundary as shown on the Paraparaumu Planning maps.*
>
> *…*
>
> *PAL shall undertake field monitoring of aircraft noise within 12 months of these rules becoming operative, then every 36 months until such time as there are three consecutive calendar years when the total aircraft movements at the Airport exceed 70,000 in each calendar year. At that time, monitoring shall be undertaken annually. On each occasion, monitoring shall take place for a sufficient duration to adequately demonstrate compliance with the L_{dn} noise limit which shall be a period not less than one month and shall be undertaken during the busier times of the year (expected to be during the summer months). The monitoring undertaken shall include, as part of that overall assessment, the noise from the operation of the glider tug. The monitoring shall occur at the 65 dBA L_{dn} contour only."*

The most recent assessment of Kāpiti airport's noise was in 2015 by Marshall Day Acoustics. Over the 42 days of noise analysed there were 3,752 noise events. The average daily noise level was 60 dB L_{dn} with a maximum and minimum daily noise level of 63 and 58 dB L_{dn} respectively. Therefore, the airport complied with council regulations. Nevertheless, this does not say anything about negative externalities from the airport noise unless the council regulations were designed to keep such externalities to zero (which is unlikely).

4.3.2 Measuring the negative externality of airport noise

To our knowledge the simplest and most effective way to proxy the negative externality generated by airport noise is to identify the effect (if any) on nearby land prices[26]. However, it is not the only method available and other attempts have been made in past literature[27]. A good identification strategy that isolates all other salient features to land prices (on top the proximity to the airport) will give an effect that also includes any other costs/benefits that the airport imposes on nearby residents. For example, some individuals may consider the close proximity to the airport as a benefit that counteracts the greater noise. While estimates in the literature of the effect of airport noise on land prices do differ somewhat depending on the airport and the measure of noise, there is a clear consensus that the effect is negative and significant (for an analysis of major studies see Van Praag & Baarsma, 2005).

Due to a house being a consumptive good as well as an asset, there are conceptual difficulties in considering whether the effect on land prices from airport noise is necessarily a negative cost. The consumptive element of a house may lead some readers to suggest that, even if airport noise decreases the value of land prices nearby, the costs to owners are netted out by the benefit to buyers of being able to purchase a lower priced house/land. This logic is incorrect. To clarify why, let us describe a hypothetical example. Consider a world in which there are loud sirens (say similar to that of a fire engine) installed directly outside every house along a given street. The sirens ring every half hour at a loud volume for one minute. It is quite evident that houses with a siren directly outside would be worth a lot less to their owners (as nobody wants to have a loud siren blasting through their windows every half hour). It should also be clear that the net welfare generated from installing the sirens is negative. The flawed logic above would imply that removing all doors and windows from every house would be a net zero benefit because the negative cost to current owners (from having a poorer conditioned house) would be counteracted by a lower cost to buyers. The negative externality generated from airport noise is merely a less extreme form of the hypothetical siren example. The cost is negative, and it can be proxied by the effect on nearby land prices.

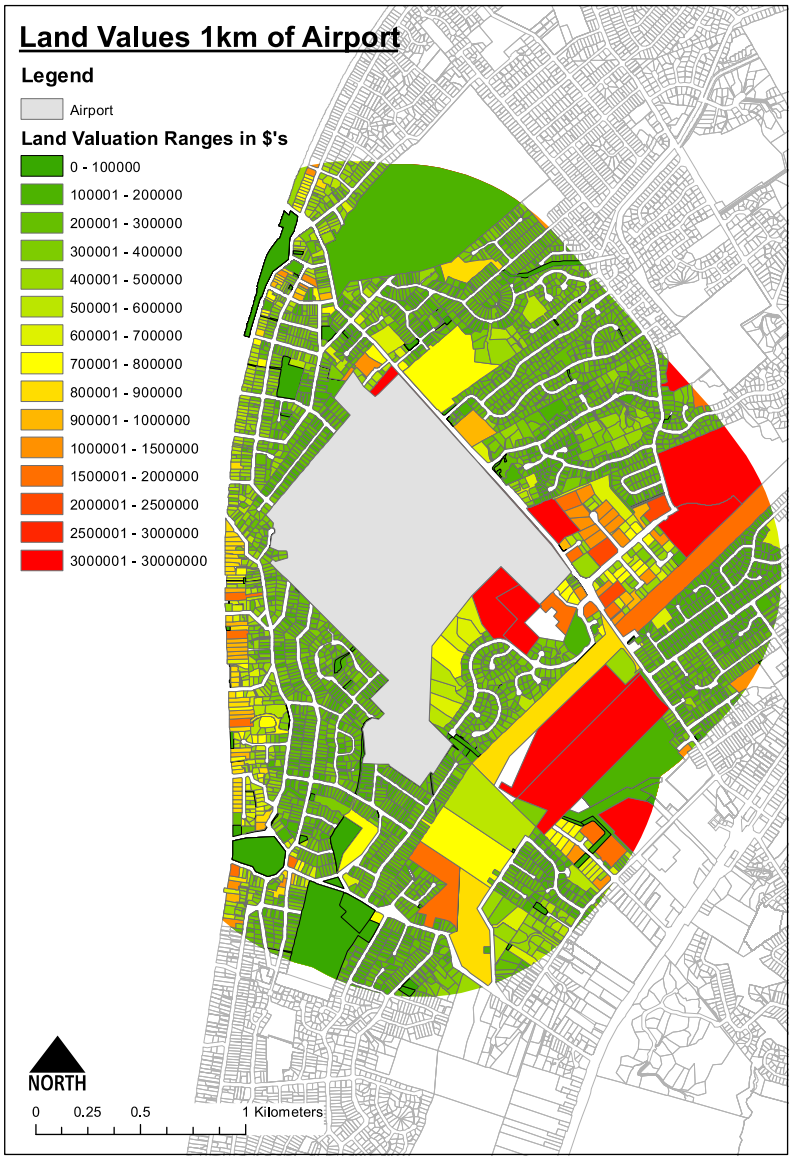
The difficulty then lies in measuring the effect of the airports proximity on nearby land prices. Because houses are not all equal, simply comparing land values close to the airport with land values further away from the airport will not accurately identify the effect of the airport on land prices. A good identification strategy would also control for the effect of all other salient features to land values, such as: land size. Note that because our dependent variable is land value and not house (or capital) value we do not have

