

THE STATES OF DELIBERATION
of the
ISLAND OF GUERNSEY

COMMITTEE FOR ECONOMIC DEVELOPMENT

GUERNSEY AIRPORT RUNWAY EXTENSION STUDY

The States are asked to decide:-

Whether, after consideration of the policy letter entitled 'Guernsey Airport Runway Extension Study', dated 3rd July 2023, they are of the opinion:

1. To agree that a decision to extend the runway at Guernsey Airport should be driven by the States' Trading Supervisory Board on the basis of commercial, regulatory or other considerations, and to direct the States' Trading Supervisory Board to take account of the cost-benefit analysis and supporting reports presented in this policy letter in advance of the next planned resurfacing of the runway at Guernsey Airport or as part of the Guernsey Airport Master Plan.
2. To note the cost-benefit analysis and supporting reports on the extension of the runway at Guernsey Airport and that it may be possible to achieve a runway length of approximately 1,623 metres within the existing airport boundary utilising Engineered Materials Arresting System (EMAS) technology, subject to regulatory approval.

The above Propositions have been submitted to His Majesty's Procureur for advice on any legal or constitutional implications in accordance with Rule 4(1)(c) of the Rules of Procedure of the States of Deliberation and their Committees.

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GUERNSEY AIRPORT RUNWAY EXTENSION STUDY

The Presiding Officer
States of Guernsey
Royal Court House
St Peter Port

3rd July 2023

Dear Sir,

1 Executive Summary

- 1.1 The Committee *for* Economic Development (“the Committee”) presents this policy letter in accordance with the States Resolution of 28th November 2019, arising from the Requête titled “*Development of the Business Case and Cost Benefit Analysis for the Extension of the Runway at Guernsey Airport to create a 1,700 Metre Runway*”, dated 6th October 2019.
- 1.2 An extended runway would provide infrastructure that could enable new air services, lower average fares, and therefore new visitors, each year, to the Islands of Guernsey. This would lead to increased direct expenditure in both the local tourism sector and the wider economy (including local accommodation, retail, catering and on-Island transport businesses). Furthermore, this could also support Guernsey residents through new business growth opportunities, additional tax revenue and enhanced social benefits (linked to access to healthcare, sport and cultural activities).
- 1.3 Importantly, the Committee has identified an alternative engineering option utilising Engineered Materials Arrestor System (EMAS) technology, which, subject to regulatory approval, could facilitate similar benefits to an extended runway of 1,700 metres but with none of the impact to the east of the aerodrome

boundary, by keeping the runway extension within the airport's current boundary. This would ensure that the valley to the east of the runway is preserved, together with the properties located within it, as well as the Villiaze Road, the Route des Blicqs and the nearby cemetery.

- 1.4 However, delivering increased passenger numbers is more than an infrastructure decision, as it would require a significant shift in Guernsey's air connectivity policy. There would also be significant implications for the airport's finances and business model, the ongoing cost of route development support, service levels (frequency, reliability and flight times) and Aurigny's sustainability.
- 1.5 In short, extending the runway is only one part of major set of interdependent infrastructure, financial and policy decisions. This policy letter and its appendices strive to set out in a balanced way the potential costs and benefits of extending the runway, together with the wider impacts of those decisions.
- 1.6 The Committee has concluded, by a majority, with Deputy Vermeulen dissenting, that any decision to extend the runway at Guernsey Airport should be a commercial decision taken by the States' Trading Supervisory Board. The next planned resurfacing of the runway at Guernsey Airport (to take place in 5 to 10 years) or the ongoing work on the Airport Master Plan would provide relevant opportunities for this to be considered as a coherent overall investment decision.
- 1.7 For avoidance of doubt, the development of a detailed business case would only take place if the States' Trading Supervisory Board determined, at some point in the future, that Guernsey Airport's runway should be extended.

2 Background

- 2.1 In November 2019, the States of Deliberation supported a Requête – led by the late Deputy Jan Kuttelwascher – directing the Committee for Economic Development (“the Committee”) to “*present a business case and cost benefit analysis for the extension of the runway at Guernsey airport to create a runway of at least 1,700m*”. The work was to be completed by May 2020, and the Policy and Resources Committee (“P&R”) was directed to make available funds not exceeding £360,000 to support this work. See Appendix 1. ¹

¹ Requête, P.2019/105, *Development of the Business Case and Cost Benefit Analysis for the Extension of the Runway at Guernsey Airport to Create a 1,700 Metre Runway*. Available from:

- 2.2 The underlying premise of the Requête is that an extended runway of at least 1,700 metres (compared to its current length of 1,463 metres)² would make the airport accessible to the short-haul, narrowbody jet aircraft which represent the majority of aircraft used by UK and EU airlines – including low-cost carriers (LCCs) – such as the Airbus A319/A320, Ceo and Neo variants, or the Boeing 737 family of aircraft. This, in turn, could facilitate the launch of new services and routes – potentially offering lower average fares – which could generate additional air passenger movements to and from Guernsey. A proportion of these passenger movements would be undertaken by new visitors who would contribute to Guernsey’s tourism sector and wider economy. At the same time, residents could potentially benefit from lower fares and an increased choice of destinations to fly to from Guernsey.
- 2.3 In order to support its assessment of the costs and benefits of an extended runway of at least 1,700 metres, the Committee *for* Economic Development commissioned consultancy Frontier Economics to undertake an economic impact analysis, together with a high-level social and environmental impact assessment. Frontier Economics completed this work in March 2020. (see Appendix 3)
- 2.4 However, with the advent of the Covid-19 pandemic, the Committee decided that it was not the right time to submit a policy letter for debate on a potential extension to Guernsey airport’s runway. The Committee published the report but advised that the findings of Frontier Economics’ analysis would need to be reviewed once the Covid-19 pandemic had been brought under control and the future of local and regional air travel had become clearer.
- 2.5 Consequently, in 2021, the Committee commissioned Frontier Economics to provide an updated report, which was completed in August 2021 and reflects new developments that took place between March 2020 and July 2021; it is enclosed at Appendix 2. The original report is also enclosed, for completeness, at Appendix 3. Frontier Economics’ findings are discussed in Section 5.
- 2.6 In parallel, the States’ Trading Supervisory Board (“STSB”) had begun work on developing a new Guernsey Airport Master Plan. As part of this workstream, STSB commissioned York Aviation to advise on the factors that could drive additional

<https://www.gov.gg/article/174627/Development-of-the-Business-Case-and-Cost-Benefit-Analysis-for-the-Extension-of-the-Runway-at-Guernsey-Airport-to-Create-a-1700-Metre-Runway>

² Measured as the runway’s declared landing distance available (LDA).

passenger and revenue growth at Guernsey Airport. STSB published the high-level conclusions of York Aviation's analysis in December 2022. The York Aviation report is enclosed at Appendix 4.

- 2.7 An important part of York Aviation's brief was to assess the impact that an extended runway could have on the Airport's financial position, drawing on the recent experience of Jersey and the Isle of Man in attracting airlines with the type of narrowbody jet aircraft that an extended Guernsey runway could facilitate. As such, York Aviation's work provides useful complementary insights to Frontier Economics' analysis.
- 2.8 The Committee recommends that the States recognises the changing context since the successful Requête led by the late Deputy Jan Kuttelwascher in autumn 2019, including:
- **Market structure:** The local and regional aviation market has changed significantly post-Covid, most notably through the collapse of UK regional airline Flybe, which pre-pandemic operated around one in three UK domestic flights (more than any other airline) and carried around one in four UK domestic passengers (just behind easyJet and British Airways); and there has been a structural shift in the European market, with low-cost carriers now accounting for 40% of direct air connectivity, up from 27% pre-pandemic (2019).³
 - **Guernsey passenger numbers:** While passenger numbers have made a significant recovery post-pandemic, air passenger movements at Guernsey airport in 2022 were still only at 76% of their 2019 levels; similarly, sea passengers at Guernsey Harbours were only at 80% of their pre-pandemic levels.
 - **Aurigny:** The airline is now under new management, has a significantly revised business plan, was recapitalised in 2022, and is now moving to zero losses.
 - **Strategic framework:** Further to the 2018 Committee *for* Economic Development Air and Sea Links Connectivity policy letter, in 2022 the States noted the Air Policy Framework 2021-2026 developed by the Policy &

³ ACI Europe Connectivity Report 2022, pp 26. Available from: <https://www.aci-europe.org/downloads/resources/CONNECTIVITY%20REPORT%202022.pdf>

Resources Committee in consultation with the Committee *for* Economic Development and the States' Trading and Supervisory Board.

- **Guernsey Airport:** In 2021, the States' Trading Supervisory Board, through the Ports Board, commissioned the development of a Guernsey Airport Master Plan. The strategic goals set for that Master Plan were to: maintain compliance and improve efficiency; maximise revenue streams; and enhance the customer experience. Passenger growth generated by an extended runway could support the goal of increasing commercial returns for the Airport.

3 **Strategic context**

3.1 In December 2018, the States of Deliberation agreed a set of policy development and investment objectives which the Committee *for* Economic Development had put forward in order to guide future work on developing Guernsey's air and sea connectivity.⁴

3.2 It was noted at the time that trade-offs often have to be made between the three main attributes that define the quality of transport links: **affordability**, **reliability** and **connectivity** – also known as a “the trilemma”.⁵ This is because improving one attribute will adversely affect at least one other attribute, and because different passenger types will have different relative preferences. For example:

- a) **Business** travellers tend to prioritise connectivity and reliability over fare levels; residents travelling for business also prefer early morning outbound flights and late evening inbound flights to maximise the length of a working day off-Island.
- b) **Leisure** travellers tend to be more flexible with flight times but are more sensitive to pricing. Visitors travelling for leisure are particularly sensitive to pricing, as they will be comparing Guernsey to other competing destinations. Residents travelling for leisure also value having access to a range of destinations.

⁴ Policy letter P.2018/133, Billet d'État XXVII 2018, *States of Guernsey Air and Sea Route Policy Development and Investment Objectives*. Available from: <https://gov.gg/CHttpHandler.ashx?id=116311&p=0>

⁵ For a detailed description of the “trilemma” in the context of air connectivity, see the PwC report from September 2018, *Guernsey Air Links, Strategic Options review – Part A: Final Report*, pages 7-8 and 37. Available from: <https://www.gov.gg/CHttpHandler.ashx?id=118046&p=0> .

3.3 In October 2021, the States of Deliberation agreed the Air Policy Framework 2021-2026, which was developed by P&R, in consultation with the Committee for Economic Development and STSB. The Air Policy Framework clarified, and in places updated, the air connectivity and investment objectives which the States had previously agreed in December 2018.⁶

3.4 The Air Policy Framework lists a number of core strategic objectives and critical success factors for air connectivity. The key ones in the context of a runway extension are listed in Table 1 below.

Table 1: Subset of relevant core strategic objectives and critical success factors (taken from the Air Policy Framework 2021-2026)

Core strategic objectives
<ul style="list-style-type: none"> • Stimulate economic growth through the routes that are operated, such as UK regions and non-UK destinations. • Focus any financial stimulus on new routes which do not cannibalise existing routes being operated, particularly essential routes. • Increase visitor numbers back to 2015 levels.
Critical success factors
<ul style="list-style-type: none"> • Broaden UK and European connectivity (scheduled and Charter services). • Security of connection to London Gatwick. • Take into account the impact of additional routes on the essential services to London Gatwick and Southampton. • Enable the Airport to work with other carriers to encourage competitive fares without negatively impacting the interests of other commercial carriers on existing routes.

⁶ Policy letter P.2021/102, Billet d’État XX 2021, *The Aurigny Group - Financial Sustainability*, pp 16-25 – Appendix 1: Guernsey’s Air Policy Framework 2021-26. Available from: <https://gov.gg/CHttpHandler.ashx?id=153355&p=0>

3.5 The Framework also states that Guernsey-Gatwick route will remain an essential (licensed) route for the foreseeable future, with a review envisaged in 2026.

3.6 In their 2021 update report, Frontier Economics advised that a decision to extend the runway should only be made alongside developing a wider connectivity strategy. Accordingly, the Committee has considered the costs and benefits of a runway extension against the Air Policy Framework's strategic objectives and critical success factors.

4 Market context

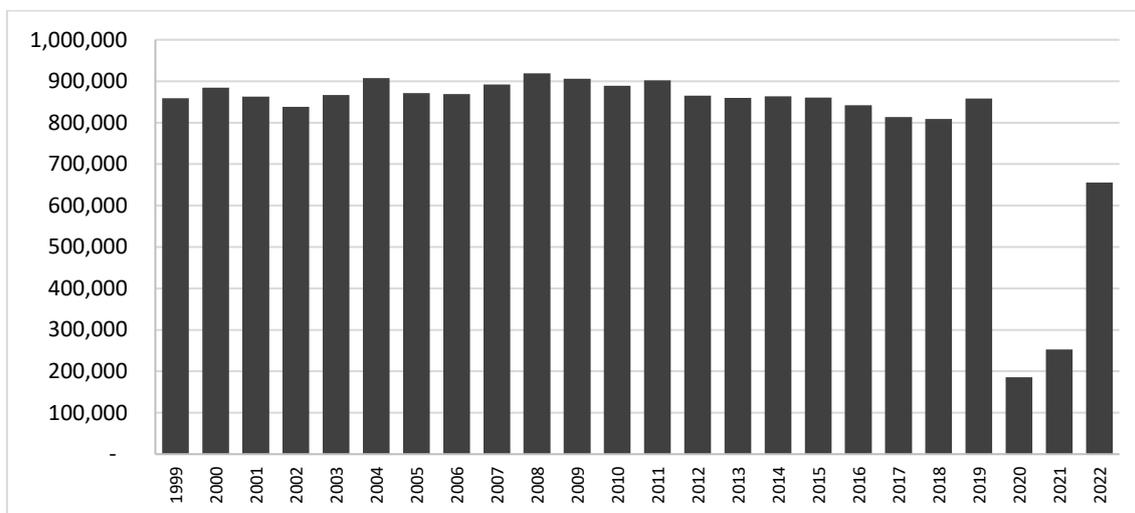
4.1 Air passenger movements to and from Guernsey were fairly static during the two decades prior to the pandemic, with annual numbers generally fluctuating between 800,000 and 920,000. This static trend is not surprising, given that the key drivers of air travel demand have not changed substantially in that time. In particular, the population has remained stable at around 63,000, GDP has grown modestly, and Guernsey as a tourist destination has faced increasing competition from alternative destinations in the UK, Europe and Mediterranean.⁷

4.2 Between 2014 and 2018, air passengers declined each year by a total 6.3% over the period, down to 808,616 movements. This was essentially reversed in 2019, when air passengers increased by 6.1% to 858,230.

4.3 The pandemic and associated travel restrictions caused air passenger numbers to then plummet in 2020 and 2021, before making a substantial recovery in 2022, reaching 76% of their 2019 levels, in line with the trend seen for the UK on average.⁸

⁷ See PwC, Tourism Product and Customer Experience Strategic review (December 2017). Available from: <https://gov.gg/CHttpHandler.ashx?id=118479&p=0>
Air passenger recovery for UK Airports as a whole in 2022 (not including Crown Dependency airports) was 75% of 2019 levels (source: CAA annual airport data).

Chart 1 – Guernsey Airport annual air passenger movements



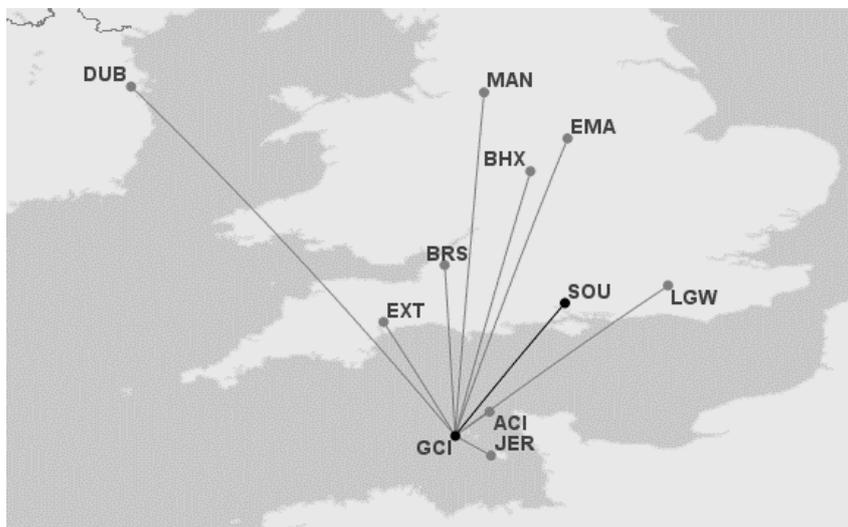
Source: www.gov.gg/ff and www.guernseytrademedia.com

4.4 Scheduled air passenger services at Guernsey airport are currently served by Aurigny and Blue Islands. Aurigny operates year-round services on 9 routes, as well as 3 seasonal routes and a number of occasional European city breaks. Its fleet consists of one Embraer 195 (122 passenger seats), three ATR72-600 (72 seats) and two Dornier 228NG (19 seats).⁹ Aurigny carried 77% of passengers in 2022. Blue Islands operates year-round services on 2 routes, with a fleet of five ATR72-500, which carried 22% of passengers in 2022; the airline also operates weekly summer charter services for German tour operators.¹⁰ Guernsey’s year-round route network is depicted in Figure 1 below. (These make up the vast majority of passenger movements and are complemented by a handful of seasonal services and charter flights.)

⁹ The Dornier 228NGs are used exclusively for the Alderney-Guernsey and Alderney-Southampton services, which are operated under a Public Service Obligation contract with the States of Guernsey).

¹⁰ BA CityFlyer operated seasonal services to London City and Edinburgh in the summers of 2021 and 2022, using Embraer E190-100 SR aircraft. In 2022, the airline carried less than 1% of air passengers on scheduled services to and from Guernsey.

Figure 1: Guernsey route map 2022 – Year-round routes ¹¹



5 Frontier Economics' analysis

- 5.1 Frontier Economics reported that the extension of Guernsey's runway would enable new carriers to provide services to and from Guernsey and reduce average fares by around 39% (based on fare differentials with Jersey on existing routes to the same UK destinations). They estimated that, in an intermediate scenario, this could generate around 20,000 new annual visitors to Guernsey (a 7.1% increase on 2019 visitors), after an initial 12-year "ramping-up" period. ¹²
- 5.2 These new visitors would generate increased direct spend for the local tourism sector and wider economy, based on a conservative average spend figure of £506 per visitor. ¹³ Consequently, over a 40-year payback period, the resulting visitor expenditure alone would yield a significant net positive value of £82 million for the local economy, measured as Gross Value Added (GVA, a measure of the income generated by individuals and corporations on the Island). ¹⁴

¹¹ Map generated using the Great Circle Mapper (www.gcmap.com) - copyright © Karl L. Swartz.

¹² There were c. 293,100 visitors to Guernsey in 2015 (air and sea combined, excluding visiting yachtsmen). By 2019 (the last full year for which visitor survey data is available), this figure had reduced slightly to 281,581. In 2022, this figure is estimated at 215,166 (using overall visitor numbers, together with the visitor / air passenger ratio from 2019.)

¹³ This represents 80% of the £633 actual average visitor spend figure reported in Visit Guernsey's 2019 Visitor Survey report.

¹⁴ This figure represents the increase in Gross Value Added (GVA) to Guernsey's economy, in an intermediate scenario, over and above the no extension baseline scenario, and reported in net present

- 5.3 Frontier Economics also projected that an extended runway could have a positive business expansion effect, by facilitating new business, stimulating trade flows and thus increasing economic productivity. This business expansion effect is valued at £48 million in additional GVA, meaning that the net benefit to the economy, including both visitor and business expansion effects, is estimated at £130 million.
- 5.4 In a high scenario, Frontier proposed that annual visitors would increase by 61,000, delivering £609 million in net benefits (including business expansion effects); nevertheless, given that air travel has yet to recover to pre-pandemic levels, the Committee has taken a prudent approach and chosen to focus on the intermediate scenario in its analysis of potential costs and benefits.
- 5.5 Frontier Economics also found that in order to simply reach a break-even position from a GVA perspective, the runway extension would need to generate 9,900 long-run incremental visitors (3.5% more visitors than in 2019, or roughly the number of visitors on the Birmingham route in 2019).
- 5.6 They added that while the majority of visitors would arise from scheduled air services, an extended runway could enable European operators to operate additional charter flights to Guernsey using Airbus A319 or A320 aircraft. They estimated that there could be a 20% uplift on 2019 charter flight visitors, which would equate to around 600 new visitors arriving on charter flights.¹⁵
- 5.7 Moreover, Frontier economics identified further benefits arising from an extended runway. They estimated £21 million in additional tax receipts, arising from both the new visitor GVA (£15 million) and from business expansion effects (£6 million). They also identified social benefits for Guernsey residents, linked to access to healthcare services off-Island, as well as access to sport and cultural activities and connections, both in Guernsey and off-Island.
- 5.8 They compared these benefits to estimated costs associated with extending the runway, based on a Rough Order of Magnitude (ROM) costing provided by engineering consultancy RPS in 2019, reflatd by Frontier Economics in 2021 to account for post-pandemic inflation in raw materials costs. They assumed a

value (NPV) terms over 40-years, using a 3.5% discount rate. See page 23 of the Frontier Economics (2021) report.

¹⁵ It must be noted, however, that charter flights are currently far from their pre-pandemic levels, and their recovery has been further constrained by post-Brexit immigration controls requiring all non-Common Travel Area air passengers to travel with a passport.

capital cost of around £88 million, together with annual airline incentives of £1 million per year for 10 years (amounting to £8m in net present value terms) – taken together, these resource costs amount to £96 million in present value terms. Frontier Economics also valued the environmental impact from additional aircraft-related greenhouse gas emissions at £2 million.¹⁶

5.9 A summary of Frontier Economics’ cost-benefit analysis is provided in the following Table 2; all figures are expressed in present value terms, over 40 years, using a 3.5% discount rate, as per the HM Treasury Green Book business case methodology.¹⁷ Overall, under the intermediate scenario, Frontier Economics reported a net benefit of £130 million (including GVA impact from both visitor spend and business expansion effects). If the estimated tax revenue is factored in, the net benefit rises to £151 million.

Table 2: Summary of Frontier Economics’ Updated Analysis

Combining all the worse case scenarios increases the break-even level of additional visitors to 9,900.

If we combine each of the areas of sensitivity analysis using the “worst case” scenario then the break-even number of visitors rises to 9,900.

This analysis combines our scenarios of:

- lower visitor numbers with reduced spend per visit and
- a longer period to ramp up to the total number of new visitors alongside
- lower travel for business purposes and
- increased costs of putting the runway extension into place.

Results under a ‘worst case’ scenario sensitivity (i.e. by combining all previous sensitivities)

	Reduced visitors	+	Reduced spend	+	Longer ramp-up	+	Fall in business	+	Increased costs
Sensitivity scenario (visitor impact)	High		Intermediate		Break-even				
Long-run increase in annual visitors (after 12 year ramp-up)	61,000		20,000		9,900 ▲				
GVA impact: visitor spending effects (over 40 years)	£565m		£181m		£97m				
GVA impact: business expansion effects (top down, over 40 years)	£149m		£48m		£21m				
Resource costs of 1740m traditional RESA (total cost)	– £96m		– £96m		– £96m				
Social cost of increased emissions (present value over 40 years)	– £9m		– £2m		– £1m				
Net benefits (visitor spending effects only)	£460m		£82m		£0m				
Net benefits (including business expansion effects)	£609m		£130m		£21m				

*: this is not intended to be the worst imaginable scenario. There are scenarios where visitors numbers never recover, where variants of Covid-19 lead to waves of lock-downs and travel is affected for very prolonged periods. This is intended to be a reasonable worst case scenario for planning purposes based on the best available evidence at the time of writing. The States should decide whether it is sufficiently “worse case” for their planning.

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Source: Frontier Economics (August 2021 report), page 23 Appendix 2. All figures are expressed in present value terms, over 40 years (using a 3.5% discount rate). Some figures may not add up due to rounding.

¹⁶ Frontier Economics also advised that a more detailed study would need to be undertaken prior to a final decision on whether to extend the runway.

¹⁷ HM Treasury, *The Green Book – Central Government Guidance on Appraisal and Evaluation, 2022*. Available from: <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

- 5.10 It is also important to note that, in their benefits estimates, Frontier Economics have assumed a saving of circa £10 million in surface overlay expenditure which would have to be incurred as part of the routine maintenance of the runway in 5-10 years' time, absent a runway extension, and which would be undertaken at the same time as the extension of the runway.¹⁸
- 5.11 While travel to and from Guernsey has made a reasonable recovery, air passengers in 2022 were still down by almost a quarter (-24%), and sea passengers by one fifth (-20%) compared to their pre-pandemic levels (2019). Nevertheless, the Frontier Economics forecast is a long-term one. It is set against the fairly static air passenger movements experienced in the decade prior to the pandemic, and points to the fact that an extended runway could facilitate a significant upward shift in air passengers to and from Guernsey, which in turn could generate economic growth for both tourism and the wider economy.

6 York Aviation's analysis

- 6.1 York Aviation's report provides valuable complementary insights to Frontier Economics' analysis, through lessons learned from Jersey and the Isle of Man's respective experiences in attracting commercial airlines which operate the type of narrowbody jet aircraft that an extended Guernsey runway could facilitate.
- 6.2 York Aviation's view is that without a runway extension, the key drivers of air passenger growth are: GDP growth, population growth, labour force growth (all of which have been modest in recent times) and refreshed tourism policies (this is underway through the work of the new Tourism Management Board).
- 6.3 York Aviation advise that an extended runway would create greater potential for passenger growth, most likely linked to the entry of a low-cost carrier (LCC). In line with Frontier Economics' intermediate scenario, York Aviation quantified the long-term opportunity at around 20,000 new annual visitors to Guernsey.

¹⁸ Another surface overlay will be required within the 40 year time-span of this appraisal, approximately 20 years after the runway extension works. However, as this is a routine maintenance item which would need to occur absent a runway extension, the potential cost for this future work is not included in this analysis.

- 6.4 York Aviation also state that there would be a lag in visitor numbers increasing, compared to a more immediate upturn in resident travel. Frontier Economics have factored this into their benefits estimate, which assumes a 12-year “ramping up” period before visitor numbers reach their long-term potential.
- 6.5 York Aviation go on to highlight a number of significant follow-on implications from low-cost carrier (LCC) entry, based on Jersey and the Isle of Man’s respective experiences:
- i. **Gatwick route:** York Aviation believe that access to the Guernsey-Gatwick route is a prerequisite for entry by a low-cost carrier. Using this as an ‘anchor’ route, a low-cost carrier would then develop a network of routes to other parts of the UK over time.
 - ii. **Airport finances:** While overall passenger numbers would increase, the airport’s financial position is likely to be detrimentally impacted. Low-cost carriers expect to pay substantially lower airport fees and charges than other airlines. Consequently, York Aviation forecast that this could lead to £2.5 million in lost annual revenue to the airport as a direct result of entry by a low-cost carrier. They also forecast increased operational security costs in the order of £0.4 million from the increased passenger footfall.
 - iii. **Terminal expansion:** York Aviation advise that the passenger terminal would need to be expanded in order to accommodate increased peak passenger flows arising from the operation of a low-cost carrier. They estimate that this would represent a capital cost of up to £23 million over and above the cost of extending the runway itself.
 - iv. **Impact on sea passengers:** York Aviation believe that there is a risk of transfer (‘cannibalisation’) of sea passengers onto the low-cost carrier’s new air services.
 - v. **Market impact:** York Aviation advise that a low-cost carrier would be expected to take around 50% of the overall air travel market share over time, largely at the expense of Aurigny. York Aviation estimate that this would lead to around 330,000 passengers switching away from Aurigny (or 62% of Aurigny’s passengers in 2019), which would equate to an annual loss in revenue of around £25 million for Aurigny. The potential impacts of such a change in market structure on Aurigny’s operations

and Guernsey's connectivity are discussed in the next section.

- vi. **Service levels:** York Aviation advise that there would be a reduction in the frequency of services because larger aircraft with higher seat capacity would operate fewer rotations, with frequencies expected to almost halve with low-cost carrier operations (down to 55% of their current levels). On the Gatwick route, this could mean a reduction to 2-3 daily rotations (down from 5-6). Meanwhile, total air seat capacity is not expected to change significantly (based on both Jersey and the Isle of Man's respective experiences).
- vii. **Fares:** York Aviation advise that it is not certain that air fare reductions would be sustained if a low-cost carrier displaced other airlines and attained a quasi-monopolistic market position.

7 Commentary on York Aviation's findings

Gatwick Route

- 7.1 It is important to note that competition on the Gatwick route is not currently envisaged by the Air Policy Framework. It states that the Gatwick route should remain an essential (licensed) route for the foreseeable future, given its strategic importance for ensuring the resilience of Guernsey's connectivity with the UK and onwards (see paragraph 12 of the Air Policy Framework). From Jersey's experience, a low-cost carrier would only enter the Guernsey market if it was able to establish a strong presence on the Gatwick route. For this to happen, the Air Transport Licensing Policy Statement would need to be amended, and the Gatwick route would need to have its "essential" route designation removed.

Airport Finances

- 7.2 York Aviation envisage that the Airport's financial position would worsen by an estimated £2.9 million per year, on an ongoing basis, due to low-cost carriers expecting to pay substantially lower charges than other airlines (accounting for £2.5 million of this figure) and to increased operational costs of security processing (accounting for £0.4 million). This is significantly higher than the figure of £1 million per year, for 10 years only, assumed by Frontier Economics.

- 7.3 Assuming that this £2.9 million annual revenue shortfall arising from low-cost carrier entry is phased in at the same rate as the new visitors (i.e. over 12 years) the net present value (over 40 years) of this shortfall would be around £47 million. Furthermore, additional support would be expected from airlines if they were required to base an aircraft in Guernsey overnight.
- 7.4 The Airport's financial position may be partially improved in the longer term (10-15 years onwards) by the airport seeking to maximise its non-aviation revenue through the development of other income streams as part of the Airport Master Plan, albeit low-cost carrier passengers are understood to have a relatively low propensity to spend in airport terminals.
- 7.5 Establishing new operators on current routes and facilitating the launch of new routes would therefore require further investment by the States of Guernsey – through the provision of additional funding to the airport. Without this investment, Guernsey as a market will remain sub-scale to many larger operators, and if this support is not maintained, 'thinner' routes may become unsustainable and route choice would reduce after an initial increase. York Aviation's assumption that airport revenue shortfall mitigation funding would be ongoing (rather than for an initial period of 10 years) therefore seems reasonable.

Terminal expansion

- 7.6 In order to enable efficient and effective low-cost carrier operations at Guernsey Airport, it is likely that the passenger terminal would need to be reconfigured and expanded in key areas where passengers congregate, such as the central search security area, the departures hall and hold baggage reclaim area.
- 7.7 An initial cost estimate of the minimum investment required to deliver some improvement in the infrastructure to deliver commercial opportunities and/or an improved passenger experience on the ground floor of the terminal building has been estimated by AECOM in the order of £20 million. The business case for this investment has yet to be considered by Guernsey Ports or the STSB.
- 7.8 A single daily low-cost carrier service that does not conflict with the existing commercial airline schedules could likely be accommodated without any significant impact on the current terminal infrastructure. However, if new low-cost carrier services were to coincide with current established scheduled

services, some expansion of the airport terminal building (c. £20 million) and an additional security lane, at a cost of approximately £3 million, would most likely be required in order to process passengers in a timely and efficient manner.

7.9 Without the additional space, substantially increased peak time passenger numbers would make it highly likely that failures would occur at key passenger touchpoints such as: departures queuing, central search and pre-boarding, arrivals, immigration, and baggage reclaim.

7.10 While it is possible that the £20 million terminal expansion may have taken place by the time low-cost carrier services were introduced, the £3 million cost of an additional security lane would only occur in the event of entry by a low-cost carrier. Therefore, for the purposes of the economic cost-benefit analysis which follows later, only the £3 million security investment cost is included as necessary expenditure for a runway extension.

Impact on sea passengers

7.11 York Aviation state that *“a high proportion of any additional air passengers are likely to switch from sea, impacting negatively on the viability of ferry services”*. Guernsey’s current context is somewhat different to Jersey’s or the Isle of Man’s at the time that low-cost carriers entered these Islands’ respective markets. The ferry service operating to and from Guernsey nowadays is much more focused on maximising car passenger traffic. This is understood to be less sensitive to competition from air services than the foot passenger segment, which is much smaller than in the past (in large part due to ferry fleet and timetable changes in recent years). Therefore, while some limited modal switching cannot be ruled out, it may not be as pronounced in Guernsey as it appears to have been in the case of Jersey and the Isle of Man.

Market impact

7.12 The States of Guernsey purchased Aurigny in 2003 in order to provide security of access on the lifeline London Gatwick route, with Aurigny having taken over a number of take-off and landing slots at Gatwick Airport after British Airways withdrew from the route. Since then, Aurigny has used these slots to provide year-round, high frequency air passenger services between Guernsey and Gatwick (with up to 6 rotations per day at present).

7.13 Aurigny's finances have stabilised in recent times, and the business plan objectives of moving to zero losses are being achieved. In addition, the airline remains a strategic asset for the Bailiwick. Therefore, any far-reaching negative impact on its current operating model – or any event resulting in its operation being curtailed – would have significant implications for the Bailiwick's strategic air connectivity. It would also cause a significant loss of taxpayer investment following the airline's recapitalisation in 2021.

7.14 York Aviation state that if a low-cost carrier entered the Guernsey market, it would require access to the Gatwick 'anchor' route and expect to take a 50% market share of the air travel market over time and displace around 330,000 of Aurigny's passengers, resulting in £25 million in annual losses for Aurigny. In such a scenario, it is reasonable to assume that the States would be unwilling to allow Aurigny to sustain this level of losses year on year, and Aurigny would have to withdraw from the Gatwick route and refocus its business on UK regional routes. This would have a number of financial and strategic implications for the States of Guernsey:

- a) **Economic contribution:** Aurigny would have to reduce its fleet size and essentially halve its Bailiwick workforce, with pilots, cabin crew and aircraft engineers leaving the Island to find employment elsewhere.¹⁹ Consequently, Aurigny's contribution to the local economy (through salaries to Bailiwick employees and direct payments to the States of Guernsey in the form of social security contributions, hangar rentals and aircraft interest) would shrink by around £6 million per year.
- b) **Average fares on UK and Ireland routes:** In order for Aurigny to remain in a break-even position, it would need its other services to cover the lost contribution to its fixed cost base from its Gatwick services. This may mean that certain routes no longer have an air service at all, that some routes see frequency reductions, or that Aurigny increases its fares in order to cover its fixed cost base from a much reduced market share, affecting around a third of Guernsey's air travellers.

¹⁹ Unless the LCC was to base an aircraft in Guernsey, which is highly unlikely as Jersey's experience is that this only happened over a decade after LCC entry (bearing in mind that Jersey's market is around 65% larger than Guernsey's).