[26] For example, see: Espey & Lopez (2000) or Collins & Evans (1994).

[27] There have been other methods used in the literature. For example, Van Praag & Baarsma (2005) use happiness surveys. They estimate that, depending on the level of noise, the negative externality of airport noise is equivalent to approximately 1-2 percent of the average income for individuals in non-insulated houses and approximately 0-1 percent of the average income for individuals in insulated houses.

to concern ourselves with other features unique to house prices (ie, number of bedrooms/bathrooms, age of house, additional features such as swimming pools, tennis courts etc.).

Figure 3: Map of land value within 1km of airport



Kāpiti council has provided TDB with a list of all properties within a 1km radius of the airport boundary and their land valuations (used for rating purposes). We also have been provided a map of these houses with each nearby property colour-coded by land value (see Figure 3 above). It is not easily discernible from the map that land value is positively or negatively associated with proximity to the airport.

We use an OLS regression to test for the effect of proximity to the airport (explanatory variable) on land value per square metre (dependent variable) to attempt to identify any relationship between the two variables. We begin by winzorizing land value per square metre at the 1st and 99th percentiles in order to control for outliers. For example, it appears that there are some extremely low land values that are park space or schools. There is a large sample size of 4,940 properties within 1km of the airport boundary. Table 3 below summarises results of the OLS regression.

Table 2: OLS output - proximity to airport on land value per metre squared

y variable: land value per metre squared

	Coefficients	Standard Error	t Stat	P-value
Intercept	222.1446	3.4483	64.4220	0.0000
Proximity to airport (metres)	-0.0034	0.0061	-0.5624	0.5739

Regression Statistics	
Multiple R	0.0080
R Square	0.0001
Adjusted R Square	-0.0001
Standard Error	127.5895
Observations	4,940

As Table 3 shows, there is a very small and insignificant relationship between land value and proximity to the airport. The sign of the coefficient is in fact the opposite of what we would expect. That is, as distance to the airport increases the land value per square metre decreases. However, because the relationship is insignificant we do not read anything in to this.

The obvious limitations of these results are the failure to control for other value enhancing or limiting factors, such as proximity to the beach or other factors. However, from observing the map of nearby properties (Figure 3 above) there appears to be more properties near the beach further away from the airport. Therefore, there may be a disproportionate number of high-value properties further away from the airport, which would have the effect of exaggerating the appearance of a negative effect on properties nearby the airport. Because the sign of the coefficient is negative we can be more confident that there is no material relationship between airport proximity and land value. Based on the above information we do not see any apparent effect of airport proximity as a proxy for noise on land values and therefore there is no evident or material negative externality.

4.4 Emergency response capability/resilience

There may be some resilience and/or emergency response value to Kāpiti airport in the event of a major disaster or as a staging ground for search and rescue operations on the West Coast.

We note that Kāpiti airport would be a very useful staging ground in the event of a natural disaster for residents if the district were to be cut off. It could also act as a useful lifeline for Wellington if it became cut off. We note that Kāpiti Airport has been identified as a critical component of the Wellington Earthquake National Initial Response Plan (WENIRP) 2017. However, given the low probability of such an event, the uncertainty of its occurrence and the ambiguity of its magnitude and implications on affected areas, we have not attempted to the value of having access to the Airport in this exercise.

In terms of search and rescue operations we note that Wellington or Palmerston North Airport could be used as a staging ground. Alternatively, the RNZAF Base Ohakea is a fully operational military airport within 100km of Kāpiti Airport. Ohakea is one of three New Zealand air force bases and New Zealand third largest airfield. There are more than 1,000 people working at the base[28] making it appear to be better equipped and a more likely search and rescue operation base in the district. We therefore do not attempt to assign a value for Kāpiti becoming a staging ground for search and rescue operations.

[28] http://www.airforce.mil.nz/about-us/where-we-are/hq-and-bases/ohakea.htm

4.5 Trade/freight

TDB understands that there is currently no freight or trade that is facilitated by the Kāpiti airport. Therefore there is currently zero district-wide benefit from this facility, which is generally a common feature of most airports.

While it is possible that in the future freight could be a feature of Kāpiti airport, we view this as unlikely. Recently, Palmerston North Airport increased its freight operations with Freightways subsidiaries partnering with NZ Post subsidiaries to increase the capacity for domestic overnight deliveries of consumer goods[29]. Freightways entered into new lease agreements for three new Boeing 737-400s with one flying a dedicated route between Christchurch, Palmerston North and Auckland. The aircraft that is used for freight means Kāpiti Airport is not a suitable substitute for freight operations in the short to medium term (given aircraft lease commitments) due to Kāpiti airports shorter runway length. Also, it has been reported that NZ Post and Freightways have invested significant capital into Palmerston North Airport to create a Lower North Island distribution point[30]. Palmerston North was chosen because it is strategically placed in the centre of one million North Islanders[31]. Therefore we view it as improbable that Kāpiti will be able to attract freight in the near future under current airport conditions.

4.6 Social connectivity/local identity

The last possible benefit that we address is social connectivity and local identity. Local residents may consider the airport to form part of the local identity. It may be representative to them of a developed and dynamic local district of which they are an important part. It also has a rich history of which they may feel is reflective of, and has help build, the local culture. There may therefore be additional utility that the residents gain from the presence of the airport regardless of whether or not it is operating at its capacity, or is commercially viable.

We do not attempt to value this additional utility as any possible proxy that we adopted would be completely subjective and as such we have not emphasised it in the summary sections of this report. For future projects of this nature it may be possible to gauge this value (if it exists) by conducting a very carefully directed survey of the residents.

4.7 Summary of consumer surplus

As noted throughout this section the aim has been to identify and quantify, measurable and material components of the overall net economic benefit to resident consumers that is directly attributable to Kāpiti Airport. We identify travel savings, recreational value, noise costs, emergency response capability and trade and freight as possible contributors to the net economic benefit. After analysing each component, we quantify travel savings and recreational value as the two that are material and measurable.

Table 4 below summarises the components and the associated estimated values of the net economic benefits of the consumer surplus.

[29] https://pnairport.co.nz/news/palmerston-north-airport-welcomes-boeing-737-400-freighter-operations/
[30] https://www.stuff.co.nz/business/82682345/freightways-opens-new-palmerston-north-courier-depot
[31] https://www.stuff.co.nz/business/82648002/new-freighter-service-to-start-flying-through-palmerston-north-airport

Table 3: Total consumer surplus

Consumer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Travel/time savings	**$3.4**	**$57.5**
Recreational value	**$0.4**	**$7.3**
Noise	**Not measured**	
Emergency response	**Not measured**	
Trade/freight	**$0**	**$0**
Total CS	**$3.9**	**$64.8**

As shown by Table 4 above we estimate that the benefit to resident consumers from travel savings is $3.4m p.a. and the benefit from recreation is $0.4m p.a. Therefore, the total net economic benefit of the Kāpiti Airport to resident consumers is $3.9m per year which equates to a present value of all future benefits of $64.8m.

5. Economic value to the district: producer surplus

5.1 Profits and wages of airport operations

The airport is owned and operated by Todd Property Group (Todd). It is debatable as to whether any profit/loss of the airport operations should be considered in a district-wide welfare analysis as Todd could be considered non-local owners. Nevertheless, our estimates suggest the airport only generates a small positive operating cash flow of approximately $0.1m per year, which when including depreciation (the runway is estimated to need to be replaced every 15 or so years) results in a loss. Because these figures are materially small, and the attribution of the airports profit/loss to the Kāpiti district is debateable, we have simply ignored direct profits/wages in the analysis.

5.1.1 Excess profits

Our estimates of Kāpiti airports operations are that they generate an annual free cash flow of approximately $102,000 but if considering non-cash accounting costs (chiefly deprecation) the airport's earnings are approximately zero if not negative.