- c) **Security of access to Gatwick:** Aurigny would not be able to hold on to its take-off and landing slots at Gatwick Airport if it was no longer using them. This would create a risk for the security of connection to Gatwick – one of the critical success factors of the Air Policy Framework. The potential for the slots to be transferred to the incoming low-cost carrier, supported by an agreement or contract, would need to be explored. However, in the event of the low-cost carrier providing insufficient capacity or leaving the route altogether, Aurigny is unlikely to be in a position to resume services at short notice once it has disposed of aircraft and reduced its workforce. This which would pose a significant risk to the continuity of air services, at least in the short term.

Service levels

- 7.15 Unlike Guernsey-based airlines, low-cost carriers would almost certainly have aircraft and crews based off-Island overnight, which would mean later morning departure times and earlier evening returns. This would reduce the length of a working day that can be achieved off-Island, and thereby the utility of day return services to local travellers, particularly those travelling for business purposes. Based upon the experiences of Jersey and the Isle of Man, low-cost carrier operators are also more likely to cancel services earlier than Guernsey-based airlines when inclement weather is forecast or anticipated, and to scale back frequency during quieter times of the year.

Fares

- 7.16 It is likely that there will be greater flexibility in pricing due to competition in the short to medium term, but should this make way for an external, dominant operator, any reductions in average fares are likely to be reversed in the long term.
- 7.17 Furthermore, in due course the States of Guernsey (through the review of the Air Policy Framework planned for 2026) will need to consider whether such a shift in air connectivity is aligned with its priorities for air links, as it involves some significant trade-offs: low-cost carrier entry generating greater competition within routes, potentially lower fares but reduced service frequency; versus the current situation whereby airlines operate those routes designated as “essential” on an exclusive basis, competition takes place between routes, and while there is less likelihood of fare reductions, services are more frequent.

- 7.18 Since service frequency and convenient flight times are highly valued by local businesses – in particular the financial services sector – it would be necessary to ensure sufficient year-round frequency and adequate flight times on services to Gatwick and other key routes.

Wider cost-benefit analysis

- 7.19 Taking the insights from the York Aviation analysis into account, alongside Frontier Economics' analysis, the Committee has established a wider cost-benefit analysis which seeks to capture the potential impacts of an extended runway as identified by both consultancies. This analysis is set out in Section 9, based on an alternative engineering option for the runway extension which has recently emerged as potentially feasible, as described in Section 8.

8 Extended runway: an alternative engineering option

- 8.1 While the Requête directed the Committee *for* Economic Development to undertake its analysis based on an extended runway of at least 1,700 metres, the Committee also considered alternative engineering options to deliver an extended runway, with technical input provided by STSB's officers and its consultants.
- 8.2 It is important to note from the outset that the Runway Rehabilitation Project – completed in 2013 – located the western runway end as far to the west as was practicable, meaning that any future runway extension would need to be to the eastern end of the runway only. The Island Development Plan 2016 (IDP) subsequently identified land to the east of the airport boundary as a safeguarded area for a possible runway extension.²⁰ Nevertheless, the Committee reviewed the potential for extending towards the west, but found that the spatial and regulatory and air space management constraints have not changed, and as such the only viable direction for extension is eastwards. Consequently, all of the engineering options considered by the Committee were for an extension towards the east.
- 8.3 In order to achieve a runway with a length of at least 1,700 metres, the runway would need to extend beyond the airport's eastern boundary, even if space-saving Engineered Materials Arrestor System (EMAS) technology was used in

²⁰ See Policy IP5: Safeguarded Areas, *Island Development Plan 2016*. Available from: <https://gov.gg/CHttpHandler.ashx?id=104804&p=0>.

order to allow for a shorter Runway End Safety Area (RESA). This would directly impact La Villiaze Road, the valley beyond it, the properties located in the valley, the Route des Blicqs, and potentially the nearby cemetery. It would also involve substantial earthworks to bring a large part of the valley to the same level as the existing airfield site.²¹

- 8.4 Therefore, the Committee was keen to understand what scale of extension might be possible by containing the extended runway within the current airport boundary, thereby substantially reducing its environmental impact, and the extent to which this might still enable similar economic benefits as a longer runway extending beyond the airport's boundary.
- 8.5 While the States of Deliberation previously considered a similar question in 2019²², in light of an evolution in regulatory thinking on EMAS and of London City Airport's ongoing work to implement an EMAS solution (creating a precedent for the use of EMAS at a civilian airfield in the British Isles), it was timely and appropriate for the Committee to look into this matter again.
- 8.6 Consequently, EMAS specialist company Runway Safe was commissioned to scope out some technical options for using EMAS technology to maximise the length of a runway extension towards the east while keeping it within the airport's boundary. Runway Safe concluded that it would be possible to achieve a useable runway length of up to 1,623 metres within the existing airport boundary, which is similar to Jersey's current useable runway length – subject to regulatory engagement and approval.²³ This would be achieved through the installation of a 98 metre EMAS system at the eastern end of the runway.

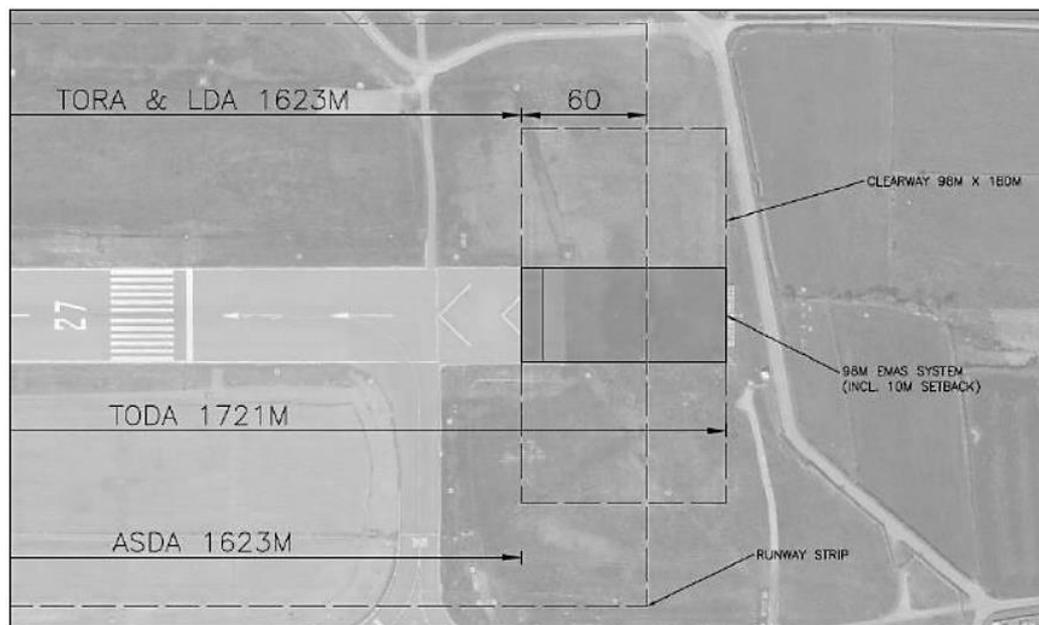
²¹ At the suggestion of the Guernsey Aviation Advisory Group, alternative options to extend the runway using stilts in order to minimise earth works for valley infill were also explored with support from consultancy AECOM, albeit these were estimated to be prohibitively expensive (at around twice the cost of conventional construction with valley infill).

²² Policy Letter P.2019/73, Billet d'État XVIII, 2019, States' Trading Supervisory Board. *Review of a potential Guernsey Airport runway extension*. Available from : <https://www.gov.gg/CHttpHandler.ashx?id=120641&p=0>

²³ Guernsey's runway 09 (for aircraft movements from West to East) would have a landing distance available (LDA) of 1,623 metres, just under Jersey's runway 08 LDA of 1,648 metres. Guernsey's runway 27 (for aircraft movements from East to West) would have an LDA of 1,623 metres, above Jersey's runway 26 LDA of 1,556 metres. For Jersey declared distances, see Jersey Aerodrome Manual (Version 5.0 – 22/05/2022), page 72. Available from : https://cdn.ports.je/web/Jersey-Aerodrome-Manual_v5.0-.pdf

- 8.7 It is important to highlight that further work, including consultation with the airport's regulators, would be required in order to confirm the acceptability of this solution from a compliance perspective, as well as the precise aerodrome declared distances which it would facilitate.
- 8.8 Figure 2 provides an illustration of the extended runway with EMAS bed at the eastern end of the runway, within the airport's boundary.

Figure 2: Diagram of potential 98m EMAS system at eastern end of the extended runway (shaded rectangle area, for illustration purposes)



Source: Runway Safe

- 8.9 The Committee understands that a runway of 1,623 metres (providing an additional 160 metres over the current runway length of 1,463 metres) would provide a sufficient improvement in operational performance to allow commercial airlines to operate narrowbody jet services to and from Guernsey, albeit potentially with some passenger payload constraints depending on the aircraft used and the sector length.
- 8.10 Figure 3 below illustrates the approximate range circle which would be achieved by a Boeing 737-800 series (around 721 nautical miles) as estimated by Runway Safe. Figure 4 below illustrates the same for an Airbus A320 ceo (around 600 nautical miles), based on from PwC's 2018 report strategic options review for

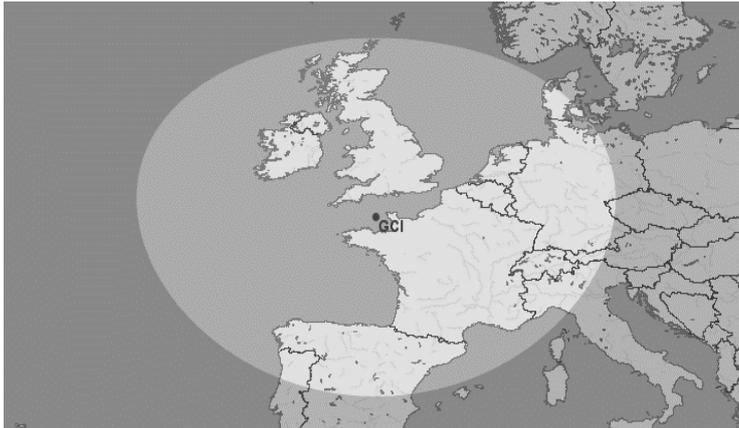
Guernsey's air links.²⁴ This would represent an improvement of up to circa 200 miles on the current range of turboprop operations from Guernsey.²⁵

Figure 3: Boeing 737-800 series: indicative range circle from Guernsey (721 nm)



Source: Runway Safe

Figure 4: Airbus A319 / A320 neo series: indicative range circle from Guernsey (600nm)²⁶



Source: Adapted from PwC (2018).²⁷

²⁴ This range circle is somewhat conservative, as it is based on a slightly shorter 1,583 metre extended runway which was considered by PwC at the time. This is indicative only; route-specific analysis including payload, fuel and wind data would need to be undertaken to provide a more accurate evaluation.

²⁵ The ATR 72-600 has theoretical range of 740 nautical miles, albeit in practice this aircraft travels at a much lower cruise speed and tends to be used for sector lengths of no more than 2 hours, or 500 nautical miles. Source: ATR manufacturer brochure, available from: <https://www.atr-aircraft.com/our-aircraft/atr-72-600/>.

²⁶ Baseline criteria were set to account for aircraft performance at sea level, at international standard atmospheric conditions, with zero wind on a dry runway. Further work is required to determine actual performance as these will vary dependent on a multitude of factors including runway surface condition, temperature, air density, wind and fuel reserves. The take off weight weights for the A320 neo series have not been calculated but are thought to improve operational performance.

²⁷ PwC, *Guernsey Air Links, Strategic Options Review – Part A: Final Report*, page 16. Available from: [CHttpHandler.ashx \(gov.gg\)](CHttpHandler.ashx (gov.gg))

- 8.11 While the exact range of destinations that could be operated with full passenger payloads would need to be confirmed by individual airlines based on their own, specific, operational parameters, this provides a good indication of the range of services which could be operated to and from Guernsey. The destinations within range would include the UK and Ireland, as well a number of Western European destinations, including France, Germany, the Netherlands, Austria, and parts of Spain and Italy.²⁸
- 8.12 Infrastructure consulting firm AECOM has undertaken a high-level analysis and has estimated the rough order of magnitude (ROM) cost of an extended runway of 1,623 metres, kept within the existing airport boundary (using an EMAS RESA, as per Runway Safe's specification), at approximately £72 million.²⁹ AECOM's ROM cost report is enclosed at Appendix 5.
- 8.13 This figure includes circa £10 million in surface overlay expenditure which would have to be undertaken in any case as part of the routine maintenance of the runway in 5-10 years' time, absent a runway extension.
- 8.14 Guernsey Ports have indicated that allowances should be made for the ongoing maintenance cost of the EMAS system, as well as for the capital cost of replacing it after the end of its 20-year expected lifespan. For the purpose of the cost-benefit analysis (in Section 9), which is over 40 years, an indicative allowance of £7 million has been made for this, taking the total cost of this option to £79 million.³⁰
- 8.15 Guernsey Ports have also indicated that an additional maintenance expenditure of £10-£15 million would need to be incurred for the structural rehabilitation of the runway pavements halfway through the 40-year payback period, as the underlying runway pavements structure have an operational life of around 20 years. This is not factored into this economic cost-benefit analysis as it would need to happen regardless of whether the runway is extended or not.

²⁸ As this is based on a number of preliminary assumptions; precise performance and range potential would need to be established with individual carriers.

²⁹ This figure includes other necessary airfield improvements beyond extending the runway and installing an EMAS bed, such as strengthening the taxiway network.

³⁰ Based on the ROM cost of EMAS system installation of £6.4 million provided by AECOM, together with an allowance of approximately £575,000 for ongoing maintenance provided by Runway Safe.

9 Wider cost-benefit analysis

- 9.1 The Committee has established a wider cost-benefit analysis which builds on Frontier Economics' analysis by taking into account the additional impacts of an extended runway, as identified by York Aviation (as set out earlier) as well as the lower cost of an extension kept within the airport boundary.
- 9.2 By way of reminder, the key assumptions that differ from Frontier Economics' analysis are:
- a) **Capital cost:** This has reduced by £9 million through the use of an alternative runway extension solution, which uses EMAS technology to keep the extension within the airport's current eastern boundary.
 - b) **Airport revenue impact:** This has increased by £39 million by factoring in York Aviation's insights on reduced passenger fees and increased security costs arising from low-cost carrier operations, based on Jersey and the Isle of Man's respective experiences.
 - c) **Additional security cost:** New capital expenditure of £3 million for an additional security lane has been added, as per York Aviation's analysis (noting that if an expansion of the terminal has not taken place beforehand, there would be an additional expenditure requirement of around £20 million).
 - d) **Economic impact of reduced Aurigny workforce and fleet:** An additional economic cost of £10 million has been factored in, to account for a smaller Aurigny operation, as a result of competition from a non-Guernsey based low-cost carrier. It is based on half of Aurigny's reported annual salaries and wages at £5m, plus an estimated £1m in annual taxes, social security contributions and hangar rental fees to the States of Guernsey, giving a total of £6 million annual loss for the Island's economy. The £10 million Present Value (PV) figure is based on the assumption that this £6 million annual impact would be temporary and reduce over time (at a rate of 50% per year, over 3 years), as staff and other resources are re-employed or replaced in Guernsey's economy.

9.3 The costs and benefits from extending the runway, for the States of Guernsey, are summarised in Table 3 below. This shows that there would be a net financial cost, over 40 years, of £108 million for the States of Guernsey.

9.4 The costs and benefits for Guernsey’s economy are summarised in Table 4 (also below). Under the intermediate scenario there would be a net economic benefit for Guernsey, over 40 years, of £217 million in additional GVA i.e. in additional income generated by individuals and corporations on the Island.

Table 3: Costs and benefits from extending the runway for the States of Guernsey (present values over 40 years; 3.5% discount rate)

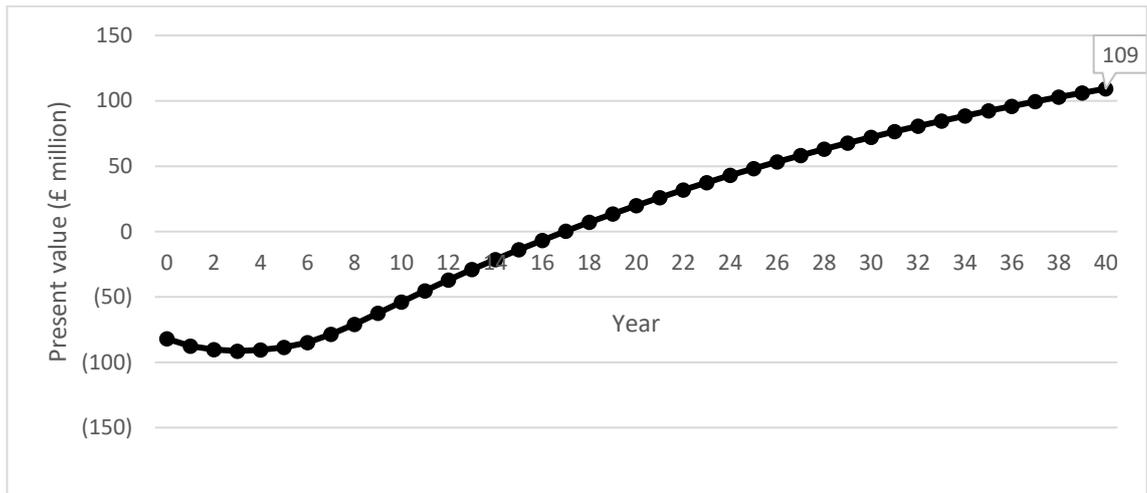
STATES OF GUERNSEY	£ million
Expenditure	
Runway extension (capital and maintenance, inc. EMAS)	(79)
Airport revenue impact: reduced passenger fees and increased security costs	(47)
Terminal expansion: capital cost of third security lane	(3)
Total costs to States of Guernsey	(128)
Revenue	
Tax revenue	21
Total revenues to States of Guernsey	21
NET STATES OF GUERNSEY POSITION	(108)

Table 4: Costs and benefits from extending the runway, for Guernsey’s economy (present values over 40 years; 3.5% discount rate)

ECONOMY	£ million
Economic Costs	
Economic impact of reduced Aurigny workforce and fleet	(10)
Environmental impact (increased greenhouse gas emissions)	(2)
Total Economic Costs	(12)
Economic Benefits	
GVA impact: visitor spending	181
GVA impact: business expansion effects	48
Total Economic Benefits	229
NET ECONOMIC BENEFIT	217

9.5 Taking both the net States of Guernsey position and the net economic benefit together, there would be a net overall benefit of approximately £109 million in present value, over 40 years. The investment would be expected to break even in year 17, as depicted in the following chart.

Chart 2 - Net overall cumulative impact of an extended runway (£ million, over 40 years, at a 3.5% discount rate)



Other Considerations

9.6 A positive decision in relation to the runway could have other non-economic benefits: it would provide greater future proofing of the airport infrastructure for future aviation technologies, and it would provide spend on construction that would have direct and indirect benefits to the local economy. However, it would also require additional spending in order to unlock the benefits of a longer runway, and it would also have potentially financial and environmental impacts that would need to be offset in the longer-term.

9.7 Furthermore, delivering increased passenger numbers is more than an infrastructure decision, and it would require a significant shift in Guernsey’s air connectivity policy. There would also be implications for the airport’s finances and business model, the ongoing cost of route development support to make Guernsey routes economically viable for carriers, Aurigny’s sustainability, and the level of air passenger service available (in terms of service frequency, the length of a working day off-Island, and potentially, in the longer-term, destination choice). In short, extending the runway is only one part of major set of related strategic, infrastructure, financial and policy decisions.

10 Potential finance and funding

10.1 The Committee is wholly cognisant of the stated financial position of the States of Guernsey. For a major infrastructure investment of this nature, there are likely to be only a limited number of financing options, either through borrowing by the States of Guernsey or by funding the project from the capital reserve. It is also understood that infrastructure providers may offer alternative financing options.

11 Cost of external advice

11.1 The cost of the external advice commissioned by the Committee *for* Economic Development in support of its analysis, against the £360,000 maximum budget made available for this purpose, is £304,614. This does not include the cost of the York Aviation report, which was commissioned by STSB as part of the Airport Master Plan project.

12 Conclusion

12.1 An extended runway would provide the infrastructure that could enable lower average fares and increase the numbers of new visitors each year to the Islands of Guernsey, generating increased direct spend for the local tourism sector and wider economy, as well as business growth, additional tax revenue and social benefits for Guernsey residents (linked to access to healthcare, sport and cultural activities).

12.2 Importantly, the Committee has identified a new engineering option using EMAS system which would potentially facilitate similar benefits to an extended runway of 1,700 metres – subject to regulatory approval – but with none of the impacts on the area to the east of the aerodrome boundary, by keeping the runway extension within the airport’s current boundary. This would ensure that the valley to the east of the runway would be preserved, together with the properties located in the valley, the Villiaze Road, the Route des Blicqs and the nearby cemetery.

12.3 The low-cost carrier model would likely have implications for the airport’s finances, Aurigny’s sustainability and the level of air passenger service available (in terms of service frequency, the length of working day off-Island, and potentially destination choice).

- 12.4 A wider cost-benefit analysis, which builds on Frontier Economics' analysis and factors in these additional impacts, finds that an extended runway of up to 1,623 metres, kept within the airport's boundary through the use of EMAS technology, would have an overall positive net present value over 40 years of £109 million, with break-even point being reached in year 17.
- 12.5 Nevertheless, an extended runway is unlikely to attract new carriers without a significant shift in Guernsey's air connectivity policy, in relation to the London Gatwick route, and without significant investment in route development support. The role of Aurigny within the air connectivity policy would also need to be reconsidered. Therefore, any decision to progress a runway extension would only make sense in the context of a very different strategy for Guernsey's Air connectivity.
- 12.6 Ultimately, the Committee's view, by majority, is that any decision to extend the runway at Guernsey Airport should be a commercial decision taken by the States' Trading Supervisory Board. The next planned resurfacing of the runway at Guernsey Airport (to take place in 5 to 10 years) or the ongoing work on the Airport Master Plan would provide relevant opportunities for this to be considered as a coherent overall investment decision.

13 Compliance with Rule 4

- 13.1 Rule 4 of the Rules of Procedure of the States of Deliberation and their Committees sets out the information which must be included in, or appended to, motions laid before the States.
- 13.2 In accordance with Rule 4(1):
- a) The Propositions contribute to the States' objectives to secure transport connectivity and infrastructure, which is one of the workstreams supporting the general principle to grow economic competitiveness in the recently published update of the Government Work Plan.
 - b) In preparing the Propositions, consultation has been undertaken with the States Trading Supervisory Board and the Policy & Resources Committee.
 - c) The Propositions have been submitted to His Majesty's Procureur for advice on any legal or constitutional implications.

- d) There are no immediate financial implications for the States of Guernsey. Should a runway extension be progressed in the future, this would have capital and revenue expenditure implications for the States of Guernsey.

13.3 In accordance with Rule 4(2):

- a) the Propositions relate to the duties of the Committee *for* Economic Development to advise the States and to develop and implement policies on matters relating to its purpose, which is to secure prosperity through the generation of wealth and the creation of the greatest number and widest range of employment opportunities possible by promoting and developing business, commerce and industry in all sectors of the economy.
- b) It is confirmed that the Propositions have the majority support of the Committee *for* Economic Development, with Deputy Vermeulen dissenting to both propositions.

Yours faithfully

NR Inder
President

SJ Falla
Vice President

A Kazantseva-Miller
NG Moakes
SPJ Vermeulen

A Niles
A Mancini
Non-States Members

THE STATES OF DELIBERATION
of the
ISLAND OF GUERNSEY

REQUÊTE

DEVELOPMENT OF THE BUSINESS CASE AND COST BENEFIT ANALYSIS FOR THE EXTENSION
OF THE RUNWAY AT GUERNSEY AIRPORT TO CREATE A 1,700 METRE RUNWAY

THE HUMBLE PETITION of the undersigned Members of the States of Deliberation SHEWETH
THAT:

1. At their meeting on 13th December, 2018 the States of Deliberation resolved as follows –

- "1. To approve the Core Strategic Objectives, Critical Success Factors and Investment Objectives as set out in Appendix 1 of the policy letter.
2. To note that the Core Strategic Objectives, Critical Success Factors and Investment Objectives as approved by the States will be taken forward and used to assess the cost/benefit evaluation of options that will be put forward for further investment to secure, improve and optimise the Bailiwick's air and sea links."¹

2. Paragraph 6.1 of the policy letter stated:

“The work currently being commissioned by the Policy & Resources Committee will result in detailed cost/benefit analysis of the different options for air and sea link infrastructure and future policy development. The Investment Objectives set out in this policy letter will be used as a framework for this analysis in order to assess which options would best meet the Investment Objectives.”

3. On 26th April, 2019 the States of Deliberation agreed the following Resolution –

“1 (a) TO NEGATIVE THE PROPOSITION to agree that no further work is carried out to assess the business case for extending the airport runway outside its current boundaries given the other options available for meeting Guernsey's air links objectives including the work of the States' Trading Supervisory Board investigation to examine the possibility of commissioning 107 metres of starter strip/paved

¹ See item 19 (P.2018/133) on Billet d'État No. XXVII of 2018.

runway end safety area ("RESA") to increase the current available runway length from 1463 metres to 1570 for take-off and landing on RW09 and landing on RW27."²

4. Your Petitioners recognise that the work undertaken by the States' Trading Supervisory Board has now concluded, and at their meeting on 26th September, 2019 the States of Deliberation resolved as follows:

"1. To approve that no further work is carried out to assess the option to extend the airport useable runway within the current airport boundary by reducing the Runway End Safety Area, at the eastern end of the runway, in accordance with the Director of Civil Aviation's formal advice."³

5. In the current circumstances your Petitioners believe that there is merit in the Committee for Economic Development meeting the Resolution of December 2018 and progressing with work to develop the business case and cost benefit analysis of an extension of the runway at Guernsey Airport to achieve a length of 1,700m.

THESE PREMISES CONSIDERED, YOUR PETITIONERS humbly pray that the States may be pleased to resolve:

1. To direct the Committee *for* Economic Development to present a business case and cost benefit analysis for the extension of the runway at Guernsey Airport to achieve a length of at least 1,700m.
2. To agree that this work should be completed by May 2020.
3. To direct the Policy and Resources Committee to make available the necessary funds to carry out this work, should they be required, to not exceed £360,000.

AND YOUR PETITIONERS WILL EVER PRAY
GUERNSEY

This 6th day of October 2019

Jan Kuttelwascher
Peter Ferbrache
Jeremy Smithies
Joseph Mooney
Marc Leadbeater
Jennifer Merrett
Victoria Oliver

² See item 4 (P.2019/21) on Billet d'État No. VII of 2019

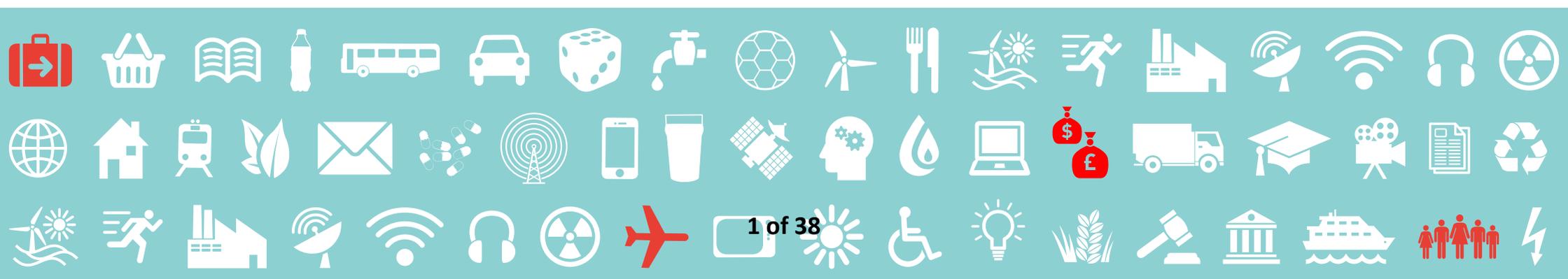
³ See item 17 (P.2019/73) on Billet d'État No. XVIII (Vol. 2) of 2019



The costs and benefits of runway extension

Update to reflect developments from March 2020 to July 2021

August 2021



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Results from scenario modelling

Wider issues

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Executive Summary

The pre-Covid economic case for a runway extension suggested the benefits likely outweighed the costs.

Frontier Economics' report in March 2020 assessed the economic case for extending Guernsey Airport's runway length to between 1,700 and 1,799 metres.

The key finding of that report was that the break-even number of annual incremental visitors to cover the costs of extension is approx. 8,200, which equates to around 5% of visitors arriving by air in 2019. In other words, if the runway extension resulted in an additional 8,200 visitors (over-and-above what would have been expected anyway) that would re-pay the costs of the runway.

The report noted that this conclusion was subject to a number of more detailed investigations that would be required before finalising the business case. These included final cost estimates but also more detailed consideration of environmental and social impacts.

This latest report considers whether the economic case for extending Guernsey Airport's runway has changed, based on developments since March 2020, most notably the Covid-19 pandemic. It is important to note that there remains considerable uncertainty over the evolution of Covid-19 and its impact on travel for tourism, personal or family reasons and business. However, as part of Covid-recovery programmes it is sensible to consider whether a runway extension would help. This quick review (conducted over May and June 2021) was designed to test the previous findings, it is not intended as a similarly in-depth analysis.

Given ongoing uncertainty, our approach has been to draw on available evidence about how net benefits from extension are likely to evolve over time as a result of Covid-19 and other developments and examine alternative scenarios. Alongside the "best estimate" on how the break-even number of visitors could be expected to have changed since March 2020, we also examine unlikely "worst case" scenarios. These worse case scenarios involve considering the impact of fewer visitors, a change in composition of visitors, of visitors spending less and/or of it taking a longer period of time for visitor numbers to recover.

Updated figures suggest that economic benefits still outweigh costs, albeit requiring slightly higher additional visitors.

Key Finding

Based on the evidence collected and reviewed, our conclusion is that **developments between March 2020 and July 2021 are not expected to materially impact the economic case for runway extension.**

This is because:

1. The March 2020 study's break-even number of annual incremental visitors to cover extension costs was already low (approx. 8,200).
2. Even assuming a worst case scenario related to the sustained impact of Covid-19 on air travel and a 15% increase in engineering costs, the **break-even number of visitors would increase to approx. 9,900 per year (and 8,600 under the base-case scenario)**. This still represents a relatively small proportion of pre-Covid-19 visitor numbers.
3. The runway extension is unlikely to be in place before 2026. Evidence from recent studies and stakeholder interviews suggests that, as a best estimate, Covid-19 is unlikely to lead to a significant and sustained reduction in air visitors travelling to Guernsey post-2026. The most likely impact of Covid-19 is that the composition of Guernsey's air visitor base will shift with a slightly higher proportion of tourist visitors.

Previous work by ASM suggested a base case of about 77,000 additional annual visitors with an extended runway, arising through two main channels: 40,000 from additional low cost carrier (LCC) flights on existing routes, and the balance from new routes operated by LCCs. We have undertaken subsequent analysis to understand how many additional visitors would arise naturally from the extension and where more effort may be required::

- Competitive pressure on existing services: new entry (or the threat of new entry) on existing routes, as a result of extension, may result in existing services becoming more competitive, for example through lower fares or an improved service offering. Some additional visitors are likely from a runway extension absent any further support (e.g. marketing or other efforts to attract new visitors*). These visitors would contribute to achieving the break-even number of additional visitors; if 5% of new visitors on existing routes arose in this way, that would contribute 2,000 annual visitors.
- Additional charter flights: Stakeholders reported that the current runway length is a constraint on European carriers operating charter flights to Guernsey, and that extension could lead to additional charter flight landings using A319 and A320 aircraft, even if some A319 landings are possible on the current runway. If an extension increases Guernsey's charter flight visitors by 20%, these additional flights would contribute about 600 annual visitors towards the 9,900 break-even number.

These conclusions are still subject to the same observations as in our earlier report: that a more detailed and firm costing is required, alongside full environmental and social impact analyses before the final consideration of whether to proceed. Furthermore, a wider connectivity action plan is required in order to ensure the runway extension is consistent with the priorities for action.

* The incentives provided to carriers were considered in detail in P17 and 25 of the 2020 Frontier report.

The impact of COVID on air travel post-2026 is uncertain, with a best estimate that air passenger movements will rebound

The conclusions in the previous slide are based on updated net benefits modelling, under a set of sensitivity scenarios reflecting the potential impacts of Covid. We constructed these scenarios based on insights from stakeholder interviews and a review of literature. Further detail on our modelling approach is provided in the Analytical approach section of this report.

These stakeholder interviews and wider research were conducted with the aim to determine whether air travel changes would materially affect the economic case for extension. Since the runway extension is unlikely to be in place before 2026, the **research question was whether developments since March 2020 are likely to change the expected status of the air travel market post-2026**. Clearly, there is substantial uncertainty in estimating how the aviation market is likely to develop after 2026, which should be kept in mind when interpreting our findings.

The key findings from stakeholder interviews and desk research are:

- **Air passenger movements are projected to rebound to pre-Covid levels by 2026**, as reported by industry experts and in various industry studies (Guernsey Ports, IATA, Innovate UK).
- **Industry experts reported that incremental routes from UK and Ireland – due to extension – will likely return post-Covid**. These routes were projected in their previous modelling to contribute the majority of new visitors from extension.
- Industry experts, Chamber of Commerce and IOD reported that there may be a sustained change in Guernsey's visitor mix, away from business travel. However, there are strong reasons for business travel to Guernsey to continue at some level post-2026, namely its importance in winning new business and requirements for Directors to be physically present in certain Guernsey-based board meetings.
- Industry experts reported that there are clear short term Tourism opportunities for Guernsey, as a result of the island's strong Covid response.
- Determining the exact changes in LCC fleets that will take place post-2026 is challenging. It appears that 3 regional airlines operating in the UK continue to retain short haul aircraft orders. In particular, Ryanair expanded its order for an additional 75 Boeing 737 aircraft in late 2020.
- Electric, hydrogen-powered and biofuel aircraft will continue to increase in importance over time, not least based on the UK's recent commitment to achieving net zero carbon emissions by 2050. A local expert in electric aviation confirmed views seen more widely that, assuming the same seat capacity, these aircraft will require the same runway length as jet fuelled aircraft.

Further detail on these findings is provided in the main body of the report.



Introduction and background

This study updates our earlier analysis in light of developments linked to Covid-19.

Requirement of this study

The Guernsey Committee for Economic Development (CfED) have commissioned us (Frontier Economics Ltd) to revisit previous cost-benefit economic modelling from March 2020, on the impact of a proposed extension to Guernsey Airport's runway. The proposal was to increase runway length to between 1,700 and 1,799 metres. This report updates our previous findings and conclusions based on developments since March 2020, most notably the Covid-19 pandemic. The report was concluded in July 2021 and does not reflect further developments since then.