Businesses that operate out of the airport or rely directly on the airport are not considered directly in this analysis. We have been unable to obtain information as to what businesses operate out of the airport or rely on the airport for business. We do understand that there is a scenic helicopter flights business and a café as well as the operations of the Aero Club and the Airlines. The helicopter business only needs a landing pad and does not need an airport to operate. Therefore, we do not consider any benefit from the helicopter business as it could continue operating without the airport. This analysis is also a local, not national, economic evaluation and producer surplus generated by local customers of the airport café (and any other airport associated businesses) can be assumed to be displaced almost entirely in the counterfactual scenario of no airport. For example, if there were no airport and hence no airport café, those same local users will still have a demand for going to a café and hence will go somewhere else in the district to meet this. All spending by visitors will be estimated in the next sub section.

We note that the two businesses that do appear as if they should possibly be included in this analysis are the Kāpiti Aero Club and air2there. Both appear to be based in Kāpiti and are on-going businesses which we would therefore assume are profitable. We do not have accurate enough information on either firm's actual ownership, cost or revenue, so we have not included either at this stage. We attempt to take a different approach by considering wages paid to residents (below) instead of making too many assumptions about the profitability of the firms here.

5.1.2 Wages

In-terms of wages, we consider that there are skilled jobs that are directly linked to the existence of the airport that benefit Kāpiti residents. We only consider wages that would be lost if the Airport did not exist, meaning, any jobs that could be replaced and the worker could earn similar remuneration elsewhere in the district is not considered. These jobs include administration, cleaning and service type work necessary for any business. This extends to any ground crew associated with the airlines as well. If the airport did not exist then we consider that the more flexible service workers would likely still be

employed in a similar capacity elsewhere in the district, ie, they would not need to leave the district to find work. The flight crew and flying instructors however would not remain in the district, they have trained to be pilots and would either relocate or commute elsewhere if the airport did not exist.

Kāpiti Aero Club has eight full-time permanent flying instructors and four part-time. From its website, the four part-time instructors appear to be more senior and specialised with higher level instructor ratings and in two cases the ability to be examiners. We deem that in these cases the instructors are likely working for Kāpiti Aero Club on essentially a contract basis and are possibly not from the district. Therefore, we do not consider their wages in this analysis. Of the full-time instructors there are four who appear to be junior (with C-CAT ratings) and four which appear to be more senior (with B-CAT ratings). Of the four senior instructors one is the Chief Flying Instructor.

In line with estimate ranges taken from CareersNZ[32] for flying instructor wages, we assume the junior instructors are each paid $34,000, the more senior are paid $70,000 and the Chief Flying Instructor is paid $100,000. This results in $446,000 in total wages for the flight instruction at Kāpiti Aero Club. We assume that none of the aircrew associated with the airlines are based in Kāpiti which, as we understand it, is reflective of how the airlines operate the routes.

Our last consideration related to maintenance and aircraft technician workers. We deem it unlikely that Air NZ would base technicians in Kāpiti and any required work on the aircraft would be conducted in Auckland. Air2there and the Kāpiti Aero Club however would occasionally need maintenance on aircraft, and, from a brief review of the Aero Clubs booking sheet this does not appear infrequent[33]. To account for an aircraft engineer we consider that there would be enough work between the Aero Club and air2there for at least one FTE, meaning that it is likely the worker(s) would reside in Kāpiti. To remain slightly prudent, we have assumed only one FTE and in keeping with CarrersNZ[34] range for an aircraft technician we have assumed a salary of $60,000 per year.

In summary, the three components included are instructor wages and technician wages, which add to $506K annually. This means a contribution of $402K after tax and ACC levies, which do not benefit the district directly. Finally, many of the residents directly employed by the airport, although skilled workers, will be less mobile and not relocate, ie, will continue to be Kāpiti residents. Instead they will commute to Palmerston North or Wellington Airport for work. We, somewhat arbitrarily, assume the 50 percent of the pilot residents will relocate and 50 percent will commute. Therefore, the estimated value of lost wages in the counter factual of no airport is $201K per year.

5.2 Visitor expenditure

In addition to the wage capture in the district we want to understand the additional producer surplus (ie, profits and wages) that result from airport induced visitor expenditure. To do this we need to know the number of tourists that come to Kāpiti each year because of the local airport. A 2017 report by Marketview estimated that tourists spent $200m (or 28 percent of total spending) in the Kāpiti district in 2016. Of which, $191m (or 95 percent of tourist spending) was spent by domestic tourists and the remaining $9m (or 5 percent) was spent by international tourists. Kāpiti Coast received 7 percent of total

[32] https://www.careers.govt.nz/jobs-database/transport-and-logistics/transport-logistics/flying-instructor/about-the-job.
[33] At the time of undertaking this work one aircraft was booked out for maintenance for what appeared to be several weeks. http://www.paperaviator.com/Bookings.aspx?GroupID=55DF34A8-6930-414D-B8E3-582C0C7D9FFA
[34] https://www.careers.govt.nz/jobs-database/engineering/maintenance-repair/aircraft-maintenance-engineer/about-the-job

tourism spending in the wider Wellington region[35] and approximately 1 percent of national tourism spending.

Of the 95 percent of tourism spending made up of domestic tourism, 54 percent of tourists originated from the wider Wellington region, 20 percent originated from Manawatu/Whanganui, 7 percent from Auckland and the remaining 19 percent from the rest of New Zealand. Note that the two largest sources of domestic tourists – wider Wellington and Manawatu/Whanganui – will almost exclusively enter the Kāpiti district by road or rail.

Of the 5 percent of tourism spending made up of international tourism, 37 percent originate from Australia, 20 percent from Great Britain, 13 percent from the USA, 5 percent from Canada, 4 percent from Germany and the remaining 21 percent from other countries.

The majority of tourism spend is by visitors who day trip to Kāpiti. Day trip visitors make up 41 percent of total tourism spend compared to 31 percent of visitors from 2-7 days, 19 percent of visitors from 8-28 days and 10 percent 29 days and over. Although Marketview recognise that the 29 days and over tourism spend in 2016 is not a good representation of a typical year as it likely captures workers brought in to work on the Kāpiti expressway.

Food and liquor are the largest category of tourism spending (24 percent of total), followed by durable goods (23 percent), other store types (18 percent), fuel and automotives (13 percent), bars/cafes/restaurants/takeaways (11 percent), clothing and footwear (7 percent), accommodation (5 percent) and attractions (1 percent).

It is quite likely that if there was no airport in Kāpiti, the loss in tourist numbers would not be as large as the number of tourists who currently use the airport to access the district because these tourists may choose to enter Kāpiti via another mode of transport. For example, tourists that no longer fly to Kāpiti may alternatively choose to drive or they may choose to fly to Wellington airport and then rent a car or take a bus/train. The current level of tourism that passes through Kāpiti airport is therefore an upper bound on the potential loss in current tourism numbers if the airport were no longer in operation. Given we have very little way of knowing whether current tourists would have still visited Kāpiti had there not been an airport we must make some assumptions on the loss in current tourist numbers that would result from the airport closing. We have assumed that 75 percent of current visitor users of Kāpiti airport would not have visited Kāpiti in the absence of the airport. We provide sensitivity tests of this assumption.

The formula for the producer surplus attributable to visitor expenditure is:

$$PS_{visitors} = [airport_{induced}(\%) \times profit_{capture}(\%) \times \sum \left(n_y \times day_y(\%) \times day_y(\$)\right) + [\, airport_{induced}(\%) \times profit_{capture}(\%) \times \sum \left(n_y \times \left(1 - day_y(\%)\right) \times overn_y(\$)\right)]$$

Where $airport_{induced}(\%)$ is the proportion of tourists that are only visiting Kāpiti because there is an airport; $profit_{capture}(\%)$ is the proportion of visitor expenditure that is captured in local profits and

[35] Other districts/regions in wider Wellington are Wellington city (46 percent share of tourism spend), Lower Hutt (20 percent), Upper Hutt (5%), Porirua (12 percent), Masterton (6 percent), South Wairarapa (3 percent) and Carterton (1 percent).

wages above cost of supply and opportunity cost; n_y is the total unique annual number of passenger trips by trip type.

5.2.1 Number and type of visitors

Based on the information available and consistent with our working on the travel savings, we have assumed 20 percent of passengers that use the Kāpiti airport are non-locals (or visitors). Given there are approximately 53,000 annual passengers through the airport, this implies there are approximately 10,600 visitor passengers. However, this does not imply 10,600 unique visitors. If each visitor passenger only entered or left Kāpiti Airport each year (ie, one-way trips) then this would mean there were 10,600 unique visitors. However, if each visitor passenger entered and left Kāpiti airport (ie, two-way trips) then this would imply only 5,300 unique visitors use the airport each year. The true number of unique visitors will almost certainly be somewhere in between due to some visitors flying in to Kāpiti airport and departing the district by some other mode (ie, car, bus, train). We can calculate the number of unique visitors by dividing the number of two-way trip passengers by two and dividing the number of one-way passengers by one.

We do not have information on the proportion of visitor passengers that use Kāpiti Airport for one/two way trips therefore we do not know the number of unique visitors. However, as discussed above, based on our estimate of 20 percent visitor passengers we know the lower and upper bound for unique visitors to be 5,300 and 10,600, respectively. We will therefore assume the midpoint of approximately 8,000 unique visitors.