Recap on our modelling approach

In the March 2020 study, our approach was to conduct economic modelling to estimate the expected costs and benefits accrued to Guernsey as a result of runway extension. There were four important aspects to our approach:

- net benefits from extension were calculated as the **incremental** benefits accrued to Guernsey, over and above the level of benefits and costs (e.g. benefits from visitor spending) in the no extension “baseline”
- extension was assumed to be completed in 2026, so the modelling only estimated benefits accrued in the period after 2026
- the modelling assumed a ramp-up of incremental benefits from extension, such that full annual benefits are only accrued from 2035 onwards
- three scenarios were considered:
 - a *high* scenario, based on visitor projections using research commissioned by the States from aviation consultancy ASM
 - an *intermediate* scenario, based on our adaptation and re-estimation of the ASM projections, which is more conservative
 - a *break-even* scenario, in which we estimated the minimum increment in visitor numbers required for the project costs to be covered solely by the benefits from increased visitor spending

The net benefits from extension were calculated under each scenario. The previous study focused on the break-even scenario, although substantial net benefits were estimated in the other scenarios. The next slide recaps on previous results.

How might Covid-19 have changed the benefits from extension?

Based on the March 2020 study's modelling approach, this study assesses how Covid-19 (and other developments since March 2020) have affected the net benefits that were estimated, and other key factors that are relevant to the economic case for extension.

For recent developments to materially change the net benefits from extension, they will need to:

- affect the estimated benefits from extension from visitor spend and business impacts, that will be accrued after extension completion; and/or
- affect the estimated costs of extension, sourced from a specialist engineering firm, RPS.

The March 2020 estimates suggested that the economic benefits of extending the runway were likely to outweigh the costs.

Our March 2020 analysis projected the following annual increases in visitors by air relative to the no-extension base case:

- **High Scenario:** 61,000 additional visitors per year.
- **Intermediate scenario:** 20,000 additional visitors per year.
- **Break-even scenario:** 8,200 additional visitors per year.

The table below summarises the results of our modelling of the net benefits of runway extension across the three scenarios described above.

The results are increases in Gross Value Added (GVA) to the Guernsey economy over-and-above the no-extension baseline scenario and reported in net present value (NPV) terms for the (standard) 40-year lifetime of the project, using a 3.5% discount rate.

Scenario (visitor impact)	High	Intermediate	Break-even
GVA impact: visitor spending effects (over 40 years)	£627m	£201m	£85m
GVA impact: business expansion effects (top down, over 40 years)	£153M	£49m*	£21m
Resource costs of 1740m traditional RESA (total cost)	– £84m	– £84m	– £84m
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£534m	£116m	£0m
Net benefits (including business expansion effects)	£687m	£165m*	£21m

The net benefits from the visitor spending alone are sufficient to cover the costs associated with runway extension.

The net benefits from visitor spend for the “break even” scenario are zero by definition: we have created a scenario to examine how many additional visitors would be needed to cover the runway costs.

* Note that this is a corrected figure from the March 2020 version of the report.

The key question for this study is whether Covid-19 could be expected to lead to sustained changes in aviation, that will remain post 2026.

The short term impact of Covid-19 is not relevant to assessing the net benefits from extension, when the extension is assumed to be completed around 2026. The key question is **whether Covid-19 and other recent developments have led to an impact on Guernsey air travel that will last until after 2026, when the extension is in place**. And if this is the case, how these developments could change the estimated break-even number of visitors required to cover the costs of extension, and other aspects of the wider economic case for extension.

A related question is whether Guernsey's baseline annual number of passenger movements (see the chart below) – which has fallen in the short-term due to Covid-19 – is likely to reach 2019 levels again by the assumed extension completion date (2026).

Annual number of Guernsey air passenger movements, 2000 to 2020



- From 2000 to 2019, the annual number of Guernsey air passenger movements fluctuated between 809K and 919K.
- In 2020, air movements fell to 186K (from 858K in 2019), due to the impact of Covid-19.
- As Guernsey re-opens its borders and populations in Guernsey, UK and continental Europe are fully vaccinated, there will be a bounce-back in passenger movements from 2022 onwards.
- An important question is whether this rebound returns air visitor numbers to their previous trend before a runway extension is in place.

Source: 2000 to 2019 data is sourced from Table 2.23, Fig 2.25, Guernsey Facts and Figures 2020. 2020 data is sourced from [Guernsey Trade Media statistics and surveys](#).

Note: An air passenger movement represents a single passenger travelling on a single flight (e.g. Guernsey to London Gatwick).

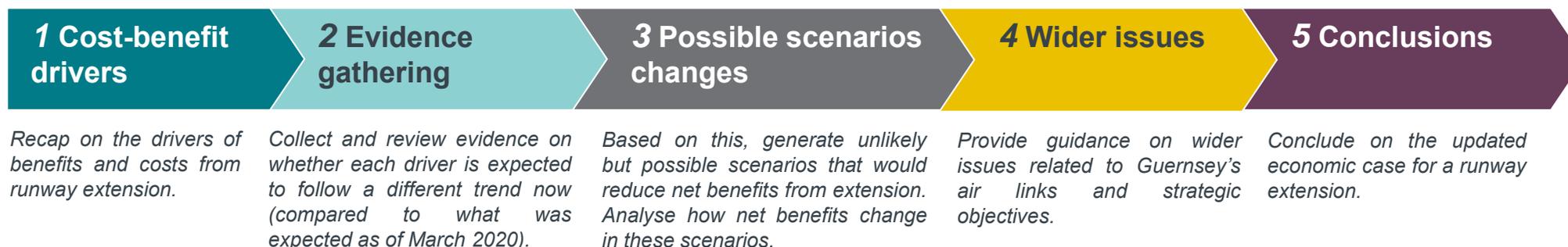


Analytical approach

We collected evidence on Covid-19's impact on the economic modelling, and checked how net benefits change in a broad range of new scenarios.

Our Approach

To determine whether there have been any material changes to our March 2020 results, we have taken the following five stage approach:



As stated in the previous slide, **the short term impact of Covid-19 is not relevant to assessing the net benefits from extension, when the extension is assumed to be completed around 2026**. There is also **substantial uncertainty** in estimating how the break-even number of visitors – which are calculated based on net benefits from extension, accrued post 2026 – have changed, based on a short period of developments since March 2020. Precise estimates on how the model's estimated break-even number of visitors has changed since March 2020 should not be attempted. Instead we look to check the robustness of the previous findings against future scenarios.

Our approach considers how factors affecting benefits and costs of extension have changed, and then forms an evidence-based understanding on the broad direction in how net benefits are likely to evolve over time as a result. Ultimately this will provide an appropriate “best estimate” on how the break-even number of visitors could be expected to have changed since March 2020.

The previous report estimated that an annual increase of 8,200 visitors, or roughly 5% of 2019 arrivals, is sufficient to cover the costs of extension. Given the uncertainty in forecasting future changes, **our preferred approach to determine whether the economic case for extension may have changed is to generate and test “sensitivity” scenarios which would increase the number of break-even visitors**. The scenarios are based on unlikely, but possible, outcomes based on drivers of visitors post-Covid-19. If the break-even visitors remain low under these sensitivities, then it is very unlikely for recent developments to change the economic case for extension.

The following slides set out: 1) the drivers of costs and benefits from extension and developments since March 2020, 2) evidence on how these drivers could be expected to change following 2026 based on recent developments, 3) results from our sensitivity modelling, 4) wider issues and developments in aviation that could be relevant to extension, and 5) our conclusions.

We reviewed whether the drivers of break-even visitors have changed since March 2020.

Recent developments

The main development since March 2020 is the Covid-19 pandemic, although we are also considering the impact of other developments, such as the UK's updated commitment to net zero emissions and Southampton Airport's decision to extend its runway.

Drivers of net impacts

There are four drivers affecting our economic modelling of the net benefits of extension, and the break-even number of visitors. Below is a brief description of how the model calculates the impact of each driver, and the possible changes that may have occurred since March 2020.



Visitor spend benefits:

The model calculates the increase in visitors from extension, translating that into expected additional visitor revenue.

We reviewed whether Covid-19 led to a change in expectation on the number of additional visitors as a result of extension or a reduced average visitor spend.



Business impacts:

The model calculates business expansion impacts, as a result of improved connectivity from extension.

We reviewed whether Covid-19 led to a change in expected working practices that will reduce the value of improved air connectivity to Guernsey businesses.



Engineering costs:

The model subtracts the engineering costs of extending the runway from the expected future benefits, in order to calculate the net benefit from extension.

We briefly checked whether the cost of engineering works has increased since March 2020.



Emissions costs:

The model calculates the expected social cost of increased carbon emissions, as a result of additional flights from Guernsey Airport, due to extension.

We checked whether inputs to the social cost of emissions, such as the carbon price, have changed since March 2020.

Evidence Base

- Stakeholder interviews: with industry experts, Guernsey Hospitality Association, Chamber of Commerce, IOD, RPS and aviation experts on recent changes to the four drivers above.
- Literature: Targeted review of studies on post-Covid air passenger forecasts (including Guernsey predictions) and recent trends in aviation.
- Frontier modelling: Adjusting our economic modelling on break-even visitors, under different sensitivity scenarios.



Results from scenario modelling

Visitor spend impacts: It is likely that the number of visitors will return to the pre Covid-19 level, before 2026.

We have reviewed whether Covid-19 is likely to have materially affected the estimated visitor spending benefits from extension, either due to a permanent change in number of air visitors to Guernsey, or to average visitor spend.

Evidence from the literature

Recent studies have predicted the likely permanent impact of Covid-19 on air travel. Perhaps most notably, Guernsey Ports (2021) predicted in their 2021-24 Business Plan that 90% of pre-pandemic air and sea visitors will return by the end of 2022. IATA (2020) have stated that they expect 2019 air passengers to be regained in around 2024, and Innovate UK (2021) expect international air travel to reach 2019 levels by 2025.

Stakeholder insights

We have also consulted with industry experts and Guernsey Hospitality Association (GHA) on whether the visitor spend benefits to Guernsey from extension are likely to have changed. There were two key insights from stakeholder interviews, with a fuller description of insights from GHA in the Annex.

1. The forecast increase in visitor volumes from extension as of March 2020 is likely still correct.

Industry experts considered that Guernsey could return to pre-Covid-19 levels of air visitor numbers in a short timeframe, and the incremental routes projected to contribute the majority of new visitors from extension in the UK and Ireland will likely return post-Covid-19. This is because Guernsey primarily relies on the domestic UK market, which is more likely to recover quickly from Covid-19 than long distance routes.

2. There may be short-term tourism opportunities for Guernsey, as a result of changes in air visitor travel due to Covid-19.

Both industry experts and the GHA considered that Guernsey may be well-placed to take advantage of short-term tourism opportunities. Industry experts stated that for example, Gibraltar has seen an increase in the number of carriers operating from 3 to 7 since the start of the pandemic. This is likely due to the relative attractiveness of Gibraltar as a tourist destination during Covid-19 and its domestic customer base. Similarly, in Guernsey, BA is operating flights from London City and Edinburgh during summer 2021 (further detail on this is in slide 16).

For this to be relevant to the impacts of extension, we need to be confident that these benefits will materialise, sustain and rise after 2026. It is difficult to confirm that Guernsey's relative attractiveness as a tourist destination now will sustain in a period after the world is fully vaccinated from Covid-19. However, Guernsey also has a unique short-term opportunity to influence its medium and longer term reputation as a tourist destination.

Industry experts also stated there is evidence that the balance of visitors could shift slightly away from business travel towards being more tourist-focused. Tourists tend to be more sensitive to the price of air fares – and in turn, larger aircraft and lower fares may be more important for tourism.

Visitor spend sensitivity: reduced visitors numbers, spend and a slower ramp-up in demand increases required break-even visitors to about 8,600.

Notwithstanding the overall conclusions from the previous slide, we have modelled sensitivities that consider how net benefits would be affected under different tourism scenarios. These are conservative scenarios that we do not expect to materialise, and consider them to be unlikely. Rather, the sensitivities are intended to ‘stress-test’ the benefits of extension against potential Covid-19 impacts.

Our visitor spend sensitivity considers changes in three parameter inputs to the model (versus the pre-Covid-19 baseline): **(1) number of air visitors to Guernsey, (2) average spend by air visitors to Guernsey, and (3) length of the phase-in period for visitors after extension.**

Reduction in visitors by 20% under both visitor cases



Reduction in average spend by 20% under both visitor cases



A slower ramp-up in tourist demand following extension

- Impact assumed to last for 10 years.
- Accounts for **both i)** initial fall in demand by 20% and **ii)** any knock-on effect on demand due to carriers reducing (removing) planned schedules for existing (new) routes, due to initial 20% fall in demand.
- Overall magnitude of the effect on visitors is therefore larger than the initial 20% fall.

- Impact assumed to last for 10 years.
- Fall in av. spend from **£633 to £506**.
- Applies to average spend across visitor groups (e.g. business, leisure), so assumes an equal fall in spend by all visitor types.

- Assumes that 12 years are required to reach full long-run demand, following completion of extension.
- This is 20% longer than the ramp-up of 10 years assumed under the base case.



Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 12 year ramp-up)	61,000	20,000	8,600 ▲
GVA impact: visitor spending effects (over 40 years)	£565m	£181m	£85m
GVA impact: business expansion effects (top down, over 40 years)	£153m	£49m	£21m
Resource costs of 1740m traditional RESA (total cost)	- £84m	- £84m	- £84m
Social cost of increased emissions (present value over 40 years)	- £9m	- £2m	- £1m
Net benefits (visitor spending effects only)	£472m ▼	£95m ▼	£0m
Net benefits (including business expansion effects)	£626m	£144m	£21m

Benefits needed for the project to break-even unchanged.

Business impacts sensitivity: It is possible that business travel could be permanently lower than the pre Covid-19 forecast levels.

In the March 2020 study, the main method for estimating the impacts of extension on business was to calculate the expected additional business visitors that would fly to Guernsey, as a result of extension. Econometric estimates for the impact of business travel on productivity were applied to convert the estimated additional number of business visitors into an estimated increase in Guernsey's Gross Value Added (GVA). We have reviewed whether the extension benefits from business impacts will have changed, due to a permanent shift in working patterns.

Evidence from the literature

The best Guernsey-specific evidence on how business travel could change post-Covid-19 is from the Business Travel Survey, conducted jointly by Chamber of Commerce, IOD, CGI and GIBA. The survey's questions focused on how travel habits might change post Covid, amongst other things, and received 411 responses. 25% of respondents stated that they expect to travel less post-Covid-19, and 6% specifically commented that technological advances in communications and video-conferencing were key contributors to the predicted reduction in business travel. This is consistent with wider evidence reviewed that suggests a smaller proportion of business travel post-Covid within the overall recovery.

Stakeholder insights

We have also consulted with stakeholders on whether benefits to businesses from extension will have changed. There were two key insights:

1. The incremental number of business travellers from extension is expected to be lower now, compared to the estimate in March 2020.

There is widespread recognition among stakeholders that a step change has occurred in the use of technology facilitating remote office working and affordable video conferencing. This change has been broadly welcomed and many in the business sector believed it would partly reduce their travel needs in the short to medium term. Stakeholders predict a modest reduction in discretionary business travel in the post-Covid-19 period.

2. However in-person attendance at meetings is likely to continue to play an important role in supporting the Finance and other sectors.

One of the central themes which emerged was the increasing need to demonstrate "substance" as a legal and regulatory requirement. This alone would provide a continued need for regular business flights (assuming business activity holds up) and thus for correspondingly reliable and relatively frequent services, particularly for those travelling to Guernsey.

In addition, although business trips may become less frequent they are expected to be for slightly longer periods. It was noted that physical meetings continue to be particularly effective for winning new business. For the Trust sector, stakeholders commented that personal interaction between clients and service providers is key to building trusting relationships and important in retaining a competitive advantage.

Summary

As a best estimate, the evidence suggests that post-2026 business travel may be slightly lower than previously expected in March 2020. However there are credible reasons for business travel to Guernsey continuing to occur post-2026 in the main, such that only a partial reduction in the number of business travellers could be expected, compared to the level that would have been expected in March 2020.

Business impacts sensitivity: accounting for the additional effect of reduced business visitors on business expansion does not change the break-even case.

We have also modelled sensitivities that consider how net benefits would be affected under different business impact scenarios, proxied by a drop in the number of business visitors. **The effect of reduced business impacts in this sensitivity are considered in addition to the visitor impacts considered in the tourism sensitivity reported previously.**

Adjustments to key model parameters considered in previous visitor impact sensitivity



Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 12 year ramp-up)	61,000	20,000	8,600 —
GVA impact: visitor spending effects (over 40 years)	£565m	£181m	£85m
GVA impact: business expansion effects (top down, over 40 years)	£149m ▼	£48m ▼	£21m
Resource costs of 1740m traditional RESA (total cost)	– £84m	– £84m	– £84m
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£472m	£95m	£0m
Net benefits (including business expansion effects)	£621m ▼	£143m ▼	£21m

Engineering cost impacts: RPS estimate that engineering costs to extend the runway could have increased by 10-15%.

In March 2020, engineering costs to extend the runway were calculated by the engineering firm RPS as £80.5m (excluding interest).

RPS's estimated change in engineering costs

RPS have adjusted their estimate on the engineering costs of extension. They now consider that the likely engineering costs could be 10% or 15% higher than pre-Covid-19 estimates, indicating possible costs in the region of £88m to £93m. The key driver of this estimated cost increase is a rise in raw material costs since March 2020, as a result of Covid-19. More specifically:

- Global commodity prices have increased due to the impact of the Covid-19 pandemic, in particular on bitumen prices which feeds through to higher asphalt costs.
- UK quarries are also struggling to meet demand for materials following reductions in supply during the pandemic, which has led to further upwards pressure on prices.
- If the on-island Ronez quarry would be able to supply the required quantities for the project, then this would enable Guernsey to avoid cost increases on shipped in materials. However, it is not clear whether this is possible.

It is unclear if these price rises will be sustained, or whether prices will resume their pre-Covid-19 trajectory once immediate supply-chain issues have been resolved. RPS have also indicated that additional work would be required to verify estimates for the revised cost of resurfacing the runway.

[20-30%]

RPS estimate of potential increase in bitumen/
asphalt prices since March 2020



[10-15%]

RPS estimate of potential increase in
aggregate costs since March 2020

Engineered Materials Arrestor System (EMAS)

Local stakeholders have raised the possibility of an EMAS area as a lower cost option for extension. At this stage there has been no site specific advice from the civil aviation regulators to indicate whether an EMAS Runway End Safety Area (RESA) would receive safety approval – our understanding is that this is being researched by Guernsey Ports, and a draft opinion on the matter is being developed.

Engineering cost impact sensitivity: a 15% increase in engineering costs would increase the break-even visitor requirement (all else equal) from 8,200 to 9,400.

We have modelled a further sensitivity to test the impact on net benefits of a potential increase in engineering costs. **The sensitivity assumes that engineering costs are 15% higher than in the pre-Covid-19 'base case' – at £92.6m compared to a previous estimate of £80.5m.**

All other model parameters are held fixed at 'base case' values consistent with our (pre-Covid-19) March 2020 modelling. **In other words, no changes are made to other input parameters** such as visitor numbers, visitor spend, or the length of the phase-in period for visitors after extension.

Increase in engineering costs for the extension of 15%



All other parameters at pre Covid-19 'base case' levels



The increase in engineering costs increases both the break-even number of visitors and the GVA benefits (from visitor spending) required to offset the cost of extension.

Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 10 year ramp-up)	61,000	20,000	9,400 ▲
GVA impact: visitor spending effects (over 40 years)	£627m	£201m	£97m ▲
GVA impact: business expansion effects (top down, over 40 years)	£153m	£49m	£21m
Resource costs of 1740m traditional RESA (total cost)	– £96m ▲	– £96m ▲	– £96m ▲
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£521m	£103m	£0m
Net benefits (including business expansion effects)	£675m	£152m	£21m

Environmental impacts sensitivity: no change to social cost of carbon; but further commitments have been made to meet net zero and...

In the previous study, quantitative modelling was undertaken to estimate the social cost of increased emissions from extension. The inputs to these social costs (incremental flights due to extension, CO₂ production of A320neo aircraft, carbon price per tonne) have not been changed. However, there have been two recent qualitative developments (unrelated to Covid) that are relevant to the future environmental impact of an extension.

1) The UK's commitment to achieving net zero carbon emissions

Policies to tackle climate change have risen in prominence, and there have been several important developments related to the UK's commitment to achieve net zero carbon emissions by 2050. While this doesn't impact the quantitative net benefits modelling, it could imply that the social cost of carbon emissions has increased, or is viewed as a more important issue than previously. These developments are as follows:

- In March 2021, the [UK government reported](#) that 30 of the UK's FTSE 100 have signed up to the United Nation's Race to Zero campaign, and pledged to cut their emissions to zero by 2050 or before.
- In April 2021, the [UK government announced](#) that it will set a new climate change target into law, to reduce emissions by 78% by 2035, compared to 1990 levels; and to net zero by 2050. This followed advice from the Climate Change Committee in December 2020.

A further development later this year is the COP26 summit, the 26th UN Climate Change Conference Of the Parties. This is attended by countries that signed the United Nations Framework Convention on Climate Change in 1994. Further international carbon commitments may follow.

... low carbon flying technology is improving.

2) Potential roll-out of electric aircraft

A local expert in electric aviation reiterated that there are significant environmental benefits of electric or hydrogen-powered aircraft. In particular, electric motors are substantially more efficient than jet engines, running at 90% efficiency in contrast to jet engines at 30-40%. In terms of rollout, 9 seater electric aircraft operating short haul flights are expected to be technically viable from 2025, with 140+ seater electric aircraft following from 2027. Ultimately, these larger aircraft (which would require extension) may operate from 2035, although this timing is clearly uncertain.

The main way that electric and hydrogen-powered aircraft could impact the case for extension is that the environmental costs of extension, measured as the social cost of carbon emissions, will be lower if the incremental routes as a result of extension are operated by these aircraft.

Further, extension may be necessary to achieve any objective for Guernsey to be known for promoting greener travel; a local expert in electric aviation confirmed that extension will be required for larger electric aircraft to safely operate from Guernsey, because the take-off and landing requirements for electric aircraft are the likely to be the same as for jet-fuelled aircraft. Should the roll-out of electric aircraft proceed as currently planned, electric planes requiring an extended runway would potentially operate from about 2035.

Summary of environmental impacts

Our view remains that it would be appropriate to commission a full study of the environmental impact of runway extension prior to a final decision.

Combining all the worse case scenarios increases the break-even level of additional visitors to 9,900.

If we combine each of the areas of sensitivity analysis using the “worst case”* scenario then the break-even number of visitors rises to 9,900.

This analysis combines our scenarios of:

- lower visitor numbers with reduced spend per visit and
- a longer period to ramp up to the total number of new visitors alongside
- lower travel for business purposes and
- increased costs of putting the runway extension into place.

Results under a ‘worst case’ scenario sensitivity (i.e. by combining all previous sensitivities)

<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; background-color: #e0f2f1;">Reduced visitors</div> + <div style="border: 1px solid black; padding: 2px 5px; background-color: #ffe0b2;">Reduced spend</div> + <div style="border: 1px solid black; padding: 2px 5px; background-color: #fff9c4;">Longer ramp-up</div> + <div style="border: 1px solid black; padding: 2px 5px; background-color: #d7ccc8;">Fall in business</div> + <div style="border: 1px solid black; padding: 2px 5px; background-color: #e2efda;">Increased costs</div> </div>			
Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 12 year ramp-up)	61,000	20,000	9,900 ▲
GVA impact: visitor spending effects (over 40 years)	£565m	£181m	£97m
GVA impact: business expansion effects (top down, over 40 years)	£149m	£48m	£21m
Resource costs of 1740m traditional RESA (total cost)	– £96m	– £96m	– £96m
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£460m	£82m	£0m
Net benefits (including business expansion effects)	£609m	£130m	£21m

*: this is not intended to be the worst imaginable scenario. There are scenarios where visitors numbers never recover, where variants of Covid-19 lead to waves of lockdowns and travel is affected for very prolonged periods. This is intended to be a reasonable worst case scenario for planning purposes based on the best available evidence at the time of writing. The States should decide whether it is sufficiently “worse case” for their planning.



Wider issues

The runway extension is linked to Guernsey's wider connectivity aims and its objectives for the airport.

The evidence indicates under a growth scenario whereby the runway extension leads visitors to Guernsey to increase by and remain at least 5% above the “pre-Covid-19 no extension” level will be of economic benefit to Guernsey, outweighing the original investment in the runway extension. This is largely unaffected by any marginal downturn in business specific traffic, as suggested by some post-Covid forecasts.

However, it is important not to consider the business case for the runway extension in isolation. Our work incorporates analysis of “cannibalisation” (the extent to which visitors switch from sea routes to air routes and so are not “new” visitors) but a more detailed consideration of connectivity would help to understand how to maximise the economic return to Guernsey from the range of connectivity options.

Connectivity is primarily seen as air and sea travel for both passengers and freight, and more recently digital connectivity has come to the fore. Stakeholders also mentioned the possibility of a tunnel or bridge link to Jersey.

Any plans for changing the passenger and freight flows through the Island and the associated infrastructure costs should be addressed holistically. This involves dealing not only with the operational requirements and infrastructure but also the wider long term economic benefits to ensure the right combination of packages is implemented. For example, one issue within this broader policy area is the current status of the near open skies policy to allow airlines to continue to open new routes. Decisions about retaining, changing or removing open skies would have wider implications for connectivity, of which the runway extension is one part. By way of another example, there are discussions about investment in (and potentially movement of) the port which, again, might affect travel decisions from and to Guernsey.

Stakeholders also noted that within the 40 year life of any runway extension the Island would be moving through a period of significant demographic change, with a forecast reduction in size of the working population, unless different strategies are introduced such as a managed and marginal increase in the population. This would have implications for housing, amongst other things, but it would also likely lead to an increase in passenger movements.

Finally, Guernsey's broader skills and economic policy, alongside wider economic, technological and other trends, will affect the types of sectors that will grow. These will have an impact on the type of connectivity where public sector investment can play the biggest catalytic role for business.

Airport ownership is just one element of ensuring high quality, efficient air connectivity.

There are a broad range of ownership options:

- From private involvement in particular civil works and operational aspects of the airport (eg catering, etc)
- To leases, concessions or joint ventures of all or parts of the airport
- To full divestiture of all our part of the airport

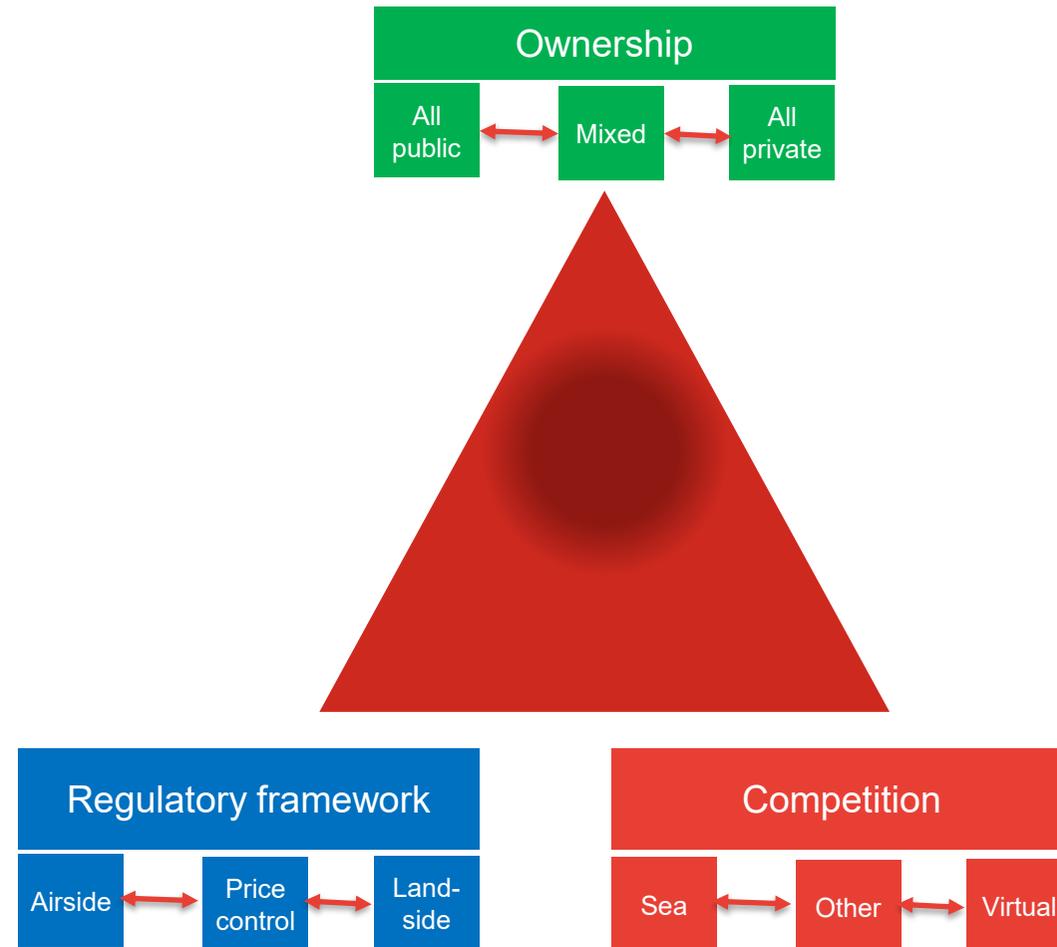
The right approach to airport ownership is not about any inherent costs or benefits of any of these options but about which option will best meet the States' objectives when it is combined with:

- Approach to regulation – combination of funding and the specific approach to regulation of airside and landside operations (including landing and other charges)
- Approach to competition – degree to which visitors have alternative options (over sea or virtual means) to the airport itself and to services provided by the airport (open skies etc)

The correct answer lies in the right combination of all of these elements, rather than deciding on one in isolation.

Some of these issues are discussed in more detail at this link:

<https://www.frontier-economics.com/media/3252/coming-down-to-earth-aviation.pdf>



The Bailiwick should consider further work to answer questions that would help resolve the role of the airport in wider connectivity.

The discussion on the previous pages suggest some questions for which answers would help to understand the role of the airport – and the runway – within the broader approach to where and how the public sector should support connectivity::

- What potential benefits could be delivered by a States-commissioned review of the Island's existing air and sea connectivity?
- What is the medium to long term strategy and expectation of the future shape and nature of the Guernsey economy (across businesses and industry)?
- What is the population strategy to meet the future social needs and to support the running of a vibrant economy?
- What will be the expectations and demands of travellers in respect of air and sea travel (in terms of the environment, speed, frequency, etc)?
- To what extent is digital connectivity and associated advances in technology likely to reduce the propensity to travel?
- Would subsidies on air or sea routes be a viable alternative to the capital infrastructure costs (i.e. passing the challenge and risk onto service providers)?
- What, if any, role does investment in the “reception” facilities (e.g. airport, port) play in travel decisions? Does that affect decisions about ownership and/or operation of those facilities?
- Is there any low risk alternative investment which might generate the same or greater economic return in the long term?

It may be best to answer these and related questions in a States' commissioned action plan for improving connectivity.

This wider review should also include an examination of the impact of Southampton Airport's runway extension and other trends ...

Southampton Airport runway extension

In April 2021, Eastleigh Borough Council members [voted to permit an extension of Southampton Airport's runway](#). It is still very early stages in considering the impact of the extension. Our discussions suggest that:

- the Southampton airport extension has a potential impact on Guernsey, given the strategic importance of Southampton for the Channel Islands.
- Southampton has benefitted from its ability to act as a mini-hub for regional carriers such as Flybe, which in turn has allowed it to act as a hub for Channel Islands airports. It is possible that Southampton Airport's extension could alter its status as a mini-hub for Guernsey to operate indirect services through regional carriers like Flybe, in particular if the next main operator at the airport was a low cost carrier with a more standard fleet of aircraft (e.g. A319s, A320neos) that generally only serve an airport with a runway of at least 1700m.
- if this were the case, then the baseline number of routes operated through Guernsey in the no extension scenario could be lower. This could strengthen the economic case for an extension at Guernsey Airport, since there would be a greater benefit to Guernsey retaining direct connections to the UK through regional carriers (who would themselves require an extension to operate preferred aircraft from Guernsey).

Additional BA flights to Guernsey

We note that [BA is flying two additional routes to Guernsey](#) this summer, from Edinburgh and London City, using 98-seater Embraer aircraft. This is a new development, and unsurprising given Guernsey's current additional relative attractiveness as a tourist destination, based on its response to Covid-19. Guernsey is also not the only location to be operating new short-term routes in the wake of the Covid-19 pandemic (e.g. the number of carriers operating flights to Gibraltar has increased since the start of the pandemic).

We have considered whether this development would change the "no extension" baseline number of visitors that could be expected to travel to Guernsey, which is our starting point for modelling the incremental visitors required to cover the costs of extension. The evidence currently suggests that these flights are a short-term development, so do not impact the "no extension" baseline.

...including wider actions to attract visitors and new charter flights.

Role of other actions to attract new visitors

Attracting additional visitors is likely to require more than only a runway extension. Some of those costs are included in the analysis (including the original, pre-Covid analysis), such as route support of £1m per year for 10 years following extension (see pages 17 and 25 of Frontier Economics (2020) for more detail).

It is possible that new entry (or the threat of new entry) on existing routes as a result of extension would result in existing services becoming more competitive, for example through lower fares or an improved service offering. This means that some additional visitor numbers are likely absent any further support (e.g. marketing or other efforts to attract new visitors). These visitors would also contribute to achieving the required break-even number of additional visitors; if 5% of new visitors on existing routes arose in this way, then that would contribute 2,000 visitors towards the 9,900 break-even number.

Further work to understand these dynamics could clarify what wider activity is required to attract significant additional visitors.

Charter Flights

Stakeholder interviews were conducted with Guernsey Airport and Visit Guernsey on the potential opportunity for additional charter flight landings at Guernsey Airport as a result of extension. These stakeholders reported that:

- The current runway length is a constraint on Guernsey Airport attracting charter flights. In particular, Jersey Airport, which is able to take larger aircraft on a longer runway, has significantly more charter flight visitors than Guernsey. Stakeholders reported that with extension, it is likely that European operators would be willing to operate additional charter flights to Guernsey on A319 or A320 aircraft, even though A319 might be able to use the existing runway.
- Eurowings is one example of a European carrier that could increase the number of visitors to Guernsey through additional charter flights. In 2019, Eurowings operated charter flights from Dusseldorf to Guernsey on ATRs, and to Jersey on A319s.
- During Covid, major European operators have been removing ATR aircraft from their fleets. This could also put pressure on charter flights to Guernsey on ATRs in the no-extension baseline.

Using Guernsey Airport and Visitor Survey data it is estimated that, in 2019, Guernsey received up to 2,900 visitors on charter flights. If extension leads to an increase of 20% of visitors from charter flights, then these flights would contribute up to 600 annual visitors towards the 9,900 break-even number.