Not all visitors are identical in behaviour and for our purposes it is helpful to identify different types of visitors and their respective behavioural differences. The most recent Statistics New Zealand data[36] on Kāpiti-Horowhenua tourism is from 2012. However, there is still some useful information in that data that can help inform our assumptions on visitor behaviour. In 2012 there were an estimated 1.58m visitor trips to the district, of which 81% were day trips. Of the 312,000 business trips (20% of total trips), approximately 82% were day trips. Of the 446,000 holiday-related trips (29% of total) approximately 76% were day trips. And of the 803,000 trips to visit family and friends (51% of total) approximately 83% were day trips.

Using the Statistics New Zealand groupings and historical data, we estimate that annual visitor numbers are made up of

- business visitors: 20%;
- visiting family/friends: 51%; and
- tourist visitors: 29%.

We suspect that this breakdown of trips will not accurately resemble the visitor trips of airport passengers. For example, it is quite probable that there will be a higher proportion of business visitors on the flight and fewer tourists (as tourists are likely to travel by other means as Kāpiti is not the only tourist destination in the district). However, this is the best information we have, and any adjustment would be ad hoc in nature. If our hypothesis is correct – that passenger movements have higher business

[36] Source: NZ.Stat: http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7571#

passengers and fewer tourists than the Statistics New Zealand data – then our estimates of visitor expenditure will likely exaggerate the level of visitor spending induced by the airport as tourists are likely to stay longer and spend more in the district than business visitors.

5.2.2 Average length of stay and spend per visitor type

The next step is to understand the average length of stay in the Kāpiti district by visitor type, followed by the average daily spend by visitor. Combining these two pieces of information with total visitor numbers above allows us to estimate the total visitor spend in the Kāpiti district.

Statistics New Zealand data from 2012 states that 76 percent of tourist visitors only visit Kāpiti for a day-trip, compared to 82 percent of business visitors and 83 percent of those visiting family and friends. Clearly there will be a large difference in the average daily spend between day-trip and overnight visitors.

Statistics New Zealand estimates that international visitors to New Zealand spent on average $190 per night in 2017[37]. We consider this nationwide figure to be higher than what visitors to the Kāpiti district would spend, and that international visitors are likely to spend more than domestic visitors (as mentioned above, Marketview estimates that domestic visitors make 95 percent of visitors to Kāpiti).

Based on this view, we have revised down the daily expenditure of overnight tourist and business visitors to $150 (to reflect a lower cost of accommodation and costs than in larger cities). Given that that overnight visitors of family/friends are much less likely to pay for accommodation we revise down the daily spend of these visitors to $88, based on the assumption that only 20 percent of these visitors will pay for accommodation and the average cost of accommodation is $156 per room for two people[38].

Our day-trip visitor expenditure estimates are based off the overnight estimates above, less the cost of accommodation. It is possible that these estimates are overly optimistic in the sense that they assume day-trip visitors behave identically to overnight visitors apart from paying for accommodation. In reality it may be that a day-trip visitor spends a fraction of the day in Kāpiti and therefore spends much less than overnight visitors on non-accommodation expenditure. On the basis that the average visitor splits the cost of accommodation across two people, then the average day-trip business and tourist visitor will spend $72 per person[39]. The average visitor of family/friends is also estimated to spend $72 per person after accounting for the 20 percent of overnight visitors that stay in paid accommodation.

As a base case we assume that overnight business visitors spend on average 2 days in the district, overnight visitors of family/friends spend on average 4 days in the district and overnight tourist visitors spend on average 3 days in the district. A summary of all our base case assumptions on visitor activity is given in Table 5 below.

[37] Source: NZ.Stat: http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7571

[38] The average room price is based on the average of all rooms in the Kāpiti district on Trip Advisor, as viewed on April 16 2018. All but one hotel/motel have a price between the range of $99 and $189 per night. There is one place at $510 per night. See https://www.tripadvisor.co.nz/Hotels-g2157946-Kapiti_Coast_Greater_Wellington_North_Island-Hotels.html

[39] Calculated as $150 – ($156/2) = $72.

Table 4: Summary of base case assumptions on visitor activity

Visitor type	Airport induced unique trips p.a.	% day trip	Mean day trip spend	Mean length overnight trip (days)	Mean overnight trip spend
Family/Friends	4,589	83%	$72	4	$88
Business	1,786	82%	$72	2	$150
Tourist	2,552	76%	$72	3	$150

5.2.3 Proportion of visitor spend

From this information, we must then estimate the proportion of expenditure that is kept as district income (profits and wages). We only count profit and wages because the remainder of visitor expenditure is simply the cost of supply.

The additional profits and wages generated by the airport can come in three forms:

- direct economic impact: the increased profits and wages as a result of tourist's direct spending;
- indirect economic impact: local businesses that receive a direct economic impact (above) will pass on some of their tourism-related revenues to suppliers, who themselves will absorb a proportion of this spend as profits and wages; and
- induced economic impact: the local residents who receive tourist related profits/wages (both of the above) will spend some of this back in to the local economy – generating a further round of profits and wages.

It is difficult to know exactly what proportion of visitor expenditure is captured in local producer surplus. MBIE (2013) stipulated that 75 percent of international visitor expenditure should be considered a net benefit to New Zealand[40] with the remaining 25 percent lost in the cost to supply and taxation. However, the accuracy of this estimate has been questioned in recent times. Sapere (2015) notes that it cannot reconcile this distribution and adopts 45.5% international value added from international spending which it bases on analysis of the based-on data from the Tourism Satellite Account dataset. This figure has been highly disputed by NZIER (2016) as being too optimistic and it noted that Sapere mistreated certain costs and the overall net benefit should be 35% lower than reported. The issue with the MBIE suggestion is that it does not account for the additional return that visitor expenditure provides over and above what the resources would have been used for alternatively. Also, the figure should be revised down given that there is likely to be larger spill overs in this situation than in a national cost-benefit analysis, due to visitors to Kāpiti district spending outside of district, as well as some non-local ownership of local businesses and flow-on expenditure outside of the district. As a working assumption we therefore use a downward revised figure of 25 percent (which, if anything, may still be optimistic).

Our base case estimate of the airport induced producer surplus from visitor expenditure is $195k.

[40] Note that there should be no issue is comparability between international and domestic tourism in this setting because we are conducting a regional or district-wide welfare analysis. Therefore analysing the district-wide value of a domestic tourist to the Kāpiti district from outside of the district is equivalent to analysing the national value of an international tourist to New Zealand (ie, both are outsiders).

5.2.4 Sensitivity of producer surplus to visitor expenditure

Figure 4 below summarises the effects that various sensitivity tests to key inputs and assumptions have on the estimated producer surplus attributable to the visitor expenditure attributable to the airport.

Figure 4: Sensitivity of producer surplus to key inputs associated with visitor expenditure

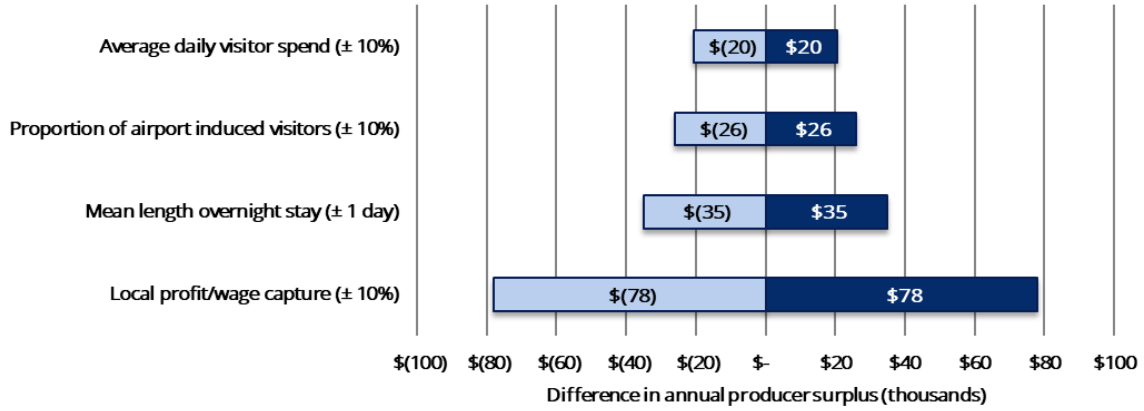


Figure 4 above illustrates the effect that sensitivity tests on the key inputs to the estimate of PS attributable to visitor expenditure. The inputs we test for sensitivity are the mean length of overnight stay trips (across all visitor types), average daily visitor spend (all visitor types), local profit and wage capture and the proportion of airport induced visitors. Increasing (decreasing) the average daily visitor spend across all visitor types by 10 percent increases (decreases) the annual PS by $20k. Increasing the proportion of visitors that only visit Kāpiti because of the airport from 75 to 85 percent increases the PS by $26k p.a. Decreasing the proportion of visitors that only visit Kāpiti because of the airport from 75 to 65 percent reduces the PS by $26k. Increasing (decreasing) the mean length of overnight stay by 1 day increases (decreases) the annual PS attributable to visitor expenditure by approximately $35k. Increasing the local profit/wage capture from 25 to 35 percent increases the annual PS by $78k and reducing it to 15 percent decreases the PS by $78k.

5.3 Potential for a "business park"

It has been suggested that there is potential for some of the surrounding airport land be converted into a business park. TDB understands that this would be possible under current zoning and land-use regulations, with the only caveat being the possibility for some need to soundproof some buildings if they fall within the noise restricted zone.