The spending patterns of visitors arriving by charter may be different to others. Given the relatively small numbers this is unlikely to materially affect the analysis which suggests benefits outweigh costs on the current scenarios. Further work could focus particularly on the market for new charter arrivals were that deemed fundamental to the decision.

Changes to carrier fleets post-2026 are uncertain and should be monitored leading up to a decision on the runway extension.

Aircraft fleets evolve as new technologies and new customer demands materialise. Whether Covid has altered previous plans for aircraft fleets is yet to be seen and, particularly, whether adjustments will have impacts beyond 2026.

A review of announcements and wider information on the fleet plans for three airlines operating in the UK indicates some potential changes. Notwithstanding uncertainty over fleet changes in mid-late 2020s, it appears that these airlines are continuing to retain orders for short haul aircraft, including A320neos.

- In late 2020, [Ryanair](#) increased its order by 75 to 210 additional Boeing 737 jets. These jets seat 197 passengers. Deliveries are expected from spring 2021 to 2025.
- In late 2020, [Easyjet](#) deferred delivery of 22 more A320neos. However, the airline was still set to take 33 new aircraft between 2021 and 2025.
- [British Airway's](#) 2019-20 annual accounts showed that its fleet shrank from 305 aircraft to 277 between December 2019 and December 2020. However, fleet changes primarily related to longer haul aircraft; BA's short haul fleet only fell by 2 aircraft from 168 to 166. At December 2020, BA had 9 A320neo and 3 A321neo aircraft still to be delivered, with an option to acquire a further 10 A320neo aircraft.

Overall this does not suggest a significant change in short-term planning for some of the airlines of importance to Guernsey.

We have also undertaken research on Airbus and Boeing full year 2020 global aircraft orders. The main insight is that Airbus's A320/A321 aircraft had significantly greater gross and net orders than any other Airbus or Boeing aircraft through 2020, including smaller Airbus A220 aircraft. The A320/A321 aircraft also account for over 80% of Airbus's order backlog.

The short term impact of Covid on aircraft orders is unlikely to be relevant for projecting airline fleets post extension, since the effects of Covid should have largely disappeared by the mid-late 2020s. However, A320/A321s are the aircraft which ASM considered are most likely to operate incremental routes to Guernsey. The evidence does not suggest that developments since March 2020 are likely to cause a shortage in aircraft required to operate the incremental routes to Guernsey. Further information on the 2020 order and delivery performance of Airbus and Boeing is provided in the Annex.

A more detailed study – likely involving structured interviews with airlines and manufacturers – would be required to more precisely determine what fleet changes are expected to take place in the mid-late 2020s.



Conclusion and recommendations

Recent developments are not expected to materially impact the economic case for runway extension.

There have been several short-term developments from March 2020 to July 2021, mainly relating to the observed impact of Covid-19 on air travel. **The short term impact of Covid-19 is only relevant to assessing whether the economic case for extension has changed if those short term impacts extend beyond the commissioning date for an extended runway (around 2026).**

The key question for this study is whether observed changes to air travel, based on developments since March 2020, will continue to have a sustained impact on the drivers of connectivity demand, costs and benefits of the runway extension post-2026. If so, the break-even annual number of visitors required to cover the costs of extension may change, with an impact on the economic case for extension.

There is substantial uncertainty in precisely determining whether short-term observed impacts to air travel – based on developments since March 2020 – are likely to lead to sustained changes post 2026. The full consequences of Covid-19 are still unrolling. Our approach has been to test how the economic modelling could change under several “sensitivity” scenarios, supported by a quick, new review of the evidence and discussions with stakeholders. The work was undertaken quickly over May and June 2021.

Based on the evidence collected and reviewed, our conclusion is that developments since March 2020 are not expected to materially impact the economic case for runway extension. This is because:

1. As a starting point, the March 2020 study’s break-even number of annual incremental visitors to cover extension costs was already low (approx. 8,200, which is approx. 5% of arrivals by air in 2019).
2. Incorporating less likely, but possible, scenarios related to the sustained impact of Covid-19 on air travel and a 15% increase in engineering costs, the break-even number of visitors increases to approx. 9,900 per year.
3. Evidence from recent studies and stakeholder interviews suggests that, as a best estimate, Covid-19 is unlikely to have a significant and sustained reduction in the number of air visitors travelling to Guernsey post-2026. The most likely impact of Covid-19 is that the composition of Guernsey’s air visitor base will shift with a slightly higher proportion of tourist visitors.

We have two further conclusions:

1. A decision to extend the runway should only be made alongside developing a wider connectivity strategy. The lack of a connectivity strategy, including but not limited to questions of airport ownership, makes it more difficult to develop the full business case for a runway extension.
2. A more detailed study into the environmental and social impacts of extension would be appropriate prior to any final decision. This includes the costs of the impacts of greenhouse gas emissions and the options to reduce or eliminate any impacts linked to the runway extension.



Annex

Our sensitivity results show that, across a set of scenarios representing a reasonable 'worst case', 9,900 long-run incremental visitors are required to break-even.

1 Baseline results from original report

Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 10 year ramp-up)	61,000	20,000	8,200
GVA impact: visitor spending effects (over 40 years)	£627m	£201m	£85m
GVA impact: business expansion effects (top down, over 40 years)	£153m	£49m	£21m
Resource costs of 1740m traditional RESA (total cost)	– £84m	– £84m	– £84m
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£534m	£116m	£0m
Net benefits (including business expansion effects)	£687m	£165m	£21m

2 Results under a 'worst case' scenario sensitivity (i.e. by combining all previous sensitivities)

Reduced visitors



Reduced spend



Longer ramp-up



Fall in business



Increased costs

Sensitivity scenario (visitor impact)	High	Intermediate	Break-even
Long-run increase in annual visitors (after 12 year ramp-up)	61,000	20,000	9,900 ▲
GVA impact: visitor spending effects (over 40 years)	£565m	£181m	£97m
GVA impact: business expansion effects (top down, over 40 years)	£149m	£48m	£21m
Resource costs of 1740m traditional RESA (total cost)	– £96m	– £96m	– £96m
Social cost of increased emissions (present value over 40 years)	– £9m	– £2m	– £1m
Net benefits (visitor spending effects only)	£460m	£82m	£0m
Net benefits (including business expansion effects)	£609m	£130m	£21m

In a challenging year, the Airbus A320 was the aircraft with most deliveries and orders in 2020.

Full Year 2020 Deliveries, Orders, and Backlog for Airbus and Boeing aircraft

	Airbus					TOTAL
	A220	A320	A330	A350	A380	
Deliveries	38	446	19	59	4	566
	TOTAL					566
Boeing	737	747-8	767	777	787	TOTAL
	43	5	30	26	53	157
Net Orders	30	263	-14	-11	0	TOTAL
	TOTAL					268
Boeing	737	747-8	767	777	787	TOTAL
	-511	-1	11	10	20	-471
Gross Orders	64	296	2	21	0	TOTAL
	TOTAL					383
Boeing	737	747-8	767	777	787	TOTAL
	130	1	11	13	29	184
Backlog	487	5,885	298	509	5	TOTAL
	TOTAL					7,184
Boeing	737	747-8	767	777	787	TOTAL
	4,031	11	75	367	513	4,997

	Airbus									TOTAL	
	A220-100	A220-300	A319ceo	A320ceo	A321ceo	A319neo	A320neo	A321neo	A320ceo	A320neo	
Deliveries	10	28	3	3	9	0	253	178	15	431	TOTAL
	TOTAL									484	
Boeing	737:	-700W	-700C	-800	-900ER	BBJ	MAX	737NG	737 MAX	TOTAL	
	TOTAL									43	
Gross Orders	6	58	0	0	0	47	97	152	0	296	TOTAL
	TOTAL									360	
Boeing	737:	-700W	-700C	-800	-900ER	BBJ	MAX	737NG	737 MAX	TOTAL	
	TOTAL									130	
Backlog	43	444	4	18	29	76	2,763	2,995	51	5,834	TOTAL
	TOTAL									6,372	
Boeing	737:	-700W	-700C	-800	-900ER	BBJ	MAX	737NG	737 MAX	TOTAL	
	TOTAL									4,031	

Source: <https://dsm.forecastinternational.com/wordpress/2021/01/18/airbus-and-boeing-report-december-and-full-year-2020-commercial-aircraft-orders-and-deliveries/>

Note: Airbus and Boeing accounted for over 90% of the commercial aircraft market at start of 2020.

The main insights from the tables are:

- The majority of new Airbus orders related to A320 family aircraft (77% of Airbus gross orders). Of these, 249 orders (65% of Airbus gross orders) were for A320 or A321 aircraft, which ASM considered would be used to operate incremental routes from extension.
- Gross orders for A320/A321 aircraft were therefore 2 to 3 times as large as for smaller A220 family or A319 aircraft, and there was also a large backlog of A320/A321 orders (over 80% of Airbus order backlog).
- The largest reduction in orders across all aircraft families related to Boeing's smallest aircraft family, the 737 (120-180 seats). It is not clear which of the 737 family aircraft saw the largest reduction in orders.

Concrete conclusions for development of aircraft fleets based on this information is not possible. This source is also only one out of a range of sources on aircraft sales. However, it appears that developments since March 2020 are not likely to cause a shortage in A320/A321 aircraft, which ASM considered to be most likely to operate the incremental routes to Guernsey from extension.

Tourism Impacts: GHA reported that extension is important to expanding Guernsey's Tourism demand

We consulted with the GHA on the importance of runway extension to Guernsey's Tourism sector's post-Covid-19 recovery, and whether the economic case for extension has been affected by other developments since March 2020.

The GHA reported that it remains the case that long-term drivers of tourist demand (such as prices, routes and promotion) are positively affected by extension. In that sense, from the GHA's perspective, the economic case for extension has not been weakened as a result of developments since March 2020.

The GHA made the following specific points:

- The longer-term drivers of tourism demand continue to be positively affected by extension. This is because it will facilitate the expanded operation of low-cost carriers (LCCs) from Guernsey Airport which, according to the GHA, are typically cheaper than other airlines. In turn, GHA considered that these lower fares will benefit Guernsey Tourism since leisure visitors are typically more price-sensitive. Expanded operations of LCCs from Guernsey Airport would also lead to larger tourist capacity for Guernsey, on the basis that LCCs would typically operate larger aircraft and increase the number of routes operated from Guernsey Airport to the UK.
- The GHA considered that additional visitor capacity and flexibility in fares offered by LCCs could lengthen Guernsey's tourist season, which is relatively short running from May to September. According to the GHA, this could also incentivise additional investment in Guernsey hotels, which require high occupancy levels to be profitable. Greater investment in Guernsey hotels and a greater bedstock could further increase Guernsey's Tourism demand.
- One recent development is that Flybe ceased trading in March 2020. GHA reported that 2019 was an exceptional year for Guernsey's Tourism sector, and that a significant contributing factor for this was the additional flights operated by Flybe to the UK. GHA considers that the absence of Flybe will make it more challenging for Guernsey to reach 2019's Tourism visitor numbers, due to a reduction in capacity. The GHA considered that incremental routes operated by other LCCs due to extension could address this potential shortfall in capacity.

List of Stakeholders

Interviews with the following stakeholders were conducted as part of our research:

- ASM
- Chamber of Commerce
- Institute of Directors
- Guernsey Hospitality Association
- Mark Harrisson (a local expert in electric aviation, CEO of Harrisson Aviation)
- Guernsey Airport
- Visit Guernsey

We also received comments and feedback from the Committee *for* Economic Development and related officials.

Alongside the interviews, we reviewed recent published evidence. The evidence reviewed is noted at relevant parts of the report but includes new visitor forecasts, aircraft fleet requirements, economic growth forecast and related information.



Frontier Economics Ltd is a member of the Frontier Economics network, which consists of two separate companies based in Europe (Frontier Economics Ltd) and Australia (Frontier Economics Pty Ltd). Both companies are independently owned, and legal commitments entered into by one company do not impose any obligations on the other company in the network. All views expressed in this document are the views of Frontier Economics Ltd.

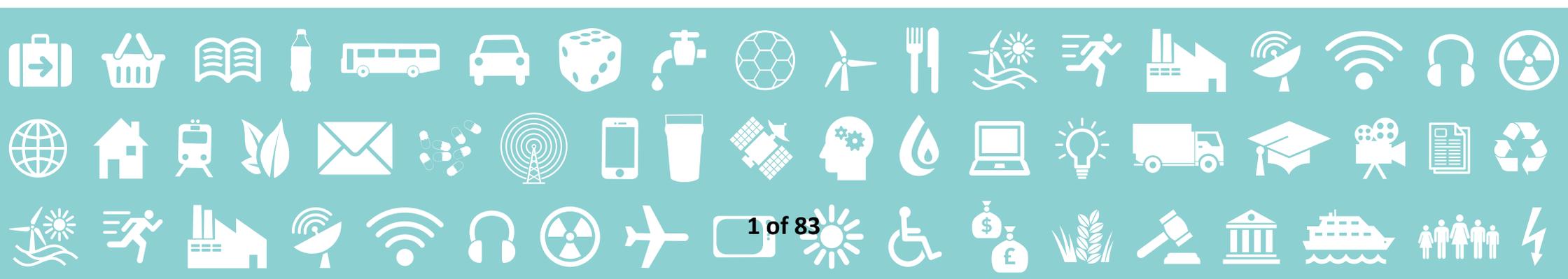
The costs and benefits of runway extension

Report for the States of Guernsey

13 March 2020

Confidential

Provisional Analysis: findings will be reviewed in light of the impact of the Covid-19 pandemic on air travel



Note about confidential information contained in this report

The analysis in this report has been prepared using a variety of information and data sources, including publicly available data prepared by the States of Guernsey and other sources, industry data, and research commissioned by the States of Guernsey. Commercially sensitive business data have been redacted from this version of the report, and this is indicated by the label [C.I.C]. Information with potentially sensitive financial implications for individuals and businesses has also been redacted. Regarding the list of stakeholder consultations, information on stakeholders responding on behalf of the states has been included. All other information on stakeholders has been redacted.

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Frontier were appointed to undertake an analysis of the benefits and costs of specific proposals for extending the runway.

The States of Guernsey commissioned Frontier Economics Ltd to undertake an economic analysis of a proposed extension to Guernsey Airport's runway. The proposal is to increase runway length to between 1,700 and 1,799 metres. The scope of this analysis focuses on the decision to invest in a runway extension or to refrain from doing so. It does not explicitly consider whether the resources ear-marked for the extension could be allocated to other uses. The analysis compares the outcomes under the runway extension scenario(s) to outcomes in scenarios in which this extension does not take place.

The States commissioned Frontier to undertake two separate streams of work: the cost-benefit analysis and a high-level analysis of social and environmental costs. The two are related, since the latter analysis informs the cost-benefit analysis. A third workstream to quantify the construction and associated engineering costs of extending the runway was undertaken separately by independent experts (RPS) and used as an input to this work.

In principle, the economic benefits of a runway extension can arise through several inter-related channels:

- The effects of the extension on connectivity, and through this on visitor numbers for leisure and business purposes. Increased visitor numbers may generate economic impacts through spending decisions on goods and services. These spending effects are captured in national accounts, and thus represent a benefit to Guernsey as a whole.
- The effects of improved connectivity on the climate for doing business. This includes the possibility of lowering costs for businesses to acquire inputs (skills, capital). It could also reduce the transactions costs associated with business operations. These effects in turn could facilitate, relative to the baseline, the expansion of existing businesses and the establishment of new ones. These effects may also be picked up in the national accounts. Connectivity may also induce activities (such as cultural and social ones) that generate public benefits that are not captured in national accounts
- Improved connectivity could also generate benefits for Guernsey residents by improving travel opportunities, and the ability to access services off-Island. Some of these services, such as health care, have high social rates of return.

Against these potential benefits it is necessary to offset the best understanding of economic costs to a runway extension. These include:

- The “resource costs” of the runway extension: the capital and operational expenditure needed to extend the runway.
- The social and environmental costs associated with the runway extension, including noise, pollution, and changes in land-use
- The social and environmental costs of increased connectivity and increased visitor numbers.

For both costs and benefits the analysis must consider which elements represent displacement from other parts of the economy (e.g. visitors by sea switching to planes and so not adding new visitors, jobs created in one part of the economy representing a shift from another and so not being new jobs, costs of runway operations for safety or other reasons that would necessitate spending regardless of an extension).

The length and condition of the runway have been under constant review for over a decade.

The consideration of when would be the right time to extend Guernsey's runway has been ongoing since at least 2009.

The States of Guernsey decided in October 2009 to rehabilitate but not lengthen Guernsey's runway. This followed a report, presented by the then Public Services Department, supported by the findings of an independent study by York Aviation, that a runway extension was not, at that time, necessary. Guernsey Airport's pavement areas (runway, taxiways and apron) were then upgraded in 2010. This work included, inter alia, realignment and strengthening of the runway and enhancement to Runway End Safety Area (RESA) provision.

Since then the potential to extend Guernsey's airport runway has continued to be a source of discussion. Guernsey's 2016 Island Development Plan recognised the potential need for a runway extension in the future and therefore designated an area of land to the eastern boundary of the airport as a Safeguard Area which could be used to facilitate an extension.

During the June 2017 Capital Prioritisation process, the Assembly decided that a strategic review of Guernsey's air and sea links infrastructure should be undertaken to ensure that all external transport links were considered as part of a strategy. The review was commissioned in May 2018 covering Guernsey's Air and Sea Links. It was undertaken by PwC for the Policy and Resources Committee, with the final report being presented in September that year.

While the strategic review was in progress the late Deputy Jan Kuttelwascher successfully led a Requête that directed the States Trading Supervisory Board to consult with the Director of Civil Aviation to determine the acceptability of an 'undershoot' and an 'overrun' provision. The Assembly provided majority support to the proposal on 26 October 2018 which, if feasible, would have allowed a runway extension of 107m providing an overall length of 1,570m.

Following the receipt of the strategic review report in September 2018, the Committee for Economic Development, adopted the *States of Guernsey Air and Sea Route Policy Development and Investment Objectives* in November 2018, which were subsequently approved by the States of Deliberation in December 2018. These objectives specifically commit to developing air links that, amongst others:

- Encourage development of regional (UK and Europe) connectivity through an open skies policy approach
- Attract carriers with proven international connectivity
- Broaden UK and European connectivity
- Access for Bailiwick residents to specialist healthcare and emergency evacuation services

More recently this culminated in the consideration of three options.

The Policy and Resources Committee subsequently prepared a **Policy Letter** focussed on air link infrastructure, (dated 08 March 2019), that was considered by the States Assembly on 26 April 2019. The strategic review considered three options:

- Option 1. A runway extension to 1,570m – within the airport boundary
- Option 2. A runway extension to 1,700m-1,800m – beyond the airport boundary
- Option 3. A runway extension to 2,000m and over – beyond the airport boundary.

Option 1 was identified as a potentially short term, low cost and high benefit solution, subject to further work to establish its feasibility from both a commercial and operational perspective. Option 2 was deemed to be one that should be subjected to a detailed cost-benefit analysis. Option 3 was immediately discounted as it was considered that the additional benefits of a 2,000m runway over a 1,700-1,800m runway could not justify the extra cost and time required.

After consideration of the Policy and Resources Committee's Policy Letter, the Assembly resolved on 26 April 2019:-

- Not to support the Policy and Resources Committee's proposition that: "*.. further work is (to be) carried out to assess the business case for extending the airport runway outside its current boundaries given the other options available for meeting Guernsey's air links objectives including the work of the States' Trading Supervisory Board investigation to examine the possibility of commissioning 107 metres of starter strip/paved runway end safety area ("RESA") to increase the current available runway length from 1463 metres to 1570 for take-off and landing..*" .
- Not to support the Policy and resources Committee's proposition: "*..to direct the Policy & Resources Committee to open a capital vote of up to £700,000 for the Committee for Economic Development to commission further work on the technical, regulatory, environmental and economic business case for the extension of the airport runway beyond the current boundaries to 1,700-1,800m,..*"

Following formal advice from Guernsey's Director of Civil Aviation about the option approved in the Kuttleswascher-led Requête to extend the runway to 1,570m, that too was rejected. The States Trading Supervisory Board presented a Policy Letter, dated 06 August 2019, proposing, inter alia, that "*..no further work is (to be) carried out to assess the option to extend the airport useable runway within the current airport boundary by reducing the Runway End Safety Area, at the eastern end of the runway..*". On 26 September 2019 the Assembly, by a majority, agreed to support the States Trading Supervisory Board's proposition, the effect of which was to cease all research into extending Guernsey's airport runway.

And, most recently, the States approved new studies to examine the costs and benefits of runway extension.

Subsequently, on 06 October 2019 Deputy Jan Kuttlewascher laid a further Requête titled “Development of the Business Case and Cost Benefit Analysis for the Extension of the Runway at Guernsey Airport to create a 1,700 Metre Runway”, seeking the Assembly’s approval:

1. To direct the Committee for Economic Development to present a business case and cost benefit analysis for the extension of the runway at Guernsey Airport to achieve a length of at least 1,700m.
2. To agree that this work should be completed by May 2020.
3. To direct the Policy and Resources Committee to make available the necessary funds to carry out this work, should they be required, to not exceed £360,000.

On 28 November 2019 the States Assembly, by a majority, provided support for the Prayer to the Requête.

Given that extension to a runway length of 1,800m would carry significant additional regulatory and reclassification requirements, the case for extension is being considered against a maximum length of 1,799m.

The current study represents the culmination of that process.

The findings in this study should be interpreted against the core strategic and investment objectives of the States.

As observed, deliberations on the extension of the runway are part of a wider policy and strategic framework that addresses the question of air and sea link connectivity. Given Guernsey's position as a small island state, connectivity has vital economic and social implications.

The strategic and investment objectives are set out in the document *States of Guernsey Air and Sea Route Policy Development and Investment Objectives*, of 12 November 2018. They are as follows:

- As core objectives - air and sea links must:
 - Meet the majority, if not all, of the current and future requirements of the residents of the Bailiwick
 - Enable economic growth
 - Increase visitor numbers
- As Investment objectives – air and sea links must consider:
 - Affordability
 - Connectivity
 - Reliability

In relation to reliability, the objectives emphasised the importance of attracting carriers of proven reliability and resources. This issue has received particular attention in the context of FlyBe's recent cessation of operations. The modelling approach pursued in this analysis is based on the profitable operation of air routes, and the link between runway extension and the profitability of servicing Guernsey by carriers that optimise their decisions across their entire network.

In setting out these three objectives, the States recognised that tension that could exist between them across different categories of users. It recognised that solving this "trilemma" would go beyond the scope of any single intervention or investment, and would require a cross-cutting approach. Similarly, there is a recognition that the core objectives would also require a suite of supporting interventions.

The next slide considers some of the broader factors that have a bearing on the findings of the study.

The findings in this study should be interpreted against a number of other factors outside the scope of the study.

The economic impacts of a runway extension operate through various channels (e.g. through new visitor arrivals, business expansion, social, cultural and environmental impacts). The degree to which each channel results in more or less economic activity or value creation depends on a wider suite of policy interventions and settings beyond the one related directly to runway extension. This point was generally acknowledged in the consultations that formed part of this study.

Where relevant this study recognises wider factors that need to be in place to realise economic and social outcomes from the runway extension.. We provide qualitative assessments of wider impacts or constraints where appropriate in the report. However, the scope of this report is solely focussed on the impact of a runway extension, and the economic, social, and environmental impacts of a resulting change in air connectivity. The scope does not extend to considering alternative policies or ways of spending equivalent amounts of money and their economic impacts.

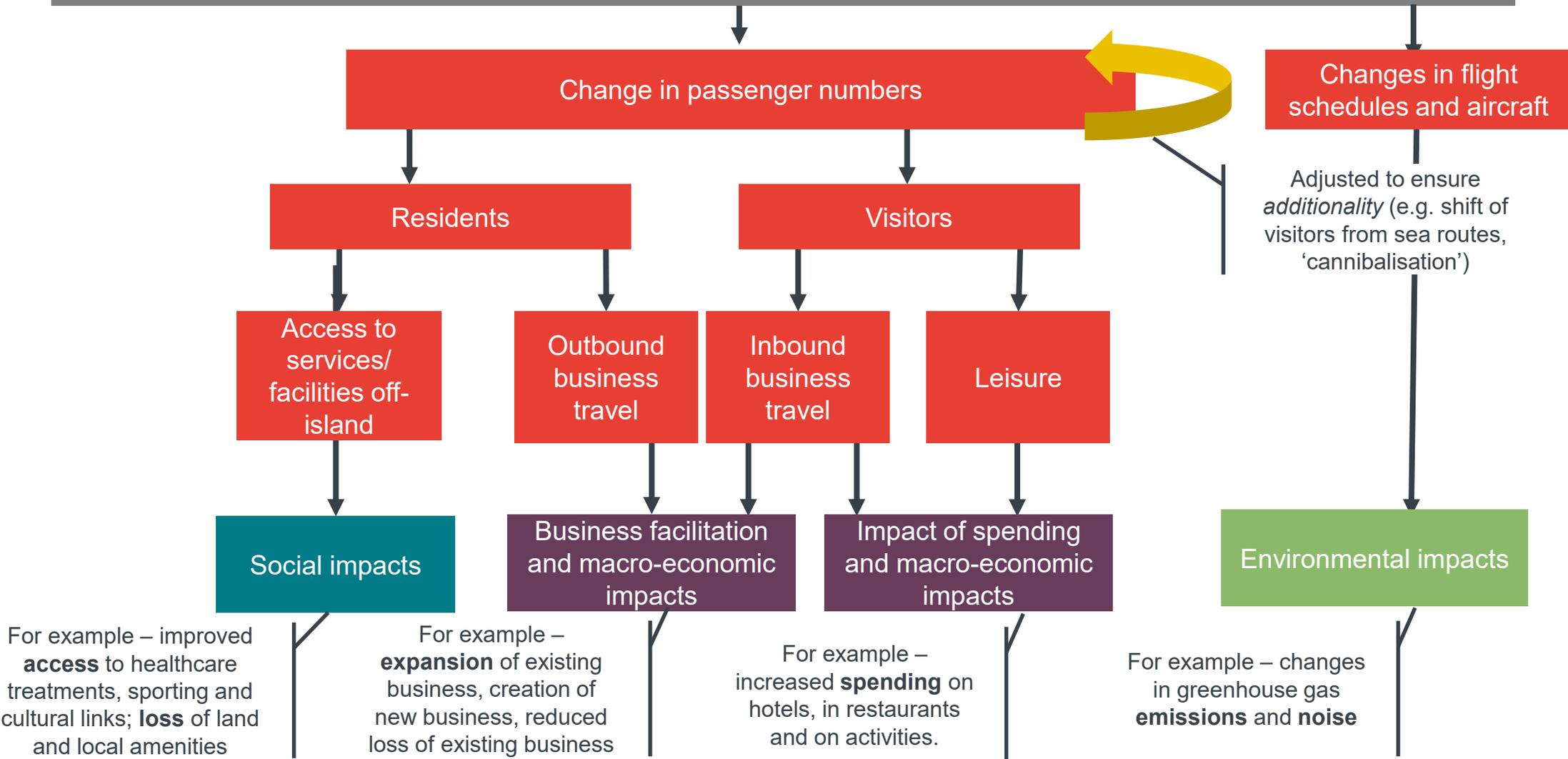
The following specific examples may be useful to keep our analysis in perspective:

- 1. States policy towards air links** . We have not assumed any changes to policy towards air links These policy settings reflect, in part, attempts to manage a perceived “trilemma” in which considerations of affordability, reliability and improved connectivity are in tension with each other. We have assumed a continuation of the quasi-open skies policy as it currently stands: i.e. liberalised services on routes to and from Guernsey, with the exception of Gatwick, the rights to which remain with the States.
- 2. Business**. Business expansion and attracting new businesses depends on many factors, of which runway length and the impact on connectivity is only one factor. The extent to which it is a factor will vary depending on the sector and structure of costs for businesses in that sector. We draw on evidence from our consultation, wider literature and our own modelling to understand how business decisions may be linked to the runway extension but these results should be interpreted in light of these other drivers of business decisions.
- 3. Tourism**. Although our modelling is based on tourism forecasts, we do not analyse other factors that contribute to tourism. The effect of the runway extension on tourism will also depend on a number of other conditions. These include the marketing strategies of air and sea-link operators (and States bodies), hotel capacity and attractiveness, airline route decisions, wider trends in the tourism market and other factors. Our modelling is based on the evidence available and we have not modelled each of these factors. We note that the runway extension is unlikely to be the sole driver of tourism outcomes.
- 4. Environment**. Different types of aircraft produce different total, per seat and per passenger greenhouse gas emission and noise. We provide evidence about these variations but do not model which type of aircraft might ultimately be used under scenarios for runway extension or business-as-usual

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Our framework investigates the pathways through which increased visitor numbers & connectivity feed in to wider economic impacts. APPENDIX 3

Impact of runway extension on air connectivity (routes and destinations) relative to no extension case



For example – improved **access** to healthcare treatments, sporting and cultural links; **loss** of land and local amenities

For example – **expansion** of existing business, creation of new business, reduced loss of existing business

For example – increased **spending** on hotels, in restaurants and on activities.

For example – changes in greenhouse gas **emissions** and **noise**

We have drawn on a wide range of evidence, from many sources, to implement the framework.

Methodology for incorporating different kinds of evidence

Developing a cost-benefit analysis of the runway extension has required a framework capable of synthesising findings from the application of different methodologies. The methodologies we used were:

- A quantitative analysis of visitor spending impacts involving: drawing on and adapting research commissioned by the States into the effects of runway extension on visitor numbers; estimating the effects of changes to visitor numbers on spending; and estimating the impacts of these changes on Guernsey's economy using official data on national accounts. In particular we:
 - Developed alternative scenarios for visitor increases based on different assumptions about the effects of runway extension on routes
 - Explicitly controlled for the effects of substitution between sea and air routes ("Cannibalisation"). Our analysis suggests that these effects are not material. Nevertheless, in Annex 3 we model scenarios based on hypothetical rates of cannibalisation. The results show that our overall conclusions do not change if there are greater levels of cannibalisation than our analysis of the evidence would suggest.
- A quantitative analysis of business expansion effects using two different methodologies. The first of these draws on econometric models establishing the role of connectivity in affecting international trade flows, and the role of international trade in driving changes to productivity. The second examines the relationship between improved business connectivity and drivers of productivity in businesses. The approach we adopted in both cases includes a combination of bespoke modelling and synthesis of peer-reviewed empirical literature.
- A quantitative analysis to determine the extent to which emissions and noise impacts arise as a result of changes to aircraft movements that result from the runway extension.
- A qualitative analysis based on stakeholder consultations in Guernsey. The purpose of the stakeholder consultations was to:
 - Guide the quantitative modelling and enable us to make informed decisions about assumptions and parameters
 - Provide information where quantitative estimation was not possible or appropriate. These include some aspects of wider economic and social benefits (notably benefits to residents of access to healthcare, and cultural and sports activities) and some aspects of social costs (such as the possible disruptions created by the extension through road diversion and the effects on land use).

Cost Modelling

- The resource costs of the runway extension (capital and operational costs) were estimated as part of a separate exercise commissioned by the States. We describe these in more detail on page 14.
- In addition to those costs, our analysis includes the cost of incentives provided by the States to airlines to service Guernsey based on expert advice.

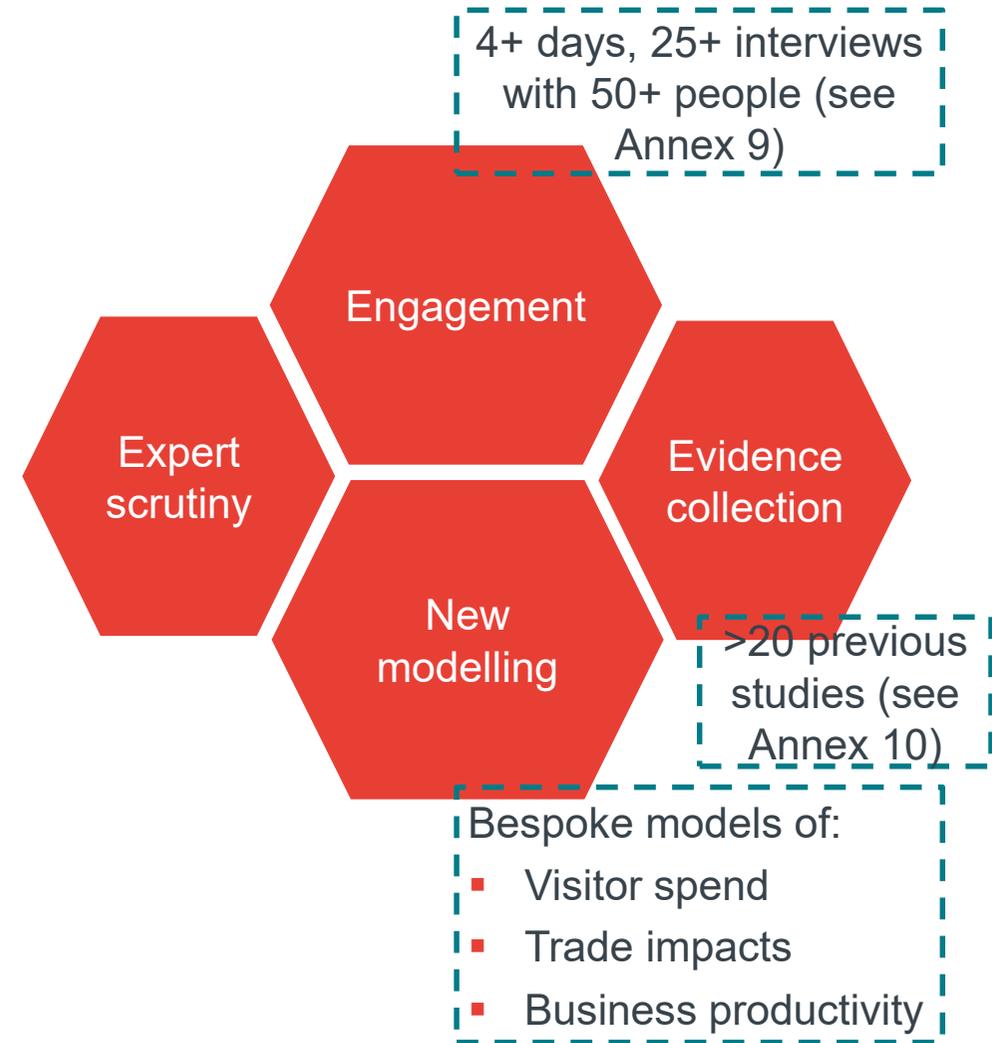
We have consulted widely. These consultations also highlighted other factors outside our analysis that needed to be taken into account. **APPENDIX 3**

Notwithstanding the evidence collection, a number of wider factors not included in the analysis could be important:

- Guernsey's economy has specific characteristics. It is necessary to exercise caution when applying methods and estimates developed for applications in other economies.
- There are many other factors that may limit the extent to which historical data from Guernsey will predict the future (e.g. future trading arrangements between Guernsey and the EU).
- Technological developments might affect how and by whom the runway is used and the impact of that use (e.g. possibilities for alternative fuel aircraft, role of remote working and meeting).

Given these and related uncertainties, we have consistently adopted an approach that biases our analysis towards increasing costs and reducing benefits (i.e. it is a conservative approach). These include:

- Using the upper end of cost estimates for the runway and incentives
- Using lower bound estimates for business growth impacts
- Assuming no real increase spend per visitor over time
- Plus other technical assumptions (e.g. choice of discount rate, break even analysis)



Our analysis is based on a proposal to extend the Runway to 1740 metres with traditional RESA. Three other options were costed.

In line with the PwC Strategic Review and the States' Investment Objectives, a variety of extension scenarios were considered and modelled by a specialist engineering consultancy appointed by CfED, RPS. The four main ones are summarised in the table below:

Option	Civil Works (on Island costs)	Valley Fill (Civil costs)	Fee Risk and Contingency	Misc.construction costs, labour and insurance	Total
Costs in £ Millions (numbers may not add up due to rounding)					
1700 with traditional RESA	23.2	12.6	22.8	9.9	69.5
1740 traditional RESA	24.4	19.0	24.6	9.9	78.9
1740 EMAS RESA	30.6	13.7	24.8	9.9	80.1
1799 EMAS RESA	31.2	25.7	27.9	9.9	95.3

The costs associated with runway extension works are primarily found in the civil works category. The costs quotes are acknowledged to be at the high end of the likely range. The actual construction process will follow a competitive tender. The costs of upgrading the Instrument Landing System, and of expanding the size of terminals, have been excluded from this cost base. They would be the subject of a separate analysis if and when decisions are taken on these aspects.

The option highlighted in bold is the one considered in this cost benefit analysis. The 1700 option is not deemed to be adequate to accommodate the type of aircraft required to ensure higher levels of connectivity.

A runway extension to 1,799m with traditional, land-based, RESA was discounted as it would require earthworks which would extend over both Les Blicqs Road and the parochial cemetery; it would also take the development well beyond the IDP Safeguarded area.

An extension to beyond 1,799m was not considered, as this is outside the scope of the options that were retained in the 2018 Strategic Options Review report; it would also require the Runway Code to change from 3C to 4C (or 4D).

The primary economic impacts are the result of visitor spending and business facilitation and expansion effects.

The business case analysis for the proposed runway extension against the no-extension case rests primarily on visitor spending impacts and business facilitation and expansion impacts

- **Visitor spending impacts** are measured as the macro-economic impacts of changes to the annual number of expected leisure and business visitor arrivals as a consequence of the runway extension. To obtain this impacts, we use our projections of visitor numbers and combine these with data on average spending. This information on spending is then converted into impacts on Gross Value Added (GVA) using national accounts data. We also use this approach to derive data on exchequer revenues based on indirect and direct taxation.
- **Business facilitation and expansion impacts** are based on estimates of the macro-economic impacts of runway extension via business facilitation and expansion effects. Given the uncertainty in these estimates we use two different approaches to provide the most likely range:
 1. *A top-down approach* that is based on international evidence about the relationships between business travel and trade and economic growth. We model the application of these relationships to Guernsey in the context of a runway expansion and forecast impacts on visitor numbers.
 2. *A bottom-up approach* that models the relationship between reliability, business visitor numbers, and productivity. On the basis of these relationships, we estimate the level of sectoral expansion linked to a runway extension.

We use both approaches given the more uncertain nature of the magnitude and measurement of these business expansion effects. We interpret the findings in light of inputs made by stakeholders on their views of the likely magnitude and nature of these effects.

Alongside the impacts on GVA from changes to visitor spending and business, we also provide an analysis of other effects including:

- Effects on tax revenues estimated on the basis of GVA effects via the visitor spending channel and the business expansion channel
- Benefits in terms of access to health services and facilities, and in terms of access to sporting and cultural activities and events

We undertake an initial assessment of the social and environmental impacts of runway extension. This focuses on the:

- Impact of aircraft emissions of greenhouse gases and noise: drawing on the modelling of changes in visitor numbers and flights we provide initial estimates of the implications for greenhouse gas emissions and noise based on evidence about current and future airport operating performance.
- Impact of the runway extension itself: the environmental impacts of the process of runway extension, including greenhouse gas emissions associated with the new construction and with the loss of some natural environments.
- The social effects of changes in land-use as a result of the runway extension

Our assessment is of the impacts of extension against the baseline of no extension.

We assess the proposed extension of 1740 metres with traditional RESA against a 'business as usual' (or counterfactual) case in which the runway remains at its present length. We also model sensitivities around visitor trends in this counterfactual (see next page and Annex 2 for more detail).

- In the absence of the extension, the effects of connectivity that we have modelled on visitor spending channels and the business expansion channels do not materialise, and neither do the benefits that are attributable to these two channels
 - In the absence of an extension, annual visitor levels reaching Guernsey by air will remain stable, at around 180,000 per year, reflecting trends since 2016. This generates spending valued at around £2.4 billion in NPV terms over the duration of the project. This scenario is conservative in relation to the potential upside of a runway extension..
- The investment costs of extension are not incurred but there will be on-going costs reflecting the maintenance of the existing runway and the incentives provided to airlines by the States. These are not expected to lead to changes in connectivity trends, absent any other intervention.
 - Resurfacing is required every 10-15 years, and the estimated cost is around £10 million. Resurfacing is required regardless of the extension and therefore the costs do not feature in the net benefit analysis. We assume that in the no extension case the resurfacing costs are the same as in the extension case. Though in practice it may be higher in the no extension case if doing the resurfacing at the same time as runway extension generates economies of scope (synergies).
 - The incentives provided to carriers are valued at £1m per year for 10 years following the extension, or £8million in real present value (PV) terms.
- An assessment of a counterfactual case to the runway extension in which the States devote equivalent resources to support some other form of intervention is not within the scope of this study.
- We have not made any assumptions relating to the installation of ILS as part of the extension process, relative to the no-extension process. A decision to install enhanced ILS facilities, if made, would increase the cost base, but could also generate added benefits in terms of avoided cancellations and delays. This is borne out by the data presented in Annex 4, which contains preliminary analysis of the relationship between flight cancellations and the incidence and severity of fog.

We modelled sensitivities to the baseline no extension case reflecting scenarios in which visitor numbers continue to decline

Stakeholder input revealed concerns that in the absence of an extension, visitor numbers would continue to decline. This is because potential visitors might prefer destinations that have invested in connectivity in recent years, and compete with Guernsey for tourism and business opportunities.

We model two scenarios in which the number of visitors arriving by air could fall below the 180,000 level. We have investigated:

- A 1.7% annual decrease in visitors arriving by air, which has been the average visitor trend since 2012
- A 1% annual decrease in visitors (i.e. an intermediate scenario)

The detail of this modelling is presented in Annex 2. The table below reports the GVA increases associated with visitor spending under the standard no extension case (which is the basis of the net benefit analysis we have undertaken), and under the two sensitivities. We also report the impacts on GVA via visitor spending of the extension scenarios (high and intermediate) against these three alternative baselines

Present value visitor spend	Constant visitors	Moderate visitor decline	Historical visitor decline
No extension	£2.4b	£2.0b	£1.8b
Extension - intermediate impact	£2.6b	£2.2b	£1.9b
Extension - high impact	£3.1b	£2.6b	£2.4b

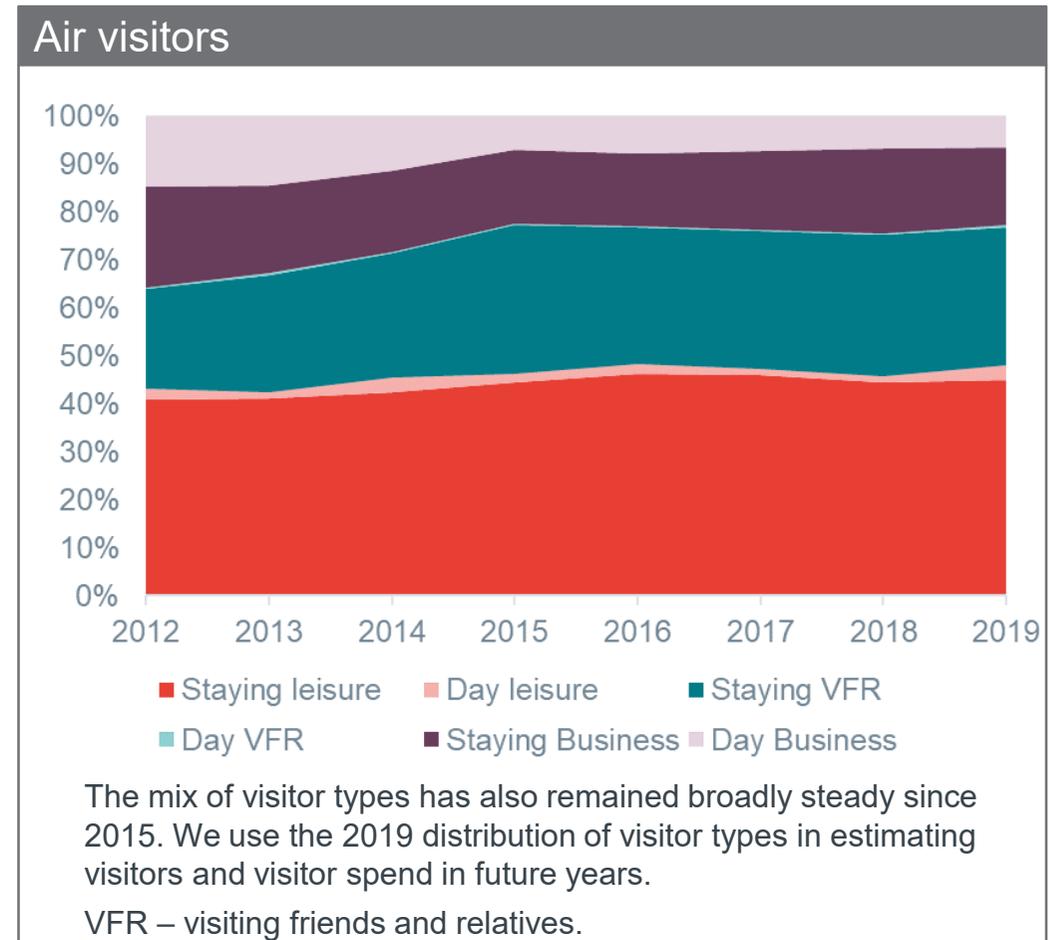
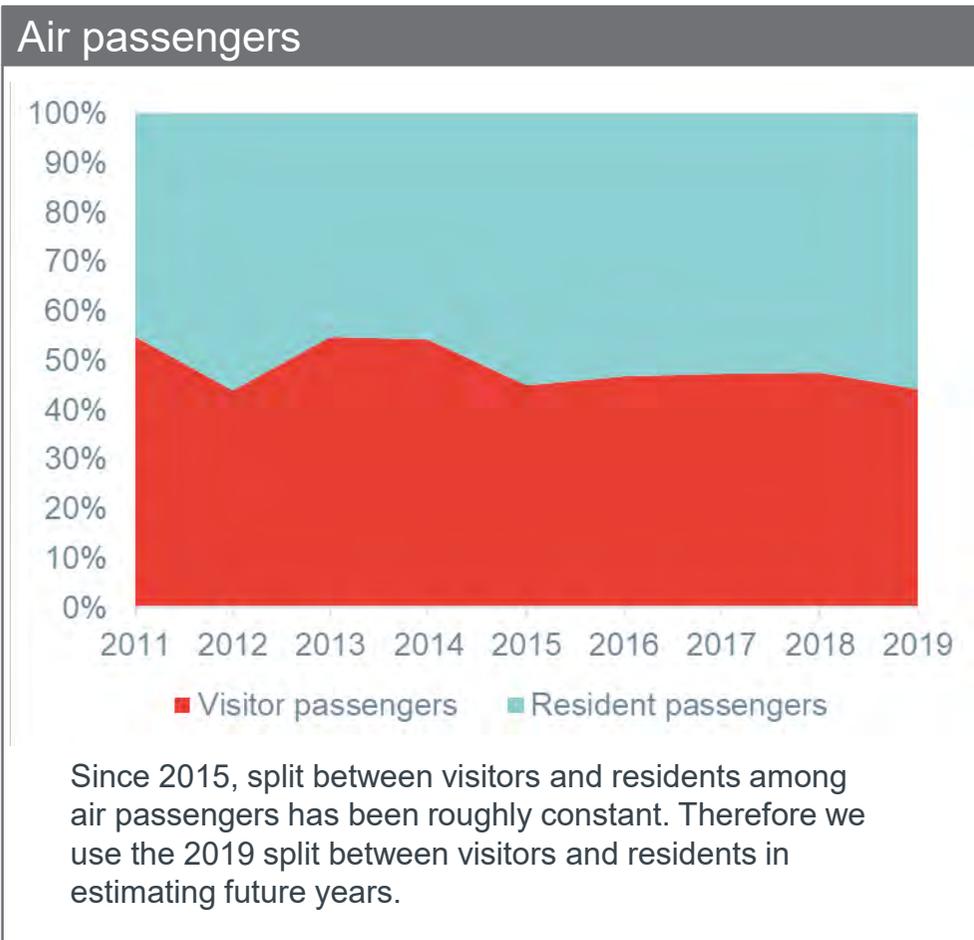
We observe that for the high impact extension scenario, the effect of *lowering* the baseline is to *increase* the relative impact of the extension (i.e. the percentage increases off the baseline are bigger). In the intermediate case, the relative impacts are smaller the lower the baseline. This reflects differences in underlying modelling approaches to the extension scenarios: in the high impact case we use fixed increases in arrivals numbers based on the modelling commissioned by the States. While in the intermediate case we model percentage increases off the baseline.

We also evaluate information stakeholders submitted to us about the value of lost business opportunities in the finance sector, and present this information as part of our discussion in chapter 4.

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The mix of passenger and visitor types has been stable over the last five years

We estimate the economic impacts of spending by new visitors to Guernsey. We investigate this from two perspectives: scenarios for possible increases in new visitors and modelling the number of new visitors that would be required to justify the cost of the runway extension. Different types of visitors spend different amounts during their stay in Guernsey. Therefore, under both our approaches we need to understand the future split of visitors by visitor type.



To ensure only new visitors are counted in the analysis, any visitors that choose to switch from sea routes to air routes following the runway extension (so-called “cannibalisation”) should be excluded.

Many external factors affect trends in sea and air passengers volumes

Over time, sea and air passenger volumes can be effected by changing passenger demographics. These can include age, rates of travelling with children, affluence, and region of origin.

Stakeholders have suggested that changes and air and sea services have affected their relative passenger volumes

In 2015, Condor replaced two smaller vessels operating from two south coast ports to a single port operation utilising a larger vessel. This reduced rotations and overall seat capacity on the Mainland line. The decreased frequency may have impacted passenger volumes, for instance reducing the feasibility of ferry travel for day-trippers.

Condor reported a drop in passenger volumes from the UK following the introduction of competition on the Southampton air route and more generally the implementation of the quasi-open skies policy.,.

The geography of air and sea links likely plays an important role in any competition between transport modes

Condor have informed us that a majority of their UK customers originate within a 2-hour drive time of the Poole or Portsmouth harbour. For example, over 30% of their UK bookings originate in what Condor refers to as the Meridian region (essentially, the South East), compared to fewer than 2% in Scotland. Therefore we would expect the location of an air route to play an important role in the impact of air connectivity on sea passengers to Guernsey.

To investigate the relationship between air and sea passenger volumes, we have analysed data from Jersey

VisitJersey provided us with monthly sea and air passenger volumes, split by route, for 2017 to 2019. Passenger volumes on a route are composed of:

$$\begin{aligned} \text{Passenger volumes on a route} &= (\text{seasonal effects on the route}) \\ &+ (\text{trends common to all routes}) \\ &+ (\text{trends specific to the route}) \end{aligned}$$

To understand competition between sea and air routes, we analysed trends specific to individual routes. We fit an econometric model to control for seasonality and common trends, that isolated trends specific to individual routes. A positive correlation between routes’ trends would indicate that shared factors drive their passenger volumes. A negative correlation would indicate that there may be substitution between the routes. Although we do not find that sea cannibalisation will substantially effect long run net benefits, for reference we calculate net benefits under cannibalisation scenarios in Annex 3.

To investigate the relationship between sea and air passenger volumes, we have analysed historical Jersey data.

Condor informed us that their closest competition from air links is from Channel Island routes from Bournemouth, Exeter, and Southampton. As there are no direct flights between Bournemouth and Jersey, we have tested correlations between the other two airports and the sea links:

Correlation between route trends	Exeter	95% Confidence interval	Southampton	95% Confidence interval
Poole	-0.0009	(-0.31,0.31)	-0.10	(-0.40,0.22)
Portsmouth	0.13	(-0.19,0.42)	0.11	(-0.21,0.41)

Source: Visit Jersey

Positive correlations indicate that numbers move roughly in the same direction. If that is the case, we can rule out substitution. Negative numbers suggest the possibility of substitution. Scores of zero or close to it indicate no relationship.

These statistics do not provide evidence of air passenger volumes impacting sea passenger volumes; the correlations between Portsmouth and the two airports are positive, and Poole and Exeter have a correlation that is nearly 0. By contrast, the sea links have very high positive correlations with one another:

Correlation between route trends	Guernsey	Poole	Portsmouth
Guernsey			
Poole	0.46		
Portsmouth	0.09	0.34	
St Malo	0.48	0.69	0.39

These correlations are all positive, and largely much higher in magnitude. This suggests that other factors common to these routes, such as weather and quality of service are more significant drivers of ferry passenger volumes.

We conclude from this analysis that changes in air passenger volumes are not likely to substantially affect sea passenger volumes in the long run. This does not exclude the possibility of periodic switching between sea and air routes.

We estimate the effects of runway extension on GVA via changes to visitor numbers and their spending (relative to a no-extension case)

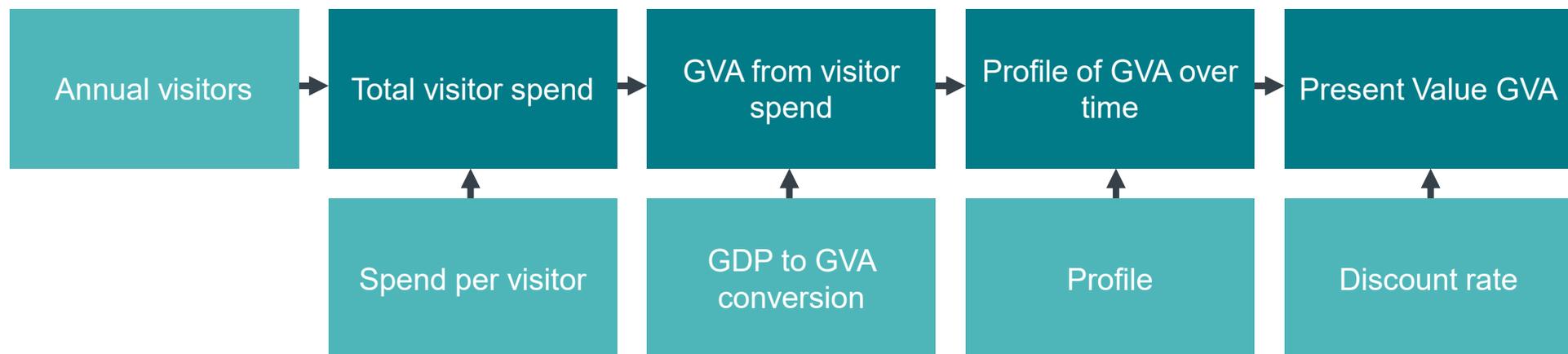
We have conducted a cost-benefit analysis that compares the benefits from visitor spend with the costs of installing the runway. As noted in our methodology, this provides one part of the overall estimate of benefits. The impacts through stimulating new and existing businesses provides the other main impact. It is discussed later.

We have analysed the impact on GVA of **3 scenarios** that vary in terms of the increase in visitors resulting from the runway extension:

- **High** This scenario uses the ‘base case’ forecast provided by the States, based on work by ASM, of the increase in visitors that would result from the runway extension. The Gatwick route is excluded from this calculation, in line with the assumption about the continuation of the quasi-open skies policy
- **Intermediate**. This scenario provides a revised projection based on the high scenario. We have independently estimated the potential increase in visitor volumes that would result from the runway extension. As with the High scenario, the Gatwick route has been excluded from the analysis. Details of this analysis are provided in the Annex 1.
- **Break even**. Unlike the other two scenarios, this is not a projection. Rather it can be viewed as a risk analysis in the sense that it estimates the smallest uplift in passengers required to exactly offset the costs of the extension through the effect on GVA of spending decisions

Note that the first two scenarios estimate the potential benefits from visitor spend resulting from a runway extension. By contrast, the break even scenario is *not a forecast*; it provides a point of reference against which to compare the passenger volumes estimated in the other two scenarios.

For each scenario, we calculate the benefits from visitor spend as follows:

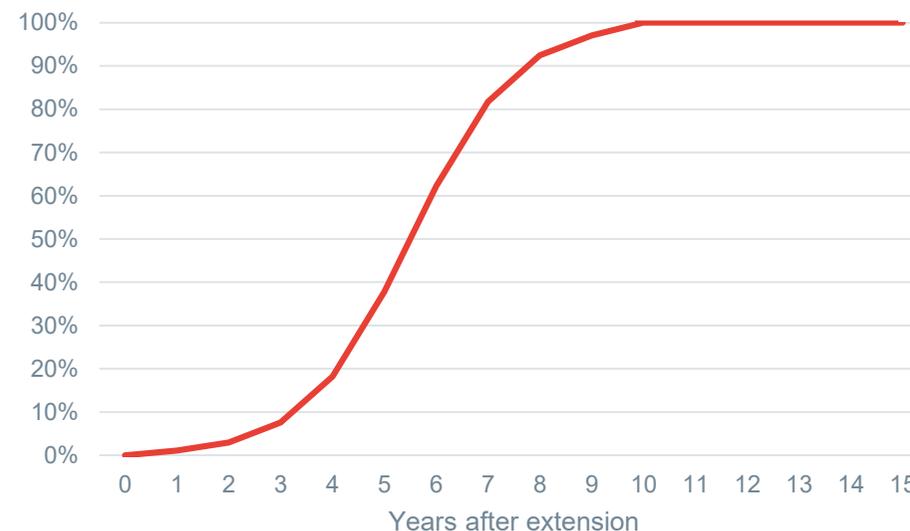


We use recent data to estimate visitor spend and to convert that spend into a present value estimate of total benefit.

Benefits

- **Spend per visitor.** We have used the 2019 spend per visitor (air travel) of £633. We have assumed that the average spend per visitor arriving by air remains constant over time in real terms. [2019 Visitor Spend Survey].
- **GVA calculation.** We convert total visitor spend to economic benefits, expressed as Gross Value Added. GVA measures GDP (turnover) less net taxes and subsidies. In the most recent year of data available (2018), 98% of GDP was GVA, and 2% was composed of net taxes and subsidies. We have assumed that net taxes and subsidies on the goods and services purchased by visitors is equal to the net taxes and subsidies in the entire Guernsey economy. So we have estimated that GVA will be 98% of total visitor spend. The calculation of GVA contribution per visitor is shown in the table on the right.
- **Profiling.** The visitor stimulation from the extension is likely to ‘ramp up’ over a period of years. This could be due to several factors: customers that make travel plans with long lead times, a delayed effect of marketing, or other lags in public awareness. We model this ‘ramp up’ over 10 years: in the year of the runway extension (year 0), there is no incremental benefit of the extension. This increases to year 10, when the full benefits of the extension are realised. Beginning in year 10, the benefits are constant. The rate of increase was modelled with a logistic function (S-shaped curve) and is illustrated on the right.
- **Discount rate.** We have used the HM Treasury Green Book discount rate of 3.5% over 40 years. We recognise the Green Book allows a lower 3% discount rate for periods over 30 years; our approach provides a conservative estimate.

Illustration of profile shape



Estimating GVA from visitor spend

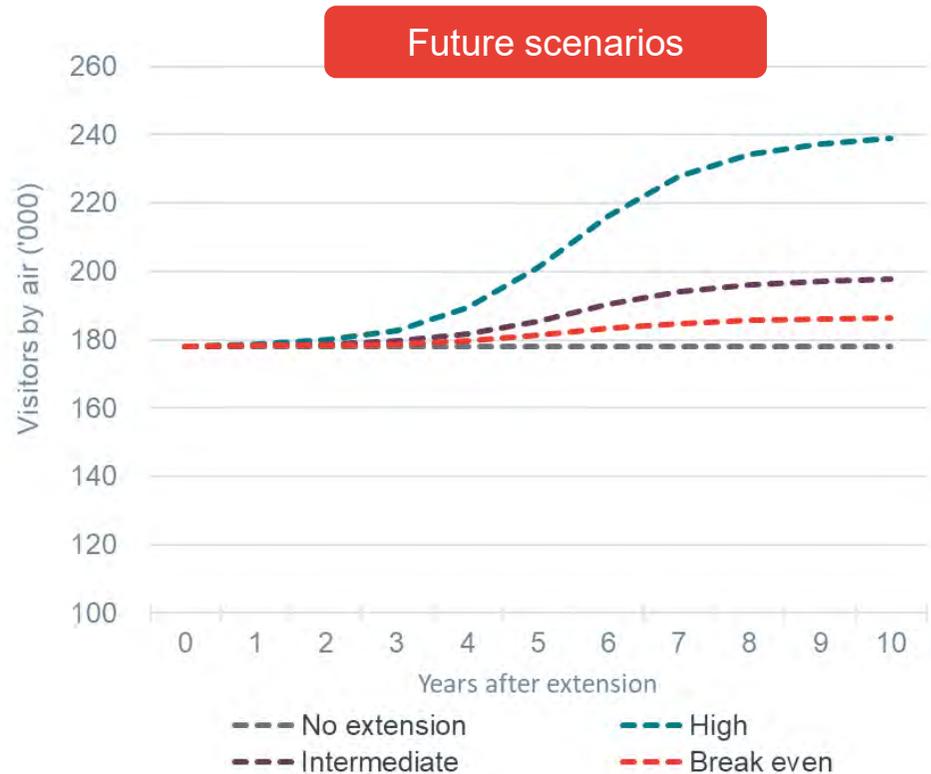
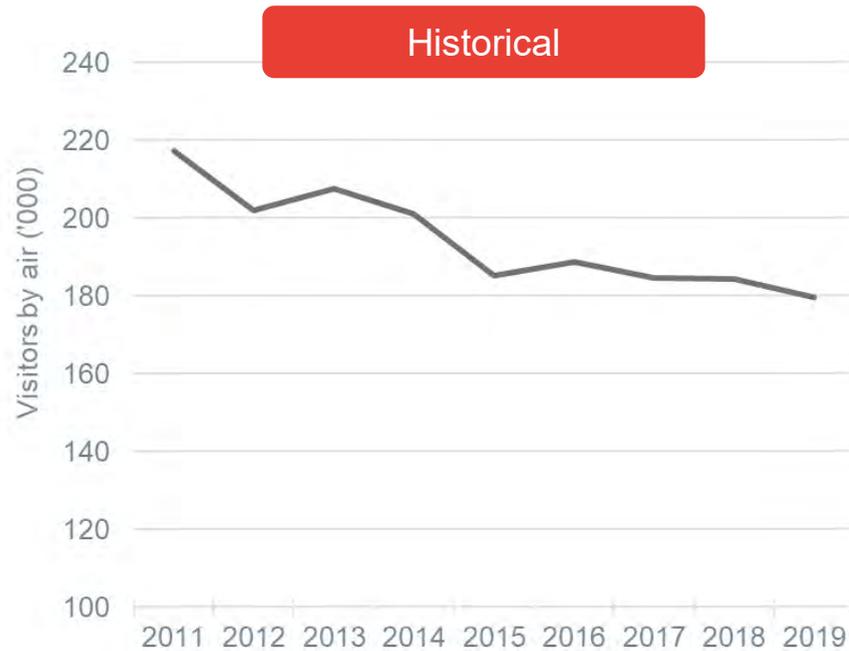
Spend per visitor	GVA / GDP conversion	GVA contribution per visitor
£633	98%	£620

We have received estimates of the engineering costs of the extension, and we estimate the environmental costs of incremental flights.

CfED commissioned a separate engineering study to estimate the costs of building the new runway extension. It was undertaken by RPS. We have used the output from analysis to estimate overall costs and benefits. The RPS analysis suggests:

- **BAU engineering costs** (not incurred in a runway extension scenario): the costs of a single resurfacing of the runway, that would last approximately 10-15 years. This is modelled as a single payment of £10m. In the absence of information about the particular timing of the no-extension resurfacing relative to the timing of the runway extension, we have evenly divided the £10m over the initial 12 years of the period being examined.
- **Runway extension costs.** RPS provided an estimate of £78.9m for a Traditional RESA 1740m runway extension. We have amortised these costs over 40 years, using an interest rate of 3.65% based on Government borrowing costs. Following expert discussions, we have also added a further annual cost of £1m for 10 years following the extension to account for incentives that may be needed to attract new airlines. This is normal practice but again we have used conservative (ie. high) estimates. Finally, in the no-extension scenario, there is a one-off cost of £10m to resurface the runway
- **Environmental costs.** We have estimated greenhouse gas emissions costs. We provide details of this calculation subsequently in this report.

The visitor increases resulting from the runway extension could reverse recent decreases in visitor levels.



- The differences between scenarios are driven by the long-run increase in visitors. All scenarios phase in visitor demand using the same profile such that 10 years post extension the full impact on visitor volumes is realised.
- The High forecast provides the highest visitor estimate. Both the High and Intermediate scenarios estimate visitor increases substantially above the visitors required to break even (i.e. to ensure the costs of the extension are balanced by the benefits from visitor spend).
- The increase in visitors under the High scenario would roughly recoup recent declines in visitor numbers. Given that Guernsey recently accommodated higher visitor flows, this may suggest that wider constraints (e.g. available beds, airport capacity) would not limit visitor growth within a 10 year time horizon, with the potential to invest and plan over a longer time horizon.

The increase in visitors and spend can be divided amongst visitor types to produce an estimate of the value of the runway extension.

APPENDIX 3

The tables below provide the analysis of visitor numbers (top table) and visitor spend (bottom table) split by the type of visitor. As discussed in the methodology section, analysis of historical trends suggest the split between different types of visitors is stable.

A large majority of the increase in visitors are likely to be leisure visitors, followed by those visiting friends or relatives (VFR). Although business visitors are likely to make up a small portion of visitor numbers, they are likely to spend more per visitor than other visitor types.

('000) visitors	% of visitors	High	Intermediate	Break even
All leisure visits	71%	43	14	5.8
All visits friends/relatives	16%	10	3	1.3
All business visits	9%	6	2	0.8
All other visits	4%	2	1	0.3
Total		61	20	8.2

Annual visitor spend	% of spend	High	Intermediate	Break even
All leisure visits	78%	£30.1m	£9.7m	£4.1m
All visits friends/relatives	12%	£4.6m	£1.5m	£0.6m
All business visits	7%	£2.7m	£0.9m	£0.4m
All other visits	3%	£1.2m	£0.4m	£0.2m
Total		£38.5m	£12.4m	£5.2m

Note: Figures are used to develop scenarios, they are not a forecast. See methodology section for details.

The net benefits from visitor spend will be in the range of £115m - £534m, considerably higher than the cost of the runway extension

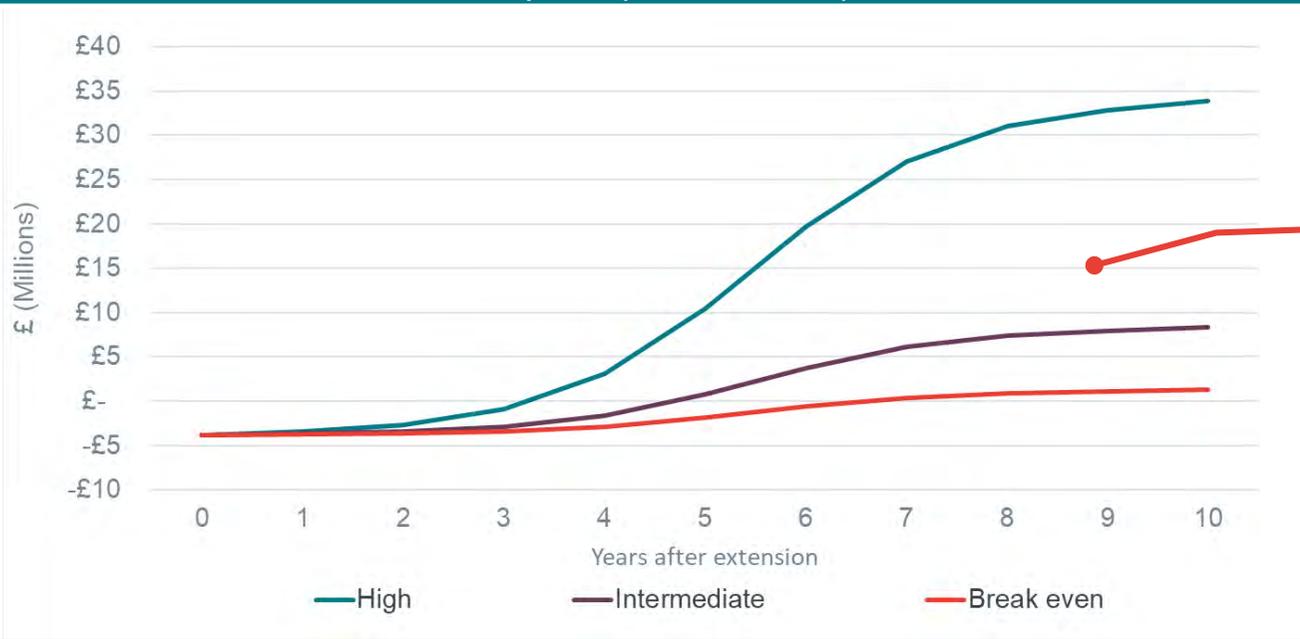
APPENDIX 3

The table below provides the net present value of the costs and benefits from the runway extension. The “break even” column shows the result of calculating the number of additional visitors that would be needed to just offset the costs of the runway extension. This break-even value, of 7,700 additional annual visitors, is well below existing estimates of the actual number of additional visitors in scenarios developed by us and others.

Scenario (differences against base case)	High	Intermediate	Break even
Long-run increase in <u>annual</u> visitors	61,000	20,000	8,200
Benefit from visitor spend (PV over 40 years)	£627m	£201m	£85m
Resource and environmental costs (PV over 40 years)	£-93m	£-86m	£-85m
Net benefits (visitor spend impacts only, PV over 40 years)	£534m	£115m	0

In the years immediately following the extension, the annual costs are likely to outweigh the annual benefits from visitor spend. The year in which the annual net benefits from spend begin to exceed the annual costs depends on our assumptions about timing of costs and benefits.

Incremental net benefit from visitor spend (annual basis)



The year in which annual net benefits exceed zero depends on:

1. Any disruptions to visitor flows during the extension installation. (not modelled these.)
2. The rate at which in visitor increases phase in. This depends on various factors such as airline and States marketing campaigns, and consumer awareness (we have modelled a 10-year ramp-up).
3. The timing with which costs are incurred. There may be some upfront extension costs that are not smoothly amortised. (We have modelled smooth amortisation.)

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Business facilitation and expansion – how do they come about?

The analysis of the visitor spending impacts suggests that the costs of a runway extension can be justified based on those alone. However, a complete cost-benefit analysis should also include benefits from business facilitation and expansion.

Existing businesses may expand their operations because of the opportunities provided by the runway extension. The size of the Guernsey economy means that individual decisions by individual businesses could have significant impacts on these estimates. In order to best capture the uncertainty created by the fact that individual decisions (which cannot be predicted) could have a significant impact on economic outcomes, we have evaluated the potential impact on businesses in two different ways:

1. A top-down approach based on the relationship between business facilitation and trade, and the effects of trade expansion on productivity and growth.
2. A bottom-up approach modelling the effects of runway extension on reliability, and through this on business productivity.

These elements are incorporated directly into our overall analysis of costs and benefits.

In addition, we received submissions from stakeholders regarding the likelihood of business-related benefits. These included:

- Statements on the effects low levels of connectivity could potentially have on lost finance sector activity and employment. Stakeholders submitted survey evidence in support of their claims. Investment funds found that the ability for potential customers to access Guernsey efficiently through known operators was an important factor in their competitive positioning vis a vis rivals in other jurisdictions.
- The Institute of Directors and Chambers of Commerce presented survey evidence about the effects of reliability and travel costs on businesses. They also submitted information on their assessment of lost business opportunities in the finance sector. A quantitative assessment and estimate of the economic impacts of lost finance sector activity based on this claim is presented in this section, but is not included in our overall analysis of costs and benefits.
- Statements pointing to feedback from tourism sector operators indicating that future investments in tourism infrastructure were on hold pending a decision on the runway extension. If the runway were to stimulate such investments, this would in turn generate wider benefits in terms of economic activity.

Business expansion benefits are valued at between £21 million and £153 million in PV terms (over 40 years), depending on business visitor increase scenarios

The analysis described in this section suggests additional benefits, in PV terms over 40 years, of £21 million to £153 million from business facilitation and expansion effects using the top down approach. The estimated benefits are lower using the bottom-up method: they range from £11 million to £87 million. The difference is not necessarily surprising: the bottom-up approach considers a narrower range of effects, as explained later in this report. We use the results from the first methodology for our overall calculus since the methods used in it have been applied to various situations and contexts globally.

Both sets of results tell a consistent story: greater connectivity can have significant effects on businesses, and through that on economic activity. They suggest that the benefits measured solely on the basis of visitor spending are likely to significantly understate the overall benefits of runway extension. And notwithstanding the uncertainty surrounding the estimates, the runway extension preserves the option that they may be realised.

The small size of the Guernsey business community means that individual decisions by individual businesses could make a significant difference to these estimates. Given the unpredictability of such individual decisions these estimates should be treated with caution.

The table below summarises the NPV effects for the different methodologies.

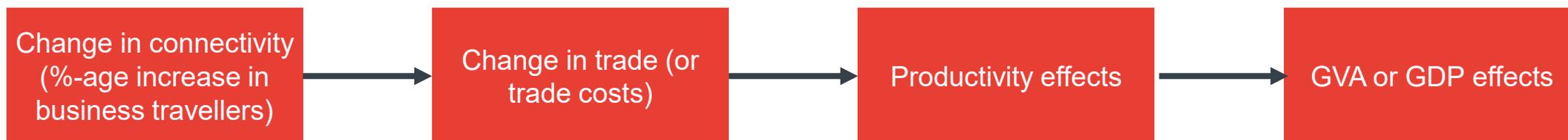
Present value of GVA increases under the...			
	Break even scenario	Intermediate scenario	High scenario
Top down: connectivity, trade, productivity and growth	£21m	£86m	£153m
Bottom-up: connectivity, business efficiency and productivity, growth	£12m	£28m	£87m

In addition, **stakeholder inputs** raised the issue of costs to Guernsey if no extension were forthcoming and businesses relocated elsewhere. Based on a view that this would lead to lost opportunities equivalent to 30-45 finance sector jobs per year, we estimated annual GVA losses at between **£3.4 and £8.6 million per year**. We do not include these results in our analysis of net benefits. However, they can be viewed as sensitivities around these results, in particular as a guide to additional costs of a no-extension scenario

Our first approach was to estimate the effects of increased connectivity on business expansion “top down”.

A “top down” approach draws on the research connecting connectivity to the reduction of transactions costs, and the research connecting transactions costs to productivity

The key steps of the analysis are summarised in the schematic below.



One advantage of this approach is that the focus on productivity responds to concerns raised by stakeholders that lack of air connectivity was one of several factors that contributed to a “productivity trap” i.e. a situation in which lack of connectivity inhibited business expansion, which in turn inhibited productivity growth, with further consequences that Guernsey would forego opportunities for further investment and growth.

The framework also has the advantage of drawing on an established empirical findings, including

- Empirical research into the relationship between connectivity and trade and trade costs
- Empirical research into the relationship between trade and productivity

Both lines of research typically estimate measures of responsiveness (“elasticity”) of trade to changes in connectivity and productivity to trade. These measures are averages, and are estimated across countries. We therefore need to adapt these estimates to Guernsey.

To do this, we look at qualitative evidence as to which sectors are likely to benefit from a reduction in transactions costs brought about by the increased business travel. The evidence from our consultation with stakeholders suggests that the main sector in which these effects are detected is the financial sector. This is because of the importance of personalised, face-to-face contact in developing client relationships and managing clients’ businesses. Stakeholders also pointed to the value of being able to accommodate a higher number of business and private jets. Specifically, we focus on financials services trade: the extent to which Guernsey is able to attract funds from outside the island. This counts as cross border trade by Guernsey based institutions and consumption abroad by clients based off-shore.

Note: See Annex 5 for all references and literature referred to in this “bottom-up” approach

The “top down” approach focuses on the impact of new trade in raising the productivity of Guernsey-based businesses.

How does increased business travel increase trade flows

We use a gravity model of trade to provide a proxy for the impact of the runway extension. Gravity models of trade represent trade between any pair of partners as proportional to their size and inversely proportional to the square of distances between them. In this context, distance can capture trade costs generated by transport. Frontier’s gravity model of international services trade flows augments the basic model with other policy variables measuring services trade restrictiveness. It suggests that a 1% reduction in distance boosts trade in services by around 0.6%.

An alternative methodology, used in other research, is to measure the change in trade resulting from business travel directly. This gives a responsiveness of around 0.3% to every percentage change in business travel.

We can treat the two estimates as lower and upper bounds. The first estimate might overstate the effects of business travel connectivity since there are other factors that may be captured in the model but are not related to the ease of business travel. The second estimate may understate the effects since it includes sectors that may be less “relationally-intensive” than financial services.

Responsiveness of productivity to trade .

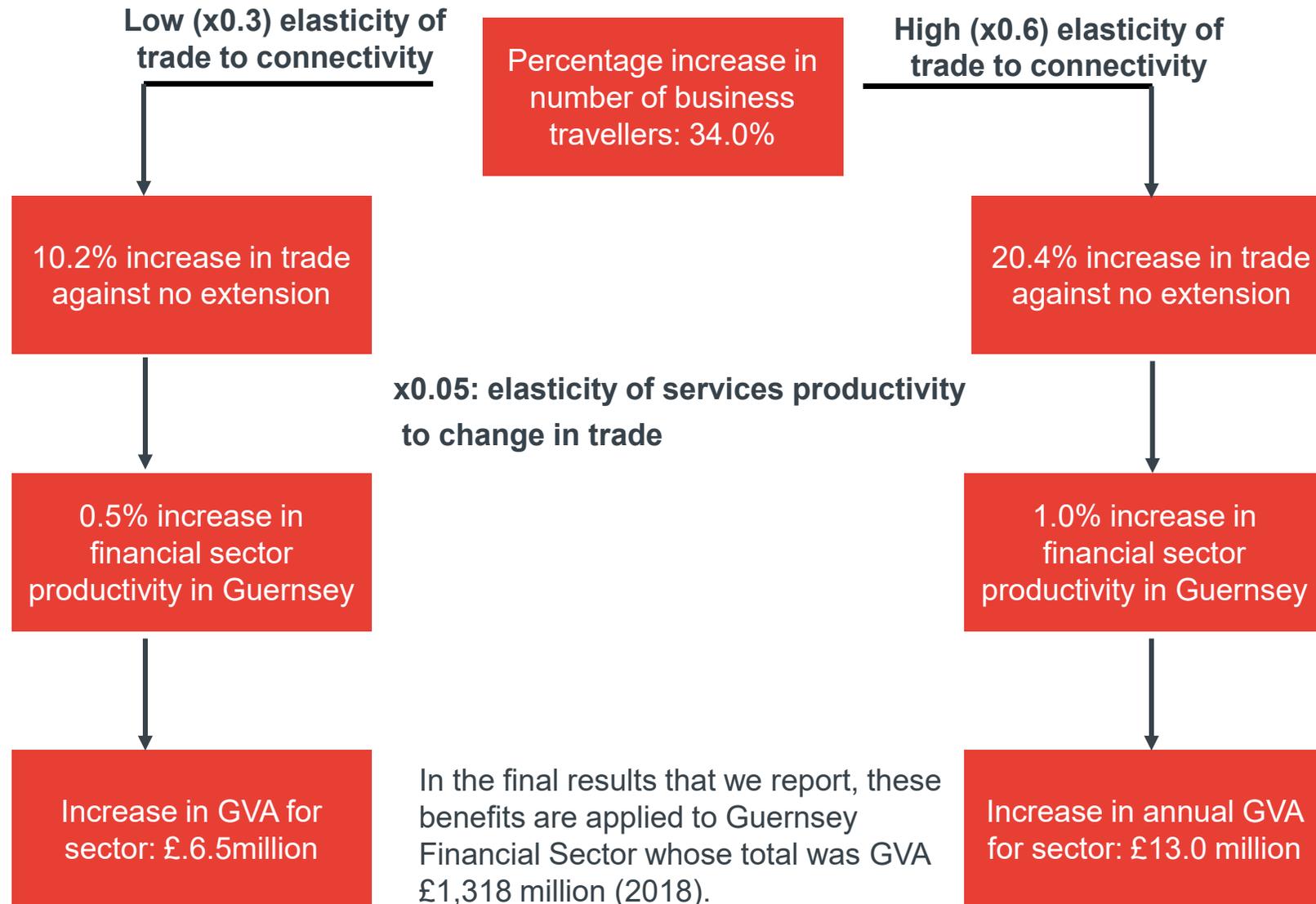
Empirical research provides estimates of the relationship between trade and productivity. The empirical evidence on this is vast and points to a fairly wide range of effects depending on the countries in question. The literature suggests an intermediate value of 0.4%. This figure may overstate the impact for financial services in Guernsey because: (1) the results capture economies of scale that are more prevalent in manufacturing than in services and (2) the results also capture the effects of global value chains and the gains from international specialisation in production, which is less relevant to Guernsey. Research into trade costs and productivity suggests that productivity gains in services might be around 12% of those measured overall. We use this as a conservative estimate and adapt the 0.4% figure downwards accordingly.

Applying these estimates to financial sector GVA

The schematic on the following page shows how the methodology is applied. We begin with the proposed uplift in connectivity, measured as the percentage change of business travellers. We then multiply these by a parameter that measures the responsiveness of trade to connectivity (0.3 in the low case on the left, 0.6 in the high case on the right). This gives a percentage change in trade, which we then multiply by a parameter measuring how productivity changes in response to trade. This percentage uplift is applied to sector GVA to yield an increase in GVA

Note: See Annex 5 for all references and literature referred to in this “bottom-up” approach

Depending on the responsiveness of trade to connectivity we get a range of benefits from £6.5m to £13.0 per year in GVA .



Note: see explanation of pathways in preceding slide

The “top-down” trade-based analysis suggests benefits to the finance sector of £2m to £13m.

Visitor increase scenario relative to baseline	Percentage change in business travellers	Percent change in trade as results of projected change to business travellers (scenario A – low, and scenario B – High)		Percentage change in productivity response to change in trade (scenario A – low, and scenario B – high)		Range of finance sector GVA effects (millions of pounds per annum)
		A	B	A	B	
High	34.0%	10.2%	20.4%	0.5%	1.0%	£6.5 to £13.0
Intermediate	11.0%	3.30%	6.6%	0.2%	0.3%	£2.1 to £4.2
Break even	4.5%	1.4%	2.7%	0.06%	0.1%	£0.9 to £1.8

The table summarises the results of the methodology depicted in the previous slide across all three visitor scenarios relative to a no-extension case for the finance sector. As discussed – we focus on the finance sector because evidence suggests they benefit the most from connectivity improvements. However, to the extent that other sectors also benefit this would only add to the total value of benefits.

The last column presents the annual impacts on finance sector GVA in millions of pounds, relative to the no extension case

The number reported are the result of cumulatively applying projected changes in business travellers to trade flows changes, and trade flows to productivity changes which are then applied to national accounts that present data on finance services sector GVA

The range reflects the differences between parameters used to compute the responsiveness of trade to changes in business numbers,

To the extent that the effects on passenger changes materialise progressively, the effects on GVA will also materialise progressively

The GVA effects are additional to the spending effects derived under the visitor spending effects analysis

The GVA effects are based on linear extrapolations from current values. They are conservative in the sense that they do not capture the possibility that increased connectivity could lead to step changes in business activity. (For example, as a result of the relocation of a large financial services business). Such step changes are inherently difficult to model. What could be said is that the extension, at the very least, preserves the option for such a step change to occur.

The “top down” approach to business expansion suggests benefits of £21 million to £153 million in PV terms.

We present the results in the previous table in present value terms over the 40 year life of the extension.

In order to do so, we use the same discount rate as used for the visitor spend analysis. Because the number of business travellers increases progressively, we assume that the business-related benefits calculated through this channel do not materialise immediately. As a conservative assumption, we assume that benefits only materialise after 7 years (reflecting the S-shaped profile of passenger increases).

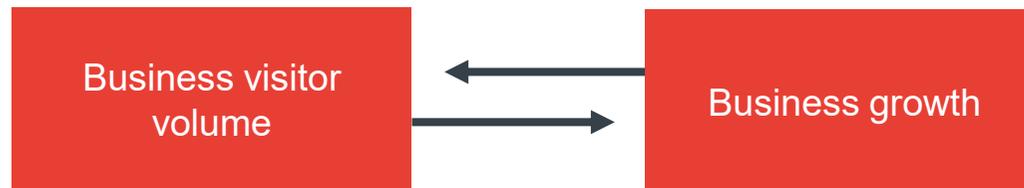
Using the mid-point of the ranges presented in the table in the preceding slide, the NPV of business facilitation and expansion benefits is:

- High scenario: £153 million
- Intermediate scenario: £86 million
- Break even scenario: £21 million

An alternative, bottom-up, approach focuses on the link between individual business decisions and connectivity.

The second approach to estimating business impacts is to investigate the decisions of individual businesses (“bottom-up”). We focus on finance sector for this bottom-up approach. Financial services forms a plurality of the Guernsey economy, and air connectivity is relatively important to the sector, as evidenced by the feedback in our stakeholder consultation. To the extent that other sectors would also benefit, the estimates provide a conservative view of total impact.

Many factors contribute to business growth, and improved connectivity may interact with these factors in complicated ways. A central challenge in estimating the relationship between business visitors and business growth is that they simultaneously impact one another: visitors affect business growth at the same time that growth affects visitors.



The principal features of air connectivity that affect business growth in finance are:

- Access to London routes
- Reliability of services
- Availability of a carrier with a global brand

In this analysis we focus on the first two points: the impact of reliability on London routes. The effect of carrier brand is difficult to measure, especially within the specific Guernsey context. To the extent that the effect of carrier branding would contribute to the impact of the runway extension on business stimulation, our estimates are conservative in omitting it.

We use a combination of Guernsey and Jersey data, in order to increase the data from which we draw inferences. One possible approach to this issue would be to estimate the effect of the introduction of easyJet in Jersey in 2008. However, this is complicated by the simultaneous structural discontinuity in the financial services industry during the financial crisis. As it is difficult to robustly remove this effect from the data, we have focussed on the period since 2012.

Our approach is based on the increase in finance sector activity from improved reliability arising from the runway extension.

In order to estimate the effect of an increase in business visitors on business growth, we focus on estimating the effect that an increase in London flight reliability would have on business visitor volumes, and how this feeds through to finance sector GVA. In focusing on Finance GVA, we avoid double-counting visitor spend, which falls within other subsectors.

We estimate the effect of flight reliability for the following reasons:

- Stakeholder evidence suggests that the runway extension will likely improve reliability.
- Reliability is an important consideration to businesses making travel arrangements. Moreover, businesses have access to high quality reliability information online and from personal experience, and so should be responsive to changes in reliability
- Flight reliability is a result of weather conditions and carrier operations, and therefore reliability is likely to be unaffected by GVA. It is statistically useful as an exogenous source of variation in business visitor volumes.

We break the estimation down into the following components:

1. How does flight reliability on London routes affect business visitor volumes?
2. How do business visitor volumes comove with GVA?
3. Combining the previous steps: how do business visitors affect GVA?

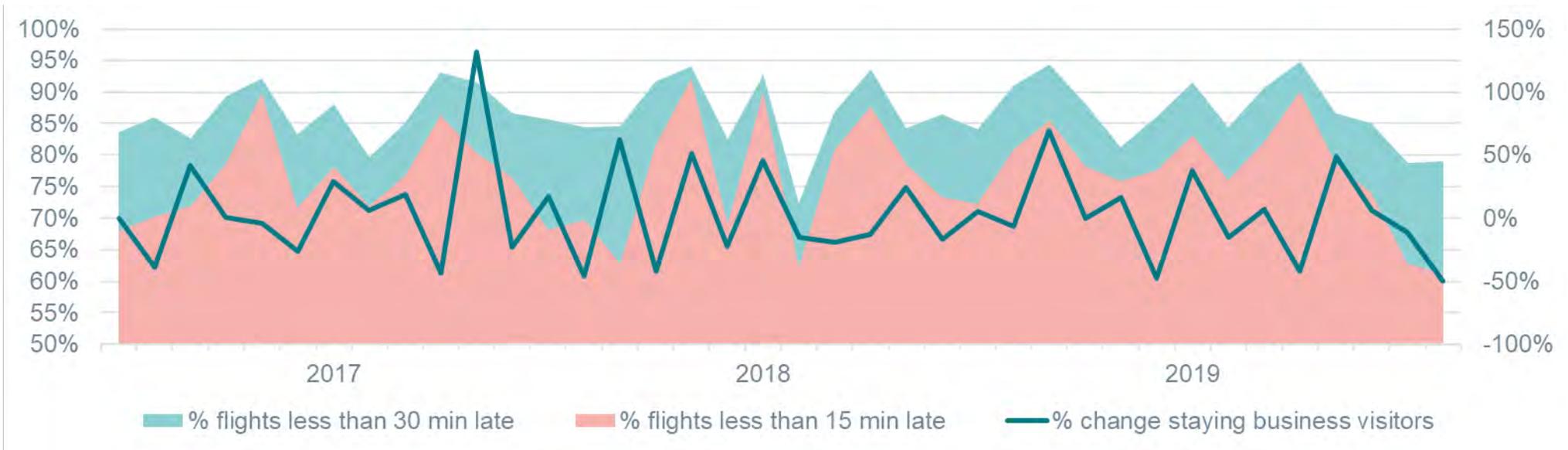
Isolating the effect of increased reliability



In the first step we investigate the relationship between reliability and business visitors.

The charts below shows the probability of flights to London (Gatwick, Heathrow, London City) being on time (axis on the left) and staying business visitors volumes (axis on the right). We undertake a simple statistical test to understand whether these two factors are correlated.

Probability that a flight between GCI and LGW, LHR or LCY arrives within a window of the scheduled time, and % change in staying business visitors



Sources: Punctuality data from CAA. Business visitor data from States of Guernsey.

The statistical analysis of the relationship shows a small, positive link – albeit with important caveats.

We have regressed staying business visitors on flight reliability measured at the monthly level. Our main specification examines the relationship between a % increase in flight punctuality and a % increase in staying business visitors. As a sensitivity, we have also reported the relationship between a % increase in flight punctuality and the level of staying business visitor volume.

Window of scheduled time	A 1% increase in the probability of flight arriving within window corresponds with the following % increase in staying business visitors:	95% Confidence interval	A 1% increase in the probability of flight arriving within window corresponds with the following increase in number of staying business visitors:	95% Confidence interval
Less than 15 min late	1.0%	(-0.49%,2.49%)	0.35	(-1.41,2.11)
Less than 30 min late	1.39%	(-1.24%,4.02%)	0.98	(-1.62,3.58)

Sources: Frontier analysis of: Punctuality data from CAA and business visitor data from States of Guernsey.

Notes: Data spans July 2016 to August 2019. N=38. All regressions included a time trend. One outlier observation was excluded from this analysis and charts on previous slide (September 2019) due to anomalously high staying business visitor volumes.

We estimate a positive relationship between the reliability of a flight and the number of staying business visitors. We note that these results are not statistically significant, as we are estimating a small association with a limited sample size. As we can estimate the relationship between staying business visitors and the 15-minutes late reliability measure with more precision than the 30-min late measure (i.e. the confidence interval is narrower), we use this estimate in our calculations.

In the following calculations, we take the conservative estimate from these results, that staying business visitors increase 0.35% from a 1% increase in flights arriving less than 15 minutes late.

The second step is to understand how an increase in business visitors may be linked to increased business output.

There are many potential pathways through which business visitors can impact business growth. In order to provide a cross-check of our qualitative evidence on these pathways, we have looked at Jersey's Business Tendency Survey.

This quarterly survey reports various measures of business activity, business outlook, costs, prices, profitability, and employment. The units of the survey measures are:

*(% respondents who answered that this area has improved in the last quarter) –
(% respondents that answered that this area has become worse in the last quarter)*

We note that this scale does not easily translate into real or monetary units, and so this exercise is a qualitative cross-check of our other analyses.

We investigated correlations between quarterly business visitors to Jersey and each of the quarterly business tendency measures. We looked at each business tendency item measured across all sectors, only within finance, and only within non-finance sectors.

The only statistically significant relationships between business visitors and the business tendency measures were within finance. We have reported these below. This provides some further evidence of an effect of business visitor volumes on growth outlook in the financial sector.

Jersey business tendency survey

Sector	Measure	An increase of 1,000 business visitors in the quarter is associated with an increase in the measure:	P-value
Finance	New Business	2.5	0.05
Finance	Input Costs	1.8	0.08
Finance	Profitability	2.8	0.05
Finance	Business Optimism	3.2	0.007
Finance	Parent company perspective	3.6	0.05

Source: Jersey Business Tendency survey

Focusing on the finance sector suggests that more finance visitors increases GVA by measurable amounts.

We find evidence of a relationship in Guernsey between the annual change in business staying visitors and financial sector GVA.

Guernsey staying business visitors and finance GVA



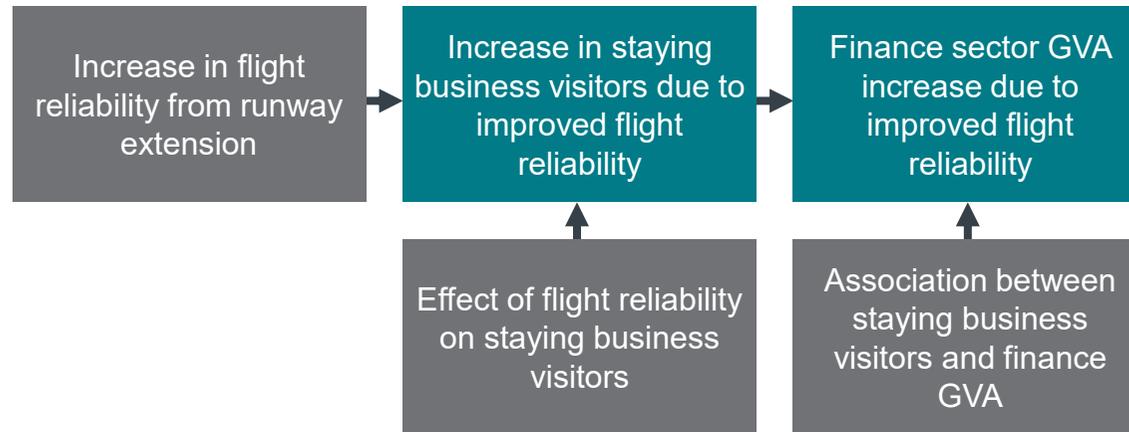
Model	A % increase in staying business visitors is associated with	95% Confidence interval
A % increase in Finance GVA of:	0.1%	(-0.69%, 0.92%)
A level increase of	£5.8m	(£-13.26m, £24.93m)

Source: Frontier analysis of data from States of Guernsey and Guernsey GVA GDP Bulletin

We take the more conservative estimate, which is the model of percentage increases to GVA.

The analysis suggests that the runway extension could increase annual business GVA by up to around £5m.

We estimate the effect of the runway extension on GVA with the following steps:



In 2019, 76% of flights to and from Guernsey Airport arrived within 15 minutes of the scheduled time. We assume that under the runway extension, the percentage of flights arriving later than this 15-minute window will increase to 86%, which is the current percentage of flights arriving no later than 30 minutes late.

We then calculate the expected long-run annual increase in business visitors that is due specifically to increases in reliability. We then calculate the increase in finance sector GVA that we expect to result from this increase in business visitors.

We note a caveat to these results. The business visitors that cause GVA growth may not be the same kind of visitors who travel to Guernsey specifically due to improvements in flight reliability. We assume that GVA growth results equally from visitors who travel to Guernsey due to flight reliability, and visitors who travel to Guernsey for other reasons.

We find the long-run annual increase in Finance GVA that would be due to increased reliability under the High Scenario is £5.2 million. We have scaled this figure down to estimate the GVA increase under the Intermediate and Break Even scenarios by the relative numbers of visitors.

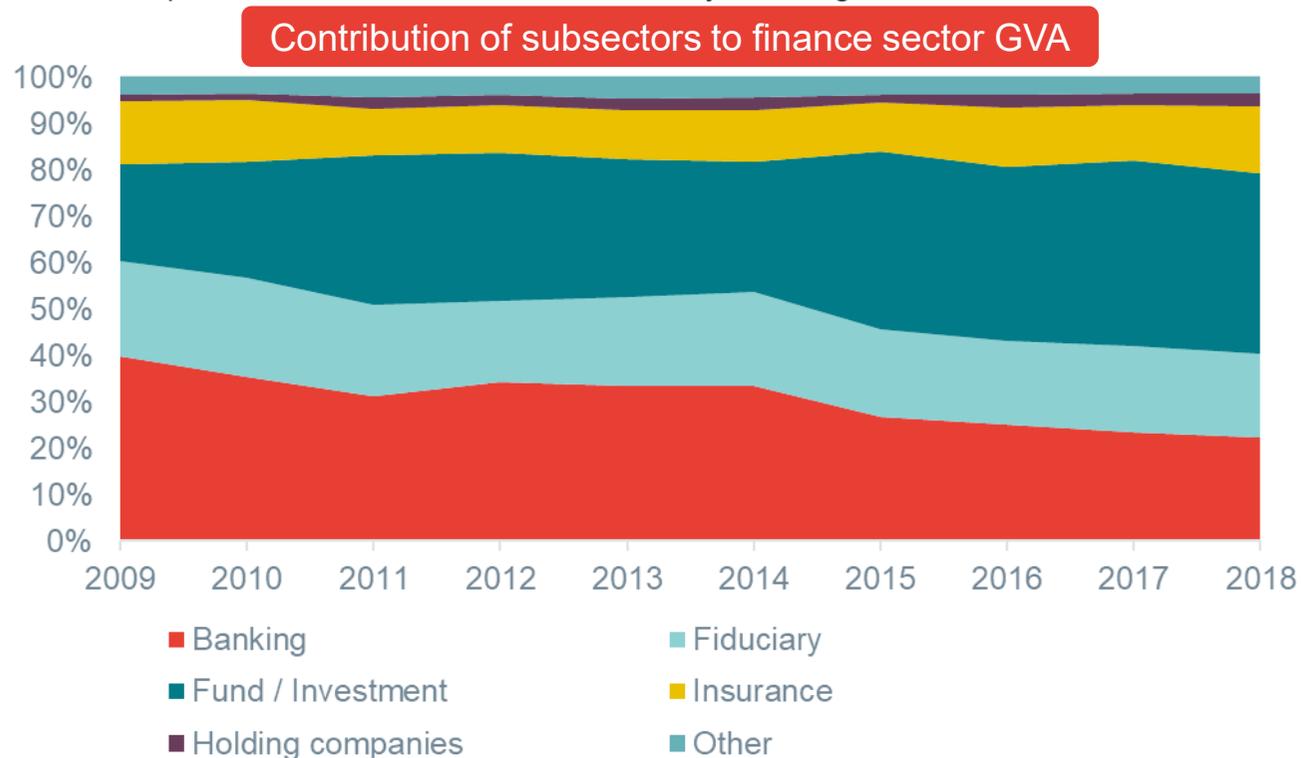
	High	Medium	Break even
Increase in Finance GVA from increase in staying business visitors	£5.2m	£1.7m	£704,000

The changing distribution of finance subsector GVA points to the importance of air connectivity for future growth.

Research evidence suggests that air connectivity reduces local investment bias, where local investment bias is the tendency to invest locally because the investors feel they have more knowledge about the conditions and factors that affect returns to investment (see notably Zhi Da, Umit G. Gurun, Bin Li, and Mitch Warachka (2019) “Investment in a Smaller World: The Implications of Air Travel for Investors and Firms”, *Management Science*, <https://doi.org/10.1287/mnsc.2019.3452>).

While that research focused on equity raisings by firms, a similar logic applies to investment fund management activities. This is because the decision to commit to a fund involves a screening process that is made easier by face-to-face communication, which in turn is facilitated by air travel. This view was corroborated by interviews with fund managers. They also pointed out that clients valued the ability to access destinations via airlines that had punctual air links and a strong brand reputation.

As investment funds are a growing share of Guernsey’s finance GVA, air connectivity is likely to be particularly important to future growth in the sector. While Funds / Investment composed 21% of Finance GVA in 2009, by 2018 it grew to 39%.



Evidence from stakeholders largely supported the view that connectivity is important – particularly in financial services.

Connectivity can affect the ease of doing business through a variety of channels.

In principle, the effects of improved connectivity can improve the ease of doing business through various channels, notably: (1) by reducing the costs of acquiring inputs to running businesses (whether physical inputs or labour) and of getting goods to market (2) by reducing wider business transactions costs, notably those associated with establishing buyer-seller relationships (whether on a B2B or B2C basis).

These channels can in turn contribute to the expansion of existing businesses, and also the establishment of new businesses.

Connectivity appears more important for sectors in which the quality of personal relationships is important, notably finance

Various submissions pointed to the detrimental effects of poor connectivity on business prospects. These submissions are dominated by businesses in which relationships through personal contact are important. Finance sector activities, are the prominent example, The reason such contact is important is that it helps to deal with informational asymmetries: i.e. to build reputation for service quality.

Data collected by the Institute of Directors/ Chamber of Commerce, reported that in 2018, of 477 respondents, close to 90% indicated that the evolution of air links in the previous 5 years had contributed negatively to their business. Frequent criticisms related to the cost of travel for business and clients. The latter effect, combined with the relative lack of connectivity in Guernsey relative to Jersey, had, in the opinion of respondents, contributed to lost business opportunities. (e.g. funds being placed in Jersey and not Guernsey).

By contrast the initiation of the open-skies policy post 2018 has contributed to an improved perception of the effects of air connectivity on business operations. A survey of business attitudes in 2019 revealed that of 270 respondents, around 40% had thought changes to air links had made a positive contribution to their businesses, with 40% neutral and 20% seeing a negative contribution.

The effects of improved connectivity may be less about business expansion and more about avoided losses

This data and the tenor of comments – notably about the threat of lost businesses – suggest that the appropriate focus, in the short-to-medium term at least, of connectivity is on loss-reduction. That is also in line with other considerations (full employment, restraints on population growth) that make analyses projecting a step change in investment and business expansion, less relevant to Guernsey's situation

Data submitted by the IOD, based on a survey of businesses, estimated that 30-45 financial sector jobs per year were at risk from a finance sector institution choosing to close or relocate.

Submissions made as part of the evaluation provide a third view of potential business impacts.

Survey data provided for the finance sector suggests indicative GVA losses between 0.11% and 0.27% per year depending on assumptions. These results could be used in discussing sensitivities around the core modelling results

To ascertain the overall impact of losses/ foregone opportunities, we need to take into account that workers move between sectors. A worker losing a job in the finance sector may be reemployed elsewhere; similarly, in the presence of full employment and restraints on inflows of workers, an expansion of employment would require reallocation for other sectors. Hence any contracting (expansion) effect in finance would need to be set against an expansion (contraction) effect in other sectors. The net effect on GVA will depend on the relative productivity of workers in each sector.

GVA per employee in the finance sector is around £190,200 per year, compared to around £76,500 for other sectors. If all 30-45 workers that were lost from the finance sector were redeployed in other sectors, the lost GVA would be between £3.4 million and £5.1 million, or between 0.11 and 0.16 percent of GVA per year. If none of the lost workers were deployed (for example, if they left Guernsey), GVA losses would be between £5.7 million and £8.6 million per year, or between 0.18% and 0.27% total GVA per year.

The figures provide illustrative evidence of how foregone opportunities could translate into wider economic impacts. As they are based on survey evidence, they form an input into the overall evidence base. We do not include them in the formal modelling analysis, but treat them as a factor to take into account when considering sensitivities around the core modelling results.

Although it is important to note that some stakeholders were sceptical about the extent to which air connectivity was the main binding constrain on business

In Guernsey's specific context, various submissions, notably by the CGI, alluded to the existence of multiple constraints affecting business establishment and expansion in Guernsey, including constraints on skills and demographic factors. These, rather than connectivity to and from Guernsey, were deemed to be the binding constraints. Some businesses averred that air connectivity had little or no bearing on their operations. Other submissions pointed to the growing value of remote technologies in conduct of business. This was notably the case for tech-sector start-ups.

Summary of business facilitation and expansion effects

We have estimated two different mechanisms through which the runway extension can generate business facilitation and expansion effects, and through this stimulate economic growth.

- A top down approach based on the effects of runway extension in stimulating cross-border trade in financial services. We draw on evidence suggesting that financial services are particularly dependent on connectivity, given the highly relational nature of the business and the importance of facilitating contacts between service providers and clients. Increases in cross-border trade stimulate productivity increases, which in turn facilitates the expansion of economic activity
 - The gains through this channel are estimated at between £21 million and £153 million on a PV basis. The upper end of this range would more than cover the costs of the runway extension. The lower end of this range would mean that there are net gains under a scenario in which visitor spending effects (measured in the previous chapter) are just sufficient to cover the costs of the extension.
- A bottom up approach based on estimating effects of improved reliability on finance sector productivity. We draw on a bespoke analysis of reliability trends and their relationship to productivity in Guernsey, on the grounds that improvements in reliability increase the propensity for business visits, which stimulates financial sector productivity by facilitating transactions.
 - The gains through this channel are estimated at £11 million and £87million in PV terms. The results are lower than the impacts estimated through the first method, which is comprehensible given the differences in focus. Nevertheless, they tell a consistent story.

Stakeholder input corroborates the analysis reported above, and also sheds light on potential costs under a no-extension scenario

- The current situation is associated, in the view of stakeholders, with multiple constraints on businesses operating in the finance sector. These costs could divert business away from Guernsey. The lost GVA effects associated with such diversion are valued at between £3.4 million and £8.6 million per year. We do not include these figures in the overall net benefit calculus. But they could be interpreted as a sensitivity around these, particularly in relation to the cost of no extension.

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In addition to economic growth effects, the runway extension could generate a range of other benefits.

The economic effects of runway expansion on GVA are likely to generate increased government revenues. If the current tax regime remains unchanged then increased visitor spending and increased financial sector output would increase tax revenue for the States. We present high-level estimates of the size of the potential increase.

We have also been provided with some evidence that the runway extension project has the potential to generate benefits to Guernsey residents through the following channels:

- Improved access to residents to healthcare facilities and services off-Island
- Improved access to cultural and sporting activities, whether through the organisation of these on-island or access to these off-Island.

The runway extension project also has the potential to generate environmental and social impacts through:

- Effects on aircraft emissions and noise
- Effects of the execution of the extension project itself on the environment, and on social goods that might be affected by changes in land use.

:

First, growth in GVA leads to higher tax receipts.

Increases in tax revenue as a result of direct spending GVA effects and business expansion GVA impacts

The runway extension is projected to generate GVA increases through the effects of increased visitor spending, and through business expansion effects. This means that the overall resource base for the economy has increased, which in turn increases the resource base from which the States raises tax revenue.

It is common practice world-wide to develop fiscal policy by projecting growth in the taxable resource base for governments by projecting growth scenarios (see references below). In estimating fiscal impacts of the uplift in growth projected by the extension scenario, we need to take into account the specificities of Guernsey's tax system, including:

- Corporate tax rates of zero on non-financial sector activity, and 10% on the finance sector
- A 20% income tax rate on net income after the application of allowances

In order to work out the effects of increased growth rates on tax, we used the following methodology:

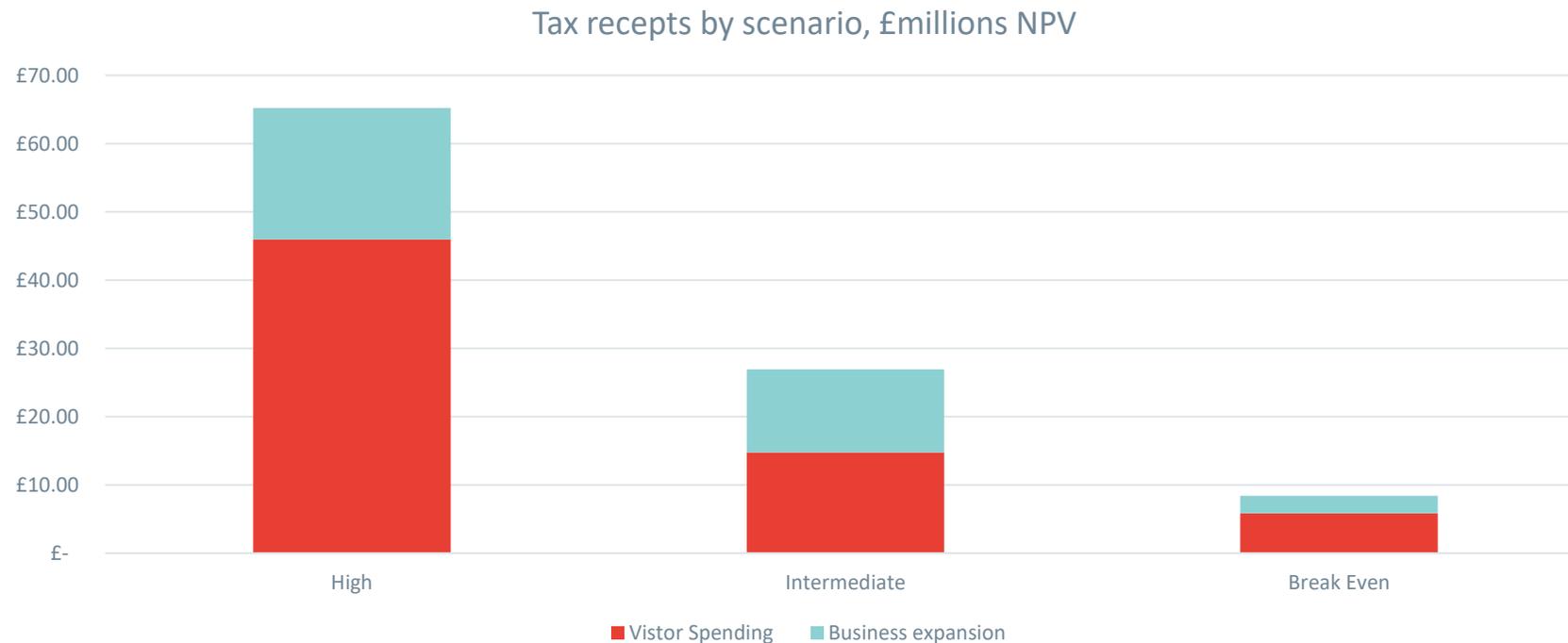
- For increased GVA generated by visitor spending, we estimated the share of increased GVA accounted for by earnings, on the basis of existing data which shows that employment accounts for around 42% of total GVA. We used data from the States schedule of benefit payments and contribution rates to subtract that portion of the 42% was attributable to pension and social security contributions made by employers and employees (controlling for different rates of contribution for employed and self-employed by looking at the relative shares of these two classes of workers in 2019). We then computed the tax receipts from this share based on a rate of 20%. The approach is conservative since it assumed that all visitor spending is directed to sectors that face a zero tax rate on profits
- For increased GVA generated by business expansion in the finance sector, we separated out shares attributable to profits and shares to employment earnings. We used a split of 65% v 35% based on trend in recent years. The profits share was assumed to be taxed at 10%. The employment earnings were taxed according to the methodology described in the previous bullet point

References: see notably Gerrit Koster, Christoph Priesmeier (2017), Revenue Elasticities in Euro Area Countries, ECB Working Paper No.1989; Paulo Dudine and Joao Tovar Jalles (2017) "How buoyant is the tax system: New evidence from a large heterogeneous panel", IMF Working Paper WP/17/4

In PV terms, tax receipts increase by between £8.5 million and £65 million over the 40 year period.

The tax increases assume no change to tax structure and constant shares of GVA by sector, and within sectors for employment earning and profits

The chart reports the results by scenario, and reports the break down by visitor spend impact and business expansion impact



We have also received evidence that improved connectivity could lead to better and more affordable access to healthcare for residents. **APPENDIX 3**

Gaps in specialist medical skills in Guernsey sometimes require that residents need to travel off Island to access treatments. In 2019, the authorities report that 11,622 movements (outbound and inbound) took place. The vast majority of these are to the UK, with Southampton as the preferred destination on account of its proximity.

Data on referrals suggest that around 54% of referrals are for patients that are outside the age range of 18-60. Patients in this range are more likely to require assistance via another accompanying adult.

Potential cost-savings from increased connectivity can be categorised as follows:

- Lower air fares for a patient, which would be a saving directly accruing to the exchequer given that the state bears the cost of patient travel
- Lower air fares for accompanying adults, which would accrue to them in most cases, unless means-tested state support is provided
- A higher frequency of flights could increase the possibility of making day returns, saving costs related to accommodation and also the opportunity cost of time for patients and for carers
- If the runway extension and associated works leads to fewer flight disruptions, this would reduce costs associated with rescheduling treatments and prolonged stays.

Our modelling of the intermediate scenario suggest a reduction in fares of around 39% for routes to Gatwick and Southampton. By way of illustration, the States has a set return rate for Southampton at around £172. There were around 4000 bookings for the Southampton route for health referrals in 2019. Assuming travel for health referrals is not sensitive to price, that would imply a savings of around £270,000 to the States in 2019 on that route alone.

Note: data and evidence above provided by the Health and Social Care and Employment and Social Services Committee.

Improved connectivity is important for cultural and sports activities, some stakeholders have suggested.

Stakeholder consultations emphasised the importance to Guernsey of sporting and cultural events. Both are dependent on connectivity because:

- Guernsey's small size means that sportspeople and performers need to access competitions and events off-Island, mainly in the UK. For example, Guernsey Football Club participates in regional football competitions in South-East England. The prospects for participating in larger-scale competitions and events held off-Island is important in terms of progression pathways in both sports and artistic contexts.
- More generally, consultations pointed to the benefits to residents of engaging in cultural events off-Island.
- Affordable travel options to Guernsey are an important factor in the ability to organise events on-Island, in terms of attracting participants (artists, performers, sports people), as well as visitors. Consultations pointed to a growing “events culture” in Guernsey.

There are various spillover benefits of facilitating access to sports and cultural events:

- Visitors to Guernsey generate revenue to businesses, including hoteliers and restaurateurs. Stakeholders consulted suggested around 3,000 to 3,500 bednights sold to participants in arts and cultural events.
- Hosting events, and facilitating access to participants can enhance the attractiveness of Guernsey. Aside from the direct benefits to residents, this can facilitate the attraction and retention of workers.

We also address the three categories of environmental and social impacts of extension.

CO2 Emissions

Our approach is to model the additional CO2 emissions impacts for incremental flights that are set up as a result of a net increase in passengers from runway extension. The incremental flights on routes from the following are used:

- 1. Frontier Intermediate Case Modelling Results**
- 2. High Case Modelling Results**

These impacts are measured in terms of **total additional CO2 produced**, which is converted into a **£ value for social cost**.

Two different methods are used to model the additional CO2 and social cost for a given flight:

- a. Emissions per representative aircraft:** use an estimate of fuel burn for a particular type of aircraft (e.g. A319) on a given route length, and convert it to CO2 produced.
- b. Emissions per passenger-km:** use a direct estimate of emissions per passenger-km from a public source

The social cost of CO2 per flight is scaled up to total annual social cost for each of the Intermediate and High results.

Noise

Our approach is to use publicly available data on aircraft noise at the standard three certification points (Lateral, Flyover, Approach) **to measure the total additional noise generated by a single flight by different aircraft** – namely, A320neos and ATR-72s.

This data is used with output from Frontier Intermediate and High Case modelling to calculate the **projected total additional annual noise as a result of runway extension**. We have calculated a value for the current level of aircraft noise at Guernsey airport, to provide context to the additional noise that will occur due to runway extension.

Other environmental and social costs

These result from the extension process itself

- Environmental costs of the extension process: e.g. impact on landscape from clearing and filling
- Social impacts of changes to land use

The analysis of these effects is preliminary. It provides information that we incorporate into our assessment of net benefits. At the same time, our research indicates the need for a more in-depth study of these effects.

Three methods were used to model the social cost of CO2 emissions for incremental flights.

The methods used are described below. There are two alternative approaches for the per passenger-km method, each with different underlying data.

Method A: Representative Aircraft approach	Method B1: Per Passenger-km approach	Method B2: Per Passenger-km approach
<ol style="list-style-type: none"> 1. Take raw data for fuel burn (gallons) for a given aircraft (e.g. A320neo) on a 1100km flight 2. Convert fuel burn from gallons to kg. Divide by 1100km, to reach fuel burn (kg/km) 3. Revise the fuel burn (kg/km) number upwards to account for flights out of GCI being shorter than 1100km 4. Convert fuel burn (kg/km) to CO2 produced (kg/km) using an emissions factor 5. Multiply up by flight distance to reach a CO2 produced value for a GCI flight 6. Reach a social cost £ value per flight related to CO2 production, by multiplying by a monetary value computed by the UK government 7. Multiply the social cost related to CO2 emissions per flight by expected number of incremental annual rotations to calculate total annual social cost related to CO2 emissions on new flights. 	<ol style="list-style-type: none"> 1. Take raw data on average airline CO2 emissions per passenger-km from UK government sources. Use data for both domestic flights and short haul European flights 2. Scale up using data for number of passengers and distance to reach a figure for total CO2 emissions on a GCI-LGW flight 3. Calculate a social cost £ value per flight related to CO2 production, by multiplying by a monetary value computed by the UK government 4. Multiply the social cost related to CO2 emissions per flight by expected number of incremental annual rotations to calculate total annual social cost related to CO2 emissions on new flights. 	<ol style="list-style-type: none"> 1. Take raw data on average airline CO2 emissions per passenger-km for a low-cost airline's flights. 2. Revise the CO2 emissions per passenger-km number upwards to account for average Easyjet route distance being larger than GCI-LGW route 3. Scale up using data for number of passengers and distance to reach a figure for total CO2 emissions on a GCI-LGW flight 4. Calculate a social cost £ value per flight related to CO2 production, by multiplying by a monetary value computed by the UK government 5. Multiply the social cost related to CO2 emissions per flight by expected number of incremental annual rotations to calculate total annual social cost related to CO2 emissions on new flights.

The methods are used to estimate CO2 emissions for a given flight between airports. This information is then used to calculate additional CO2 and corresponding social cost for the set of Frontier Intermediate and High Case results on the incremental flights operated as a result of extension. Consolidation of pre-existing flights operated by smaller planes (e.g. ATR-72s) into bigger planes (e.g. A320neos) is not included in our analysis. On this basis, our results are conservative.

Intermediate results predict up to a 1% increase in Guernsey's annual CO2 emissions as a result of runway extension.

Destination	Annual Incremental Rotations	KM	Method A		Method B1		Method B2	
			CO2 produced (Kilotonnes)	Social Cost	CO2 produced (Kilotonnes)	Social Cost	CO2 produced (Kilotonnes)	Social Cost
[C.I.C]	[C.I.C]	[C.I.C]	0.6	£40,602	0.5	£36,124	0.6	£40,858
[C.I.C]	[C.I.C]	[C.I.C]	0.4	£25,017	0.5	£36,066	0.4	£25,175
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£9,311	0.1	£8,284	0.1	£9,370
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£9,325	0.2	£11,686	0.1	£9,384
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£8,220	0.2	£11,218	0.1	£8,272
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£9,769	0.1	£9,832	0.1	£9,831
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£8,481	0.2	£10,628	0.1	£8,535
[C.I.C]	[C.I.C]	[C.I.C]	0.1	£6,217	0.1	£7,791	0.1	£6,256
Total			1.7	£116,941	2.0	£131,269	1.8	£117,680

Sources: can be provided upon request.

Note: only those routes with incremental flights operated due to extension are shown.

The table presents results for the social cost of increased emissions relative to a no-extension scenario according to the three methodologies described in this section. The social cost is derived by measuring the quantity of emissions from aircraft movements, multiplied by a monetary value that reflects an assessment of the damages resulting from the emissions of a unit of CO₂. In this case the monetary value is the official value used by the UK Government in its calculation of the social costs of carbon emissions.

Our analysis suggests that CO₂ emissions in Guernsey will increase by up to 1% following extension. This is calculated using the CO₂ emissions value for 2017 in Table 2.1.1. of Guernsey's Annual Greenhouse Gas Bulletin, 2017.

The table shows that in the Intermediate Case, the annual social cost from increased CO₂ emissions is estimated to be £110,000 to £140,000. Measured over the life of the project, the total social cost is £2 million in NPV terms. These costs are included in our overall net benefit calculus and are set against the GVA impacts projected as a result of increased visitor spending and business facilitation/ expansion effects.

High Case results predict up to a 5% increase in Guernsey's annual CO2 emissions as a result of runway extension

Destination	Annual Incremental Rotations	KM	Method A		Method B1		Method B2	
			Total CO2 produced (Kilotonnes)	Total Social Cost	Total CO2 produced (Kilotonnes)	Total Social Cost	Total CO2 produced (Kilotonnes)	Total Social Cost
[C.I.C]	[C.I.C]	[C.I.C]	1.2	£78,344	2.0	£132,431	1.2	£77,791
[C.I.C]	[C.I.C]	[C.I.C]	0.4	£27,033	0.3	£19,854	0.2	£13,077
[C.I.C]	[C.I.C]	[C.I.C]	2.3	£154,254	3.3	£219,432	2.3	£153,167
[C.I.C]	[C.I.C]	[C.I.C]	2.5	£166,180	2.8	£189,969	2.5	£165,008
[C.I.C]	[C.I.C]	[C.I.C]	0.7	£45,872	1.0	£65,254	0.7	£45,549
[C.I.C]	[C.I.C]	[C.I.C]	1.4	£92,233	2.3	£155,910	1.4	£91,583
Total			8.4	£563,916	11.7	£782,850	8.2	£546,175

Sources: can be provided upon request.

Note: only those routes with incremental flights operated due to extension are shown.

The table presents results for the social cost of increased emissions relative to a no-extension scenario according to the three methodologies described in this section.

Our analysis suggests that CO2 emissions in Guernsey will increase by up to 5% following extension.

The table shows that in the High Case, the annual social cost from increased CO2 emissions is estimated to be £540,000 to £790,000. The total social costs of emissions is around £9million in NPV terms. These are costs are included in our overall net benefit calculus and are set against the GVA impacts projected as a result of increased visitor spending and business facilitation/expansion effects.

The emissions impact analysis may in future need to be adapted to technological changes and to policy

Aircraft technology is changing in response to policy and consumer pressure

The analysis of these impacts is based on actual emissions data. It may be that over time carriers invest in lower emissions aircraft such as the Airbus Neo (see Annex 6). The runway extension may facilitate the deployment of such aircraft, given their take-off and landing requirements, which make them unsuited to the current runway length.

Over the economic life of the runway, it is likely that there will be further innovations in aircraft technology. These include alternative fuel technologies, and modification to aircraft structure and equipment (see Annex 7). The effects of these innovations remain at the level of conjecture, and are therefore not included in the formal analysis. There is evidence to suggest that some low emissions technologies – notably battery power – would require longer runway lengths. If this is the case, an extension may preserve the option that these aircraft deploying these technologies may be used to service Guernsey.

Flights into and out of the EU are currently subject to the requirements of the EU Emissions Trading Scheme, which stipulates that permits need to be surrendered corresponding to the quantity of emissions. These costs, and any further voluntary decision taken by carriers to offset emissions, are ones borne by the carriers themselves.

We have also assessed the impact of noise from additional aircraft landing on an extended runway.

There is an extensive body of work in the literature which covers how noise impacts on society. The UK Airports Commission (2013) considered that aviation noise in particular has an impact through the following channels:

- Annoyance
- Sleep disturbance
- Health impacts, including heart disease, stress and dementia

The impact of noise will also vary at different times of day. For instance, The Airports Commission state that there is difference in night-time compared to day-time aviation noise on the basis that night-time noise is more likely to impact on sleep. This means that a robust analysis of the impact of runway extension at Guernsey Airport should include an assessment of when additional flights are likely to take place.

The first in any assessment of noise impacts is to measure noise levels. The Airports Commission states how noise measurement is made a difficult task by the subjective nature of hearing varying by individual. There are also different ways to measure noise, for example, by focusing on the duration and frequency of a particular noise, or by focusing on the level and intensity of a noise.

The CAA (2003) state that aviation noise is measured at three different certification points:

- Lateral: following departure, 450m to the side of the initial climb after lift-off
- Flyover: following departure, under the departure climb path, 6500m from the start-of-roll
- Approach: prior to arrival, under a 3 degree descent path 2000m from runway threshold

At each of these certification points, noise is measured in terms of Effective Perceived Noise in decibels (EPNdB), which varies in terms of both intensity and frequency of noise. EPNdB only measures the annoyance impact of noise. A total noise level is calculated as the sum of noise across all of these certification points.

Our Approach

Our data source is EASA Europa data for February 2020 on noise levels measured in effective perceived noise in decibels (EPNdB) for different aircraft configurations. Noise is measured at each certification point: Lateral, Flyover, Approach.

Our approach was to calculate the sum of noise at each certification for a given aircraft. Output from the Intermediate and High Case modelling on number of incremental annual rotations on flights was used to estimate the total additional annual aviation noise due to runway extension.

As with our CO2 emissions modelling, consolidation of pre-existing flights operated by smaller planes (e.g. ATR-72s) into bigger planes (e.g. A320neos) is not included in our analysis. On this basis, our estimates for the impacts of extension on noise are conservative.

Intermediate Results predict up to a 5% increase in annual noise from flights at Guernsey airport.

Destination	Annual incremental rotations	Annual Noise (EPNdB)
[C.I.C]	[C.I.C]	29,311
[C.I.C]	[C.I.C]	12,769
[C.I.C]	[C.I.C]	5,905
[C.I.C]	[C.I.C]	5,342
[C.I.C]	[C.I.C]	4,467
[C.I.C]	[C.I.C]	5,577
[C.I.C]	[C.I.C]	4,815
[C.I.C]	[C.I.C]	3,616
Total		71,802

Sources: can be provided upon request.

Note: only those routes with incremental flights operated due to extension are shown.

Interpreting our Results

Aviation noise is affected by many different factors, including the aircraft. Our view is that it is not possible for us to take all relevant factors affecting noise into account. On this basis, our results should be viewed as purely indicative and with caution.

Our analysis suggests that aircraft noise at Guernsey airport will increase by up to 5% following extension. There are three things to consider when interpreting this number:

- This increase in noise is entirely due to incremental flights being operated, and therefore should be viewed in the context of noise being more frequent at Guernsey airport, rather than noise from flights themselves becoming louder or more intense.
- Incremental flights will be served by A320neos, which are below the required noise thresholds and quieter than their predecessor, the A320.
- This percentage increase will likely only lead to a small change in noise levels, since Guernsey Airport has relatively few movements compared to other airports. The table below compares Guernsey Airports annual movements against those of Gatwick and Jersey.

Airport	2019 Flight Departures
GCI	10,436
JER	11,836
LGW	140,350



If the additional flights predicted by the modelling took place at LGW, it is likely that those additional flights would only lead to less than an additional 1% of noise at LGW.

Sources: OAG, <https://www.gatwickairport.com/business-community/about-gatwick/company-information/gatwick-key-facts/>

High Case Results predict up to a 15% increase in annual noise from flights at Guernsey airport.

Destination	Annual incremental rotations	Annual Noise (EPNdB)
[C.I.C]	[C.I.C]	32,862
[C.I.C]	[C.I.C]	12,398
[C.I.C]	[C.I.C]	79,183
[C.I.C]	[C.I.C]	94,775
[C.I.C]	[C.I.C]	23,413
[C.I.C]	[C.I.C]	38,989
Total		281,620

Sources: can be provided upon request.

Note: only those routes with incremental flights operated due to extension are shown.

Interpreting our Results

Aviation noise is affected by many different factors, including the aircraft. Our view is that it is not possible for us to take all relevant factors affecting noise into account. On this basis, our results for the additional noise generated as a result of runway extension should be viewed as purely indicative and with caution.

Our analysis of the High Case modelling outputs suggests that aircraft noise at Guernsey airport will increase by up to 15% following extension.

The caveats to interpreting our results, as stated for the Frontier Intermediate set of results on the previous slide, also apply to this set of High Case results.

Other impacts: the runway extension may cause localised community impacts that could be further examined.

The runway extension under a 1740 metre with traditional RESA would involve decisions over land use in the perimeter of the airport. Specifically:

- [REDACTED]
- [REDACTED]
- [REDACTED]

In considering the social costs, we assume that private costs (e.g. lost value of property) will be compensated. This is in line with past practice. We therefore consider the social benefits: ie those enjoyed by the community at large through these assets.

The main sources of loss are:

- Costs of congestion that may arise as a consequence of road closure and diversion (though this may be offset in the future if reconfigured roads are better suited to traffic conditions)
- The loss of amenity values associated with the valley and the roads. [REDACTED].

There will also be temporary social costs related to the construction phase of the extension. These include:

- Greenhouse gases emitted as a by-product of the construction process
- Increased traffic congestion for the transportation of raw materials.

The extent and value of these effects could be measured as part of further work.

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Summing up: the economic benefits of extending the runway are likely to outweigh the costs over a 40 year period.

Our analysis projected the following annual increases in visitors by air relative to the no-extension base case:

- **High Scenario:** 61,000 additional visitors per year.
- **Intermediate scenario:** 20,000 additional visitors per year.
- **Break even scenario:** 7,700 additional visitors per year.

The table below summarises the results of our modelling of the net benefits of runway extension across the three visitor number scenarios described above and on the previous pages.

The results are increases in Gross Value Added (GVA) to the Guernsey economy over-and-above the no-extension baseline scenario and reported in net present value (NPV) terms for the (standard) 40-year lifetime of the project, using a 3.5% discount rate.

Scenario (visitor impact)	High	Intermediate	Break-even
GVA impact: visitor spending effects (over 40 years)	£627m	£201m	£85m
GVA impact: business expansion effects (top down, over 40 years)	£153M	£86M	£21m
Resource costs of 1740m traditional RESA (total cost)	- £84m	- £84m	- £84m
Social cost of increased emissions (present value over 40 years)	- £9m	- £2m	- £1m
Net benefits (visitor spending effects only)	£534m	£115m	£0m
Net benefits (including business expansion effects)	£687m	£201m	£21m

The net benefits from the visitor spending alone are sufficient to cover the costs associated with runway extension

The net benefits from visitor spend for the “break even” scenario by definition: we have created a scenario to examine how many additional visitors would be needed to cover the runway costs. The answer: just over 8,000 per year.

Our overall conclusion on the benefits of runway extension would hold under a wide range of projections about visitor numbers

Our overall conclusion is that the runway extension is justified based on the benefits that arise from the economic impacts of visitor spending and business expansion. Indeed, the former effect on its own is sufficient to justify the costs incurred in investing in runway extension.

- We have adopted a cautious approach to assessing the potential benefits of runway extension. This has included developing sensitivities around projected visitor increases, and focusing on business expansion in one sector (financial services) only.
- The break-even scenario suggests that only a modest increase in annual visitor numbers is required for the runway extension to be justified on the basis of visitor spending impacts alone. Under that scenario, further benefits through some business expansion effects may be realised.
- There is some evidence to suggest that a no-extension case could lead to costs in terms of lost business opportunities. While we have not included these in our core calculus, they should be borne in mind in considering the outcomes under a no extension scenario. In that context, a break-even scenario could be presented as a safeguard against such losses.
- Other sources of benefits include increased tax revenues reflecting the economic impacts of increased spending and business expansion; access to healthcare services and facilities for residents; and positive effects on cultural and sports.

We have carefully considered social and environmental costs

- Given the importance of addressing climate change and the impact of additional greenhouse gas emissions on Guernsey's ability to support climate policies, we have paid particular attention to quantifying the social costs of emissions increases. We have documented our best current estimates of those increases and their social cost.
- Our estimates also point to increased noise effects, through these need to be understood in the context of the current relatively low level of air traffic to and from Guernsey and low levels of noise now compared to previous years when the island was served by louder aircraft. These findings are particularly sensitive to assumptions and should be treated with caution.
- There is some evidence of social costs relating to changes in land use.
- The analysis of social and environmental costs conducted in this study is at a relatively high level. Our findings indicate that further, more in-depth research should be considered.

Finally, many of the parties consulted agreed that the runway extension was not a panacea, notwithstanding the projected economic benefits. In particular, stakeholders pointed to the value of complementary interventions, ranging from initiatives to strengthen tourism to initiatives to attract and retain skills, that would be needed to support growth that a runway extension could create.

This analysis provides evidence in each of the areas highlighted as strategy objectives in the November 2018 Policy Letter.

Pursuant to the Policy Letter of November 2018, the States of Deliberation approved the Air and Sea Route Policy Development and Investment Objectives in December 2018.

We evaluate the findings of the analysis of the next benefits of an extension, relative to no extension, against these objectives. We take into account the view of the CfED that no one investment will address on its own the issues of connectivity, reliability and affordability of air links, or the wider economic and social objectives that may be promoted by addressing these issues.

Objective	Findings of this analysis
Meet future requirements of residents of Guernsey	The analysis presents evidence of economic and social benefits to residents
Enable economic growth	Quantified gains through visitor spending effects on GVA and through business expansion effects.
Increase visitor numbers	Projections of high and intermediate case visitor increases
Affordability: Incentivise airlines to help stimulate market growth through lower fares	The modelling projects fare reductions as a result of increased service provision
Affordability: Attract carriers with capability to sustainably offer market competitive fares	Projected increase in route offer and flights. The analysis assumes the provision of route development incentives over 10 years
Connectivity	The analysis demonstrates the potential for a wider range of routes and destinations.
Reliability	Extension increases the likelihood of attracting established carriers that optimise operations across networks, and who would be able to service Guernsey by deploying aircraft that are deployed on their network as a whole.

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Annex 1: methodology for visitor estimate in the Intermediate scenario (1 of 2)

Data

OAG aviation traffic and scheduling data from OAG.

Modelling passenger volumes on existing routes

1. Estimated the reduction in fares that could be achieved by a low-cost carrier (LCC) operating on a route:
 - a. We calculated the average fares for point-to-point passengers travelling from Guernsey.
 - b. We calculated the average fare for point-to-point passengers travelling from Jersey to any of those destinations (i.e. destinations that can be accessed with direct flights from Guernsey).
 - c. We found that fares from Jersey were 39% lower than fares from Guernsey.
2. We then estimated that, if a low-cost carrier (LCC) were operating on a particular route, then fares would be 39% lower than were observed in 2019. This was a conservative estimate; the average fare from Jersey to Gatwick was 58% lower than the average fare from Guernsey to Gatwick.
3. We assumed that passenger volumes would respond to a price decrease with an elasticity of -0.7 [DfT TAG Databook], i.e. a 39% reduction in fares would increase passenger volume by 29%.
4. We evaluated whether passenger volume at 129% of current levels would be high enough to sustain the operation of an LCC on that route. We estimated that a LCC could operate on the route if the annual passenger volume on the route exceeded the passenger volumes implied by the following schedule:
 - a. 1 rotation per week
 - b. Seat capacity of an A320 neo.
 - c. An 85% load factor
 - d. A route distance of greater than 173 ([REDACTED])
5. Routes that could sustain a LCC saw a passenger increase, and routes that could not had unchanged passenger volumes.
6. The scenario does not include any changes in passenger volumes on the Gatwick route.

Annex 1: methodology for visitor estimate in the Intermediate scenario (2 of 2)

Modelling passenger volumes on new routes

1. Using data on passenger volumes for indirect journeys from Guernsey, we estimated how much passenger volumes to the destination would be increased if a direct flight were introduced. To estimate this, we calculated the savings in cost and travel time of a direct route relative to an indirect route.
 - a. We calculated flight times for new direct routes by calculating the great circle distance between airports, assuming a groundspeed of 850 km per hour, and 45 minutes for combined take-off and landing.
 - b. We calculated the cost of travel time, assuming a cost of £21 per hour. (<https://www.gov.uk/government/publications/tag-data-book>)
 - c. We estimated a fare for the new direct route by using the average fare per kilometre on existing Guernsey routes.
 - d. We estimated a reduction in fare from the direct flight due to LCC operation (same methodology as previous slide)
 - e. We calculated gross travel costs (cost of fare + cost of time) of the direct and indirect route.
2. We calculated the percent reduction in travel costs of the direct over the indirect route, and estimated passenger demand for the direct route using an elasticity of -0.7 (DfT TAG databook).
3. We estimated that a LCC could operate on the route if the annual passenger volume on the route exceeded the passenger volumes implied by the same criteria as before, but with on average 0.5 rotations per week.
4. We have assumed that no new services will be introduced on the Gatwick route.

Modelling visitor volumes

We have assumed that the proportional increase in passenger volumes from the runway extension would translate to the same proportional increase in visitor volumes.

Annex 2: We investigated how declining baseline visitor volumes could interact with the impact of the runway extension

In our main analyses, we have estimated the incremental impact of the runway extension against a no-extension case with constant visitor flows (180,000 visitors per year). However, visitor volumes have trended downward in recent years. Since 2012, annual visitors have decreased at an average rate of 1.7% per year. Therefore, as a sensitivity, we consider the effect of the runway extension under 3 no-extension **baseline scenarios**:

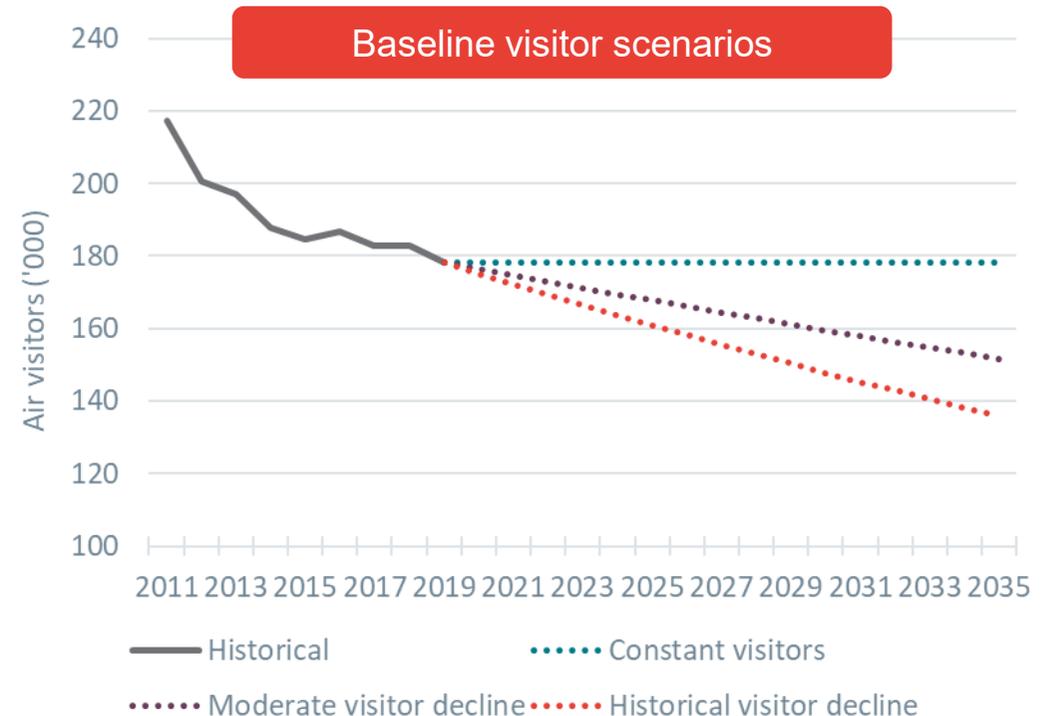
1. **Historical visitor decline**: the recent historical 1.7% annual decrease in visitors continues in every year
2. **Moderate visitor decline**: visitors volumes decrease 1% in every year
3. **Constant visitors**: visitor volumes stay constant (at 180,000 annual visitors)

We estimate the effect of the runway under each of these baseline scenarios. One issue to consider is how the baseline visitor trend may interact with the runway effect. There may be multiple types of simultaneous interactions. We illustrate some examples:

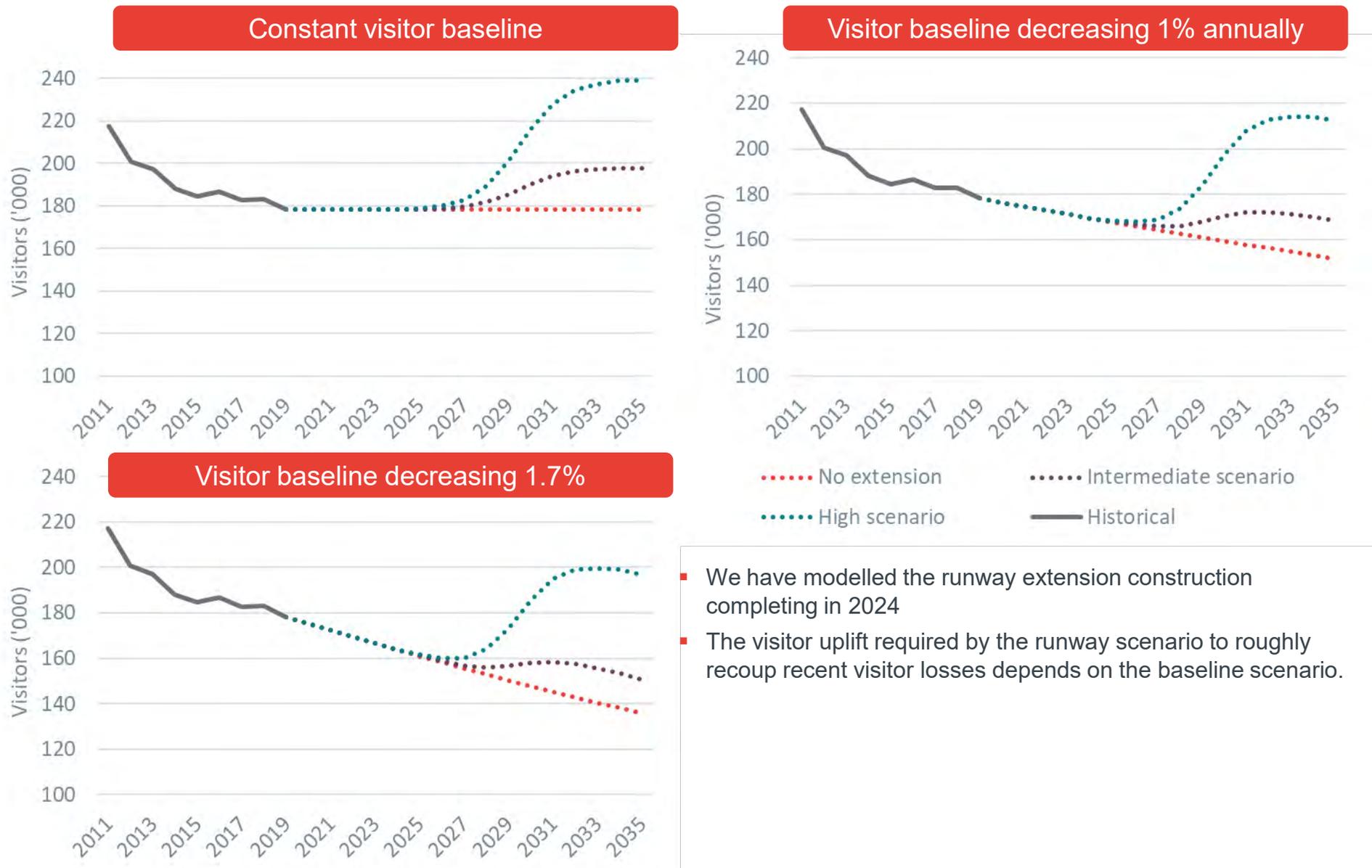
- The recent decline in visitors may be due to broad changes in preferences among potential visitors from the UK and elsewhere. In this case, a decline in baseline visitors may be associated with a decline in the incremental effect of the runway extension.
- The recent decline in visitors may be due to trends in demand that are not present among the populations served by new routes and services that result from the runway extension. In this case, the incremental effect of the runway extension may be invariant to any baseline decline in visitors.
- The recent decline in visitors may be due to Guernsey air links becoming increasingly comparatively expensive. In this case, a declining visitor baseline may indicate unserved or 'pent-up' demand for competitively priced Guernsey air links. A larger recent decline in the visitor baseline may correspond to a larger potential visitor increase from the runway extension.

In order to capture this range of possible interactions between the baseline scenario and the runway effect, we estimate a lower and an upper bound for incremental visitors from the runway extension.

- **Upper bound**. We assume that our High runway scenario visitor impact is invariant to a baseline visitor decline
- **Lower bound**. We reduce our Intermediate runway scenario visitor impact in proportion with baseline visitor decline



Annex 2: We have modelled the impact of the runway extension under different baseline trend scenarios



- We have modelled the runway extension construction completing in 2024
- The visitor uplift required by the runway scenario to roughly recoup recent visitor losses depends on the baseline scenario.

Annex 2: The present value of visitor spend, by baseline trend scenario and runway extension scenario

APPENDIX 3

We estimate the present value of benefits from visitor spend under the combinations of baseline visitor trend and runway scenario. Value is accrued beginning the year of runway completion (2024), with time discounting applied to every subsequent year.

Present value visitor spend	Constant visitors	Moderate visitor decline	Historical visitor decline
No extension	£2.4b	£2.0b	£1.8b
Extension - intermediate impact	£2.6b	£2.2b	£1.9b
Extension - high impact	£3.1b	£2.6b	£2.4b

Annex 3: Although we do not expect significant sea cannibalisation, we investigate the impact of hypothetical sea cannibalisation levels

As previously discussed, we find that there will likely be minimal sea cannibalisation from passenger increases resulting from the runway extension. However, for completeness we estimate the net benefits that would result from the runway extension under various sea cannibalisation scenarios.

Condor has informed us that their principal competitor airports are Bournemouth, Exeter, and Southampton. Therefore we focus our analysis on potential cannibalisation resulting from these routes. As in our previous analysis of Jersey route-level passenger data, we decompose Jersey sea and air passenger volumes by route into the following components:

$$\begin{aligned} \text{Passenger volumes on a route} &= (\text{seasonal effects on the route}) \\ &+ (\text{trends common to all routes}) \\ &+ (\text{trends specific to the route}) \end{aligned}$$

The relationship between route-specific trends on particular pairs of sea and air routes provides an estimate of the sea cannibalisation that would likely result by a passenger increase on particular air routes. Although there was no statistically evidence in support of significant cannibalisation, we have calculated an overestimate of route-level sea cannibalisation in the following way:

- We have regressed sea passenger route-specific trends (Poole and Portsmouth) on air passenger route-specific trends (Exeter and Southampton). This provides an estimate of the change in sea passengers that would be expected to result from a change in air passengers on particular routes.
- We have taken an overestimate of cannibalisation at the route level (the lower bound of a 75th percentile confidence interval for the regression coefficient). The overestimates of the change in sea passengers per increase in air passengers are:

Change in sea passengers for every increase in 1 air passenger	Portsmouth	Poole
Southampton	-0.06	-0.43
Exeter	-0.14	-0.76

As there is no direct flight between Jersey and Bournemouth, we have applied the Exeter estimates to Bournemouth passengers to be conservative, as the cannibalisation figures for Exeter are larger in magnitude than those for Southampton.

Annex 3: Given hypothetical sea cannibalisation scenarios, we have estimated net benefits from the runway extension

We have constructed two hypothetical scenarios that overestimate the effect of sea cannibalisation:

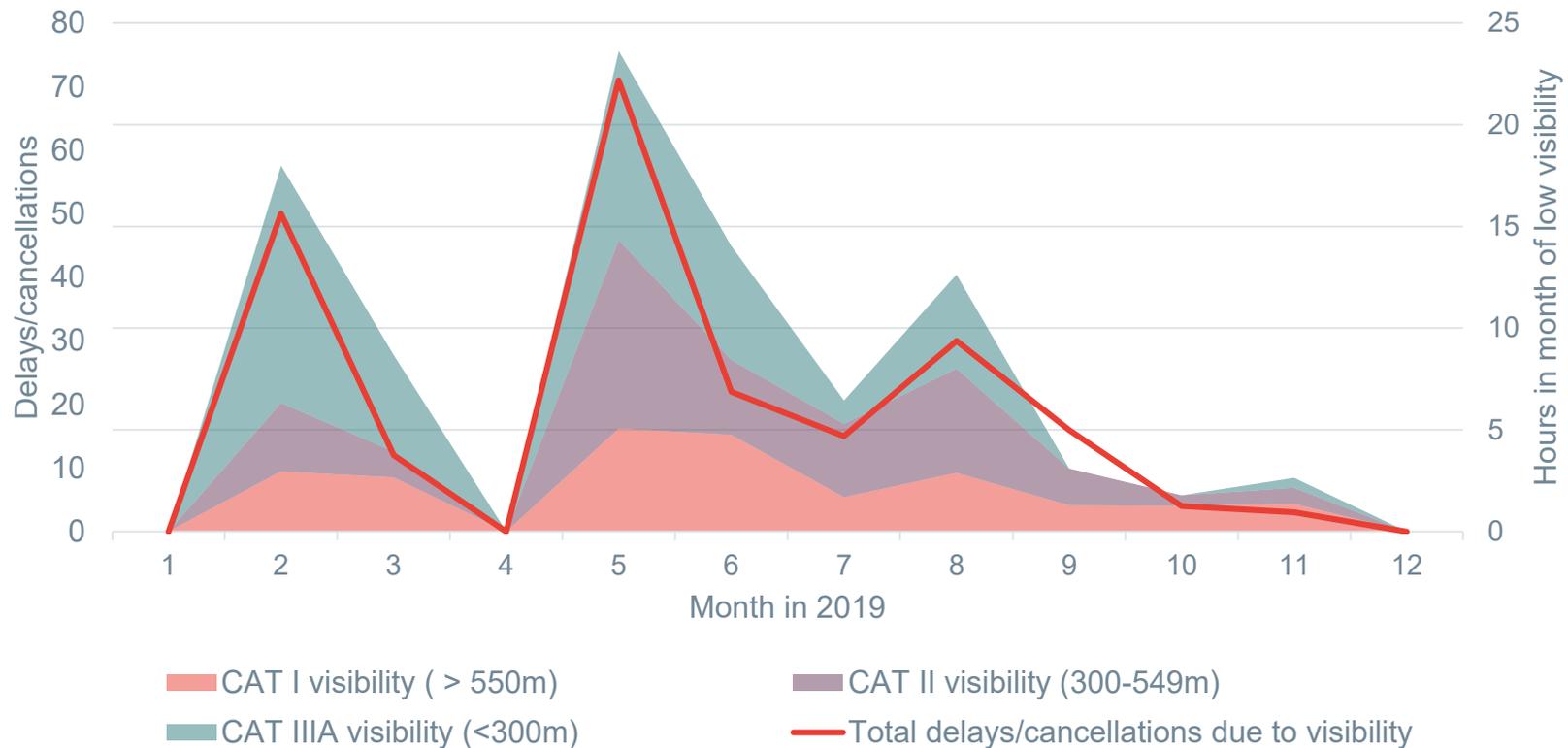
1. Medium cannibalisation: sea cannibalisation rates as described on the previous slide
2. High cannibalisation: every incremental passenger from Southampton, Bournemouth, or Exeter resulting from the runway extension is cannibalised from sea passengers

We calculate net benefits corresponding to these scenarios. For this analysis, we only show the intermediate runway scenario. The high runway scenario does not predict incremental passengers from Southampton, Bournemouth or Exeter and therefore its net benefits are unaffected by these hypothetical sea cannibalisation scenarios.

Intermediate scenario (differences against base case)	No sea cannibalisation	Medium sea cannibalisation	High sea cannibalisation
<i>Long-run increase in annual visitors</i>	20,000	16,000	12,000
Benefit from visitor spend	£201m	£161m	£119m
Resource Costs	-£78m	-£78m	-£78m
Environmental costs	-£2m	-£2m	-£2m
Net benefits (visitor spend impacts only)	£121m	£81m	£39m

In both cannibalisation scenarios, the benefits from the runway extension are likely to significantly outweigh the costs.

Annex 4: Upgrading the ILS would reduce flight delays and cancellations due to low visibility



We have received information from Guernsey Airport on visibility and also on flight delays/cancellations due to low visibility. We find that 1 hour in visibility below the CAT I requirement of 550m is associated with 3.4 delayed or cancelled flights (95% confidence interval of (2.9 to 3.9 delayed or cancelled flights)).

In 2019, the average month saw 2.0 hours of CAT I low visibility (>550m), 2.5 hours of CAT II visibility (300-549m), and 3.1 hours of CAT IIIA visibility (<300m). There were on average 18.6 delays/cancellations due to fog per month, or around 1% of total air traffic movements. The highest risk of fog delays/cancellations in 2019 occurred in February, at 4.3% of air traffic movements.*

*We note that the available data on delays/cancellation was at the monthly level. This monthly statistic may not capture higher rates of delays/cancellation occurring at particular times of day, for example in the early morning.

Annex 5 : References and sources for evidence on parameters for top-down modelling

Business connectivity and trade

- Frontier Economics estimated a gravity model of services trade, which it has used in a variety of policy modelling exercises. A brief description can be found in the [report](#) Frontier prepared in 2017 for the Royal Institute of British Architects (Frontier Economics, RIBA (2017) “Global Talent, Global Reach). The gravity model generates elasticities for bilateral trade flows in relation to various measures of trade costs. This includes distance. As the model also captures direct policy variables, notably the impacts of services trade restrictions and the existence of free trade agreements, the distance measure can be interpreted as a measure of costs associated with transport.
- In [modelling](#) the economic impacts of Toronto Pearson Airport, Frontier Economics conducted a review of the literature on the responsiveness of trade to connectivity. It noted in particular that the UK Airports Commission had in its 2015 report on airport expansion options used an elasticity of 0.3 for trade with respect to connectivity.

Trade and productivity

- The existing literature on trade and productivity is extensive, and the results vary widely. A seminal study by Cline (2004) reports that every 1 percentage point increase in trade openness, productivity increases between .14% and 0.96%. Campos and Coricelli (2014): estimates GDP benefits of EU membership for UK. The implied productivity increase is 0.34% for every percentage point increase in trade. Finally HMT in their 2016 analysis of the long term effects of the UK leaving the EU used a range of 0.2% to 0.3%. On the basis of these findings, we opt for 0.4% as an appropriate estimate for Guernsey. We then adapt these results to the financial services sector. For example, a study by Miroudot at all shows that services sector productivity changes in response to trade costs are significantly lower than other sectors (around 12% of the overall effect). We use this as a proxy for productivity responses in Guernsey’s finance sector on the basis that some of the other channels that drive sharp productivity growth (economies of scale, international value chains, large scale reallocation of productive workers from other sectors) are less applicable to Guernsey.
- References: William Cline (2004), Trade Policy and Global Poverty; Campos, Nauro F & Coricelli, Fabrizio & Moretti, Luigi, 2014. "Economic Growth and Political Integration: Estimating the Benefits from Membership in the European Union Using the Synthetic Counterfactuals Method," CEPR Discussion Papers 9968; and HMT (2016) The Long Term Economic Impact of EU membership and its Alternatives.; Sebastien Miroudot, Jehan Sauvage and Ben Shepherd (2011) “Trade Costs and Productivity in Services Sectors”, Economic Letters, 114(1): 36-38

Annex 6: Background on A320neo aircraft

Background

The A320neo is an example of a newer, more fuel efficient aircraft that might be used on any new routes operated by Low Cost Carriers out of Guernsey. Its environmentally friendly features include:

- **Improved fuel efficiency:** in total, the A320neo consumes around 20% less fuel per seat-km. This is due to the two new engine options which are able to carry more fuel and provide greater thrust. “Sharklet” wing tips which improve fuel efficiency by 7% have also been added.
- **Reduced noise:** the A320neo is quieter, based on its new engines and noise-reducing vortex generators which provides the A320neo with an up to 50% smaller “noise-carpet” than other comparable aircraft types.

Configuration

The main changes made to the configuration of the A320neo are:

- Capacity: the A320neo seats 165 passengers, compared to the A320 seating 150 passengers.
- Space: the cabin has a wider girth.
- New, larger engines: there is an option between the PurePower PW1100G-JM from Pratt & Whitney and the LEAP-1A from CFM International.
- Wing tips: these have been changed to new “Sharklet” wing tips.

Roll-out

The aircraft is still relatively new, but has already been introduced by airlines on their routes. The first airline to use an A320neo as part of their service was Lufthansa in 2016. Since then, other airlines have followed suit. Swiss Airlines are due to start operating A320neos on their Zurich to, among others, Brussels, Hamburg, Valencia and Heathrow routes later in March.

Annex 7: Possible future changes in technology

Background

There are several wider technological changes taking place in aviation that could impact a cost-benefit analysis of runway extension in the future. Our position is that currently it is too speculative to draw any firm conclusions on likely impacts, but that these could be covered in future research.

Landing Technology

This is potentially relevant on the basis that if future aircraft can land on smaller runways, then an extension to Guernsey airport's runway may not be required in order to deliver greater passenger numbers. However, it is our view that any attempt to estimate the potential scale and likelihood of this technology being transferred to mainstream aircraft in the future is highly speculative.

Biofuels and Electric Aircraft

This is potentially relevant to the cost-benefit analysis on the basis that aircraft using cleaner sources of fuel would emit a lower volume of greenhouse gases. This would in turn reduce the social costs of emissions due to increased flights from runway extension.

There have been improvements in fuel efficiency of aircraft over time, and biofuels and synfuels have very similar compositions to Kerosene, so may be compatible with existing aircraft. Batteries and hydrogen fuel cells on the other hand work differently to Kerosene. It is difficult to predict the likely take-up of biofuels and batteries/hydrogen by aircraft in the future.

Annex 8: Guernsey emissions policies and carbon offsetting

Guernsey Energy Policy

The States of Deliberation will discuss and potentially approve a new Guernsey Energy policy 2020-2050 next month. If approved in the form that is currently proposed, the Policy will adopt:

- A target of net zero emissions by 2050; and
- An interim target of reducing emissions by 57% on 1990 levels by 2030.

Given that the analysis presented suggests that runway extension will increase greenhouse gas emissions by up to 5%, it is likely that runway extension will make it harder for Guernsey to achieve its interim target. However, it is our view that determining the exact impact of runway extension on the ability of Guernsey to meet the interim target is beyond the scope of this study.

Carbon Offsets

One option to reduce the impact of greenhouse gas emissions on the environment is for the States of Guernsey to require airlines to take part in carbon offsetting schemes. Since the private sector would be responsible for obtaining EUAs, then any additional costs of purchasing carbon offsets will not flow into the cost-benefit analysis of runway extension.

Annex 9 Stakeholder consultations – list of parties

Organisation/ Person	Contact
[REDACTED]	[REDACTED]
Digital Greenhouse	Lucy Kirby
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
Committee for Economic development	Deputies Charles Parkinson Joe Mooney
[REDACTED]	[REDACTED]
Environment and Infrastructure Cttee	Deputy Barry Brehaut, Damon Hackley and Sarah McGreevy
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
Guernsey Arts Commission	Russ Fossey
[REDACTED]	[REDACTED]

Annex 9: Stakeholder consultations – list of parties

Organisation/person	Contact
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
Guernsey Sports Commission	Dave Piesing and Graham Chester
Health and Social Care/Employment and Social Services Committees	Kate Loveridge and Claire Mahy/ Lee Savident
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
Locate Guernsey	Paul Kilminster and Keith Wilen
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
States Trading Supervisory Board	Simon Elliott and Colin Le Ray
States Trading Supervisory Board (Board representatives)	Stuart Falla and John Hollis
Visit Guernsey	Mike Hopkins

Annex 10 – List of Documents Reviewed

Our research drew on documents supplied by the States and other parties

ASM (2019), GCI Airport Runway Extension, Market Assessment 2019.

BAE Infrastructure Solutions (2003), Guernsey Airport Runway Extension, Report 01

Blue Islands (2020), Guernsey Airport Runway Extension, Submission

Capt, Mervyn Dacey (2018), Guernsey Airport Low Visibility Landing Capability vs EVS ATR 72

Confederation of Guernsey Industry (2020), Guernsey Airport – Economic Case for Runway Extension

Ekosgen , Reference Economic Consulting (2018), Economic and Social Impact of Inverness Airport

Frontier Economics (2016) Toronto Pearson Airport, Economic Impact

Hollis, JC (2020), Guernsey Airport Runway Extension, Submission

Institute of Directors (2018 and 2019), Survey of Airlinks

PWC (2017), Tourism Product and Customer Experience Strategic Review

PWC (2018), Guernsey Air Links – Final Report: Strategic Options

RPS (2020), Guernsey Airport 1740m Traditional RESA Extension – Draft Costings

RPS (2020), Guernsey Airport 1740m EMAS Extension – Draft Costings

States of Guernsey, Guernsey Visitor Spend Survey Report, Various Years

States of Guernsey Air and Sea Route Policy Development and Investment Objectives, 12 November 2018.

States of Guernsey (2015), Security of Strategic Airlinks

States of Guernsey (2016), Island Development Plan

States of Guernsey (2015), Strategic Tourism Plan 2015-2025

Annex 10 – List of Documents Reviewed

States of Guernsey (2018), Committee for Economic Development, States of Guernsey Air and Sea Route Policy Development and Investment Objectives

York Aviation (2009), Airport Development – Economic Assessment of Options



Guernsey Ports
Guernsey Airport Master Plan
Additional Forecasting and Economic Analysis



FINAL REPORT
(amended)

May 2023

COMMERCIALLY CONFIDENTIAL



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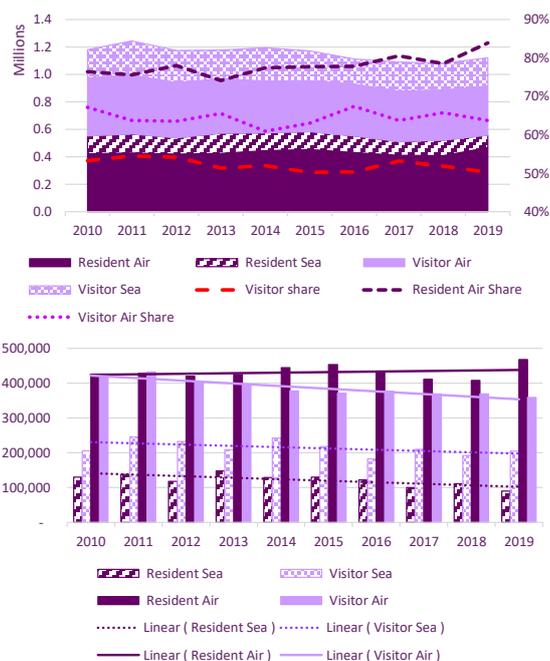
Summary Presentation of Findings

Purpose of the Study

- The study follows on from our work on the Draft Masterplan where initial demand forecasts were prepared to inform the plan but these specifically did not allow for the potential impact of extending the runway.
- The initial demand projections, informed by discussions with the airlines about the scope for growth of the market, indicated that there appeared relatively little prospect of substantial growth in passenger volumes using the Airport unless there were fundamental changes in economic circumstances.
- The airlines made clear that support to new routes in 2019 had resulted in excess capacity in the market and lower air fares that, despite the support in place, had simply made the level of services provided unviable.
- Even without the demise of Flybe and the impact of the pandemic, there would have been a retrenchment in services and increased prices going forward, with the scope for introducing new routes and services relatively limited without improved performance of the economy overall.
- Our financial analysis for the Draft Masterplan suggested that, at the level of demand projected, the Airport was unlikely to attain a break even financial position unless higher growth in passenger numbers could be stimulated and absent the exploitation of other revenue generating opportunities.
- Hence, we were tasked with two further areas to explore to inform the further development of the Masterplan:
 - to investigate the extent to which policy or other changes might drive GDP, population or tourism growth leading to higher air passenger demand at the Airport to assist in attaining profitability;
 - The impact of a runway extension on Airport costs and revenues:
 - the effect of enabling low cost airlines, or other airlines with suitable aircraft that cannot use the existing runway length, on forecast demand;
 - The financial and economic implications of extending the runway.

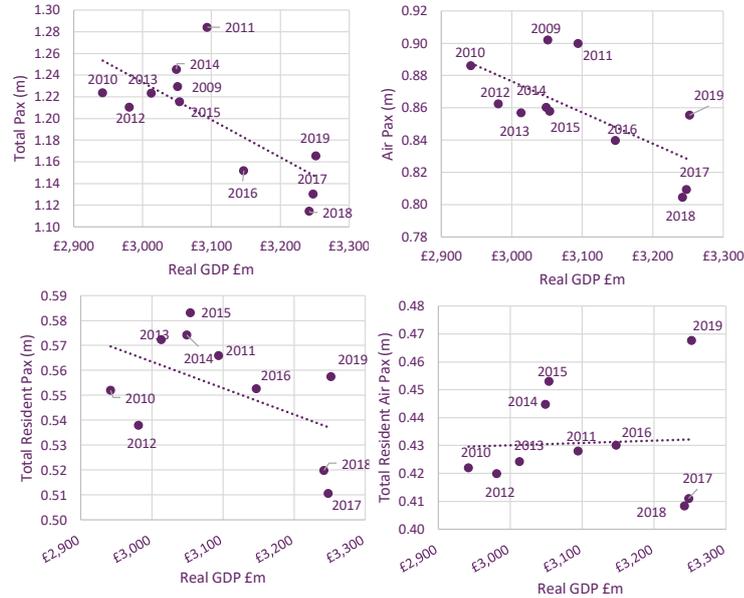
Understanding the Drivers of Demand – Historic Performance at Guernsey

- We set out to identify the key drivers of demand and the levers that the States could pull to deliver growth in air passenger demand, informed by a number of stakeholder discussions and a review of key policies and strategies.
- Our analysis was against a backdrop of declining air passenger demand levels since the 2008/9 Financial Crisis compared to other similar sized airports across the British Islands that had seen growth.
- On Guernsey, air travel did not show growth despite well reported problems with the ferry service.
- There are a number of key features to note:
 - **An overall decline in travel to and from Guernsey;**
 - **An overall decline in visitor numbers;**
 - **Air taking an increasing share of resident travel;**
 - **Air not increasing its share of the visitor market.**



Underlying Drivers of Demand

- Normally, GDP would be the main driver of air travel demand growth, driven in part by population growth and tourism growth.
- However, for Guernsey, not only has there been limited GDP growth and very limited population growth, but **the relationship of total travel demand and air travel demand shows an abnormal negative relationship to GDP growth.**
 - Only resident air travel shows a marginally positive response to GDP.
 - There was also a marginally positive relationship between population and resident travel overall and resident air travel demand.



This analysis clearly demonstrates that demand for travel to and from Guernsey has not responded as would be expected to underlying economic growth, which strongly suggests there are other economic factors in play.

Benchmarking against Jersey and the Isle of Man – Patterns of Travel



→ Guernsey Airport has not grown since 2008/9 unlike Jersey and the Isle of Man, which saw some growth before the pandemic, but the propensity to fly relative to population on Guernsey is much higher than the Isle of Man, despite low fares entry there, and is closer to Jersey.

→ This is because visitors make up a much more substantial proportion of travel to both Channel Islands.

→ As with Guernsey, air has gained market share from sea on both other islands, particularly for visitors

→ However visitor numbers have not really been growing as a proportion of overall travel.

Overall, there is limited evidence that lower air fares have increased travel substantially, rather there has been a shift from sea to air.

Projecting Underlying Demand

- Having examined the relationship between air passenger demand and GDP, we concluded that there were clearly **other structural factors in the Guernsey economy whereby growth in GDP was not converting to disposable income**, potentially linked to the population policies, an aging population and limited workforce, and that these were limiting air passenger demand to and from Guernsey.
- Even with low fare services, these factors were, to some degree, present on the Isle of Man as well.
- Jersey exhibits a more 'normal' relationship between the performance of its economy, including population growth, and air travel demand including the market's responsiveness to low fares.
- We concluded that **IF there were changes to the economic performance of Guernsey creating the conditions for a 'normal' air travel market response**, it would be expected that air passenger demand growth would respond to economic growth in line with the UK DfT's expectations for the UK domestic air market, i.e. with an elasticity of 1.1 to GDP growth. Within this population and population in employment would appear to be important factors.
- An appropriate elasticity to any reductions in the cost of travel (air fares) would be -0.6 at the level of the overall market. This is broadly consistent with the relationships observed on Jersey. (Note: fare reduction impacts could be more substantial at the individual route level). (Note also that these relationships did not apply on the Isle of Man, which showed a much lower responsiveness to GDP growth and air fares).

Growth Potential without Low Cost Services (no runway extension)

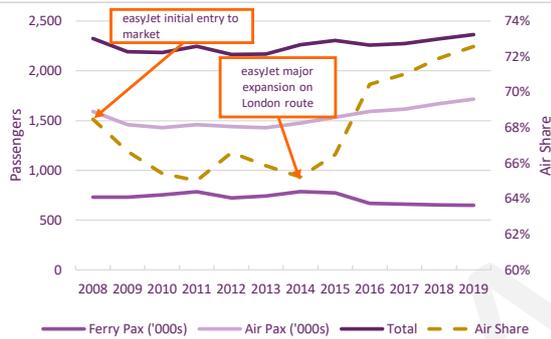
- The projected passenger throughput attainable at Guernsey Airport using the 'standard' UK DfT elasticities is set out below. This represents our 'most likely' outcome from economic, including population, growth alone. These take 2018 as the base year, as the existing carriers considered 2019 traffic levels to be unsustainable, and rely on structural changes to economic and population to create the conditions for a more 'normal' market response.
- We also show the impact of assuming the Jersey and Isle of Man derived multipliers but these multipliers already include air fare reduction effects from low cost carriers.
- **Achieving the Jersey based outcome would rely on a strong low cost offer but the Isle of Man based outcome indicates a downside risk that even a low cost offer would not stimulate strong growth. Also, much of the growth in air passenger demand on Jersey and the Isle of Man (46% and 73% respectively) was a shift from sea travel in any event.**

Potential Airport Passenger Throughput at with Variant Elasticities to GDP Growth

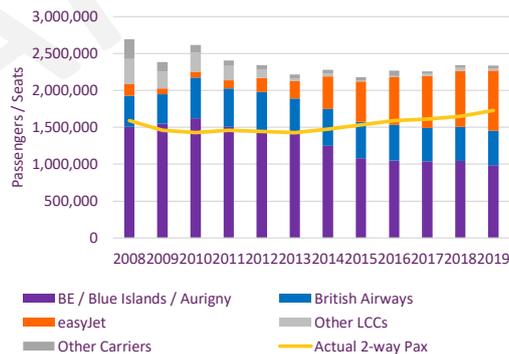
	Assumed Income (GDP) elasticity	GDP Growth			
		5%	10%	15%	20%
UK based	1.1	849,000	893,000	937,000	982,000
JER based	1.75	875,000	945,000	1,016,000	1,086,000
IOM based	0.65	831,000	857,000	883,000	909,000

- The growth on Jersey was also underpinned by population growth, albeit with a relatively sluggish growth in GDP overall. In contrast, the Isle of Man saw strong GDP growth, not linked to population growth, but a sluggish response in terms of increased travel demand.
- The baseline economic projection gave a similar result to our Draft Masterplan High Case, which could just secure net profitable operations at the Airport.

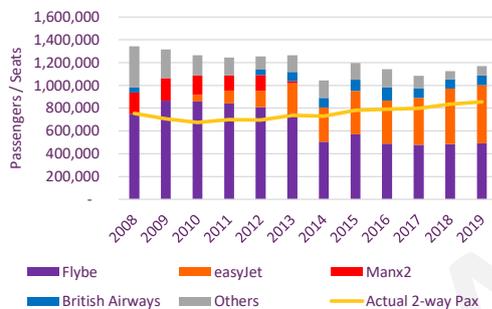
Benchmarking against Jersey and the Isle of Man – Low Fare impacts on Jersey



- Entry by easyJet and expansion of the route network led to a substantial rise in the air share of overall travel but the actual number of annual passenger trips to and from Jersey has barely risen.
- Overall frequencies of air service have fallen, with detrimental connectivity effects, particularly for business, albeit BA has maintained its presence.
- easyJet has taken a substantial share of the market overall.



Benchmarking against Jersey and the Isle of Man – Low Fare impacts on Isle of Man



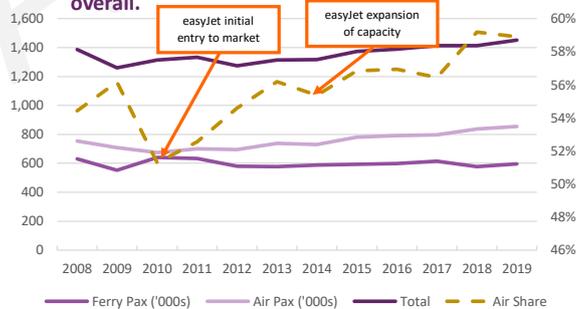
- The pattern has been virtually identical to the Jersey. Entry by easyJet and expansion of the route network led to a substantial rise in the air share of overall travel but the actual number of annual passenger trips to and from the Isle of Man has barely risen against 2008.

- Overall frequencies of service have fallen, with detrimental effects on overall connectivity, which the Isle of Man Government is having to underpin through subsidy.

- Our analysis would also suggest that air passenger demand from residents has been substantially more responsive to air fare reductions than visitor numbers, suggesting that the overall tourism product is more of an influence than lower fares.

- A further consideration is competition from other destinations. It may simply be that the air fares are not low enough to attract visitors when the product (climate for example) is not good enough compared to more southerly points in Europe.

- easyJet has taken a substantial share of the market overall.



The Potential Impact of an Extended Runway – Lessons from Jersey and the Isle of Man

- Lower air fares would offer some upside growth in air travel and some stimulation of new passengers to/from Guernsey but this is more likely to be driven, initially at least, by additional outbound resident trips.
- A high proportion of any additional air passengers are likely to switch from sea, impacting negatively on the viability of ferry services.
- easyJet (or any other low cost carrier) is likely to only offer a significant network and capacity if this is underpinned by operations on a core route, almost certainly London in the case of Guernsey.
 - Any low cost operations to London would heavily impact Aurigny on its core route. Retaining Aurigny to operate early morning and late evening services would come at a significant cost to the States, particularly if the wider Aurigny network is undermined by a low fares carrier preventing it from attaining its 'break-even' objective.
 - Overall, based on the experience on the other islands, Aurigny could lose up to 62% of its 2018/9 passenger volume.
- The size of the Guernsey market means that, even with some market stimulation, frequency reduction may be greater than seen on Jersey and could be more akin to the experience of the Isle of Man.
- The number of destinations is likely to fall as low fares airlines would consolidate regional demand from the mainland through fewer airports. Significant entry by mainline airlines