We do not however consider this to be a material benefit worth quantifying in this report for the following reasons. Firstly, we understand there is not a shortage of possible land in the Kāpiti district to develop such a business park. Therefore, the key consideration is what benefit that the possibility of a business park on current airport land would bring, over and above the possibility of a Business park on any other developable land in the district. We have been pointed to numerous other plots of land that could be developed for such purposes. Secondly, evaluating the possibility of Business park development is hard to estimate. Because the land is currently under private ownership, then presumably if there were demand for a Business park on existing land then it would be profitable for the current owners to develop it (in the absence of zoning and/or land-use restrictions).

Therefore, we conclude that, while it is worth bearing in mind there could be a potential for future development of a Business park on airport land, we do consider that this potential benefit should be overplayed given there are existing opportunities for development of such a park and the existing owners would have the incentive to develop if there were sufficient demand.

5.4 Summary of producer surplus

Table 6 below presents a summary of all components considered in the producer surplus.

Table 5: Total producer surplus

Producer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Profits/wages of airport	**$0.2**	**$3.4**
Visitor expenditure	**$0.2**	**$3.2**
Potential for business park	**Not measured**	
Total PS	**$0.4**	**$6.6**

As shown in Table 6, we estimate a total annual producer surplus of $396K (rounded to $0.4m above). This equates a present value of all future benefits of $6.6m.

6. Other considerations

6.1 Role of government

An important caveat to keep in mind when interpreting the results of this economic evaluation relates to the role of government in relation to Kāpiti Coast Airport. Just because an activity is found to make a positive net contribution to the regional/district-wide economy doesn't mean that the government (whether central or local government) should necessarily own, subsidise or regulate the activity.

As always, when considering possible government intervention, three key questions should be asked:

1. is there evidence of a significant market failure in relation to the airport?

2. if there is evidence of a significant market failure, what are the options for the government to address the market failure and what are the costs and benefits of the different options? and

3. do the benefits of government intervention outweigh the costs?

Addressing these questions in relation to Kāpiti Coast Airport is outside the scope of this report.

6.2 Distribution of benefits

It is important to note that the benefits to the district that we have identified in this report are likely attributable to a small segment of the local population (ie, airport users, affected businesses). Therefore, we suggest that these distributional affects are considered when evaluating the equity of any future action.

6.3 Endogeneity

The final note we make is that endogeneity concerns should be included in any considerations made in regard to assigning economic value to district assets such as Kāpiti Airport. That is, is the airport benefiting because of higher development in the district or is development in the district benefiting because of the airport? This is a difficult question to answer but it needs to be kept in mind when considering the value of the airport to the district.

7. Net economic benefits to the district of Kāpiti Airport

This section brings together the results of the previous two sections to adds together the CS and PS to give a total district-wide economic value of the airport. Results are presented as both an annual economic benefit and net present value of all future benefits.

Table 7 summarises the findings of the CS and PS estimates presented previously in this report.

Table 6: Total net benefits (costs) to the district

Consumer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Travel/time savings	$3.4	$57.5
Recreational value	$0.4	$7.3
Noise	Not measured	
Emergency response	Not measured	
Trade/freight	$0	$0
Total CS	**$3.9**	**$64.8**

Producer surplus ($m)	Annual benefit (cost)	PV benefit (cost)
Profits/wages of airport	$0.2	$3.4
Visitor expenditure	$0.2	$3.2
Potential for business park	Not measured	
Total PS	**$0.4**	**$6.6**

Net economic benefits (costs)	**$4.3**	**$71.4**

As depicted in Table 7 above we have identified three material and measurable components of consumer and producer surplus for Kāpiti Airport. In-terms of the consumer surplus we have identified benefits for travel savings made from residents having access to the airport for travel reasons. This component makes up, by far, the largest portion of the total net benefit (approx. $3m or 80% of the total net benefit). We note that this 80% benefit is only of benefit to those who use the airport for travel. Any residents who do not utilise the travel facility receive none of this benefit, but all residents do hold some option value of ability to access the service that is not quantifiable.

We have estimated that the benefit to residents from recreational flying is approximately $438k (approx. 10% of the total estimated net benefit). We do not view noise from the airport in this case as having a material effect on the local economy and while we note that Kāpiti Airport may be an important resource in the event of an emergency we do not deem this benefit to be measurable. Finally, it is unlikely that Kāpiti Airport holds any untapped potential to become a freight hub for the wider region in the short or medium-term.

In-terms of the producer surplus we note that it is unlikely that the airport operations and firms attached directly to the airport contribute profits above that of their cost of capital, however, we estimate that wages captured by residents which would be lost if the airport were to cease operating are approximately $200K (approx. 5% of the total net benefit). We also note that a business park may produce value but is, at this stage, not measurable. Finally, we estimate the value of additional visitor

spending that is related directly to the existence of the airport is approx. $195k (5% of the total net benefit).

In total we estimate that the net economic benefit of the airport is $4.3m per annum which equates to a present value of all future benefits stemming from the airport of $71.4m.

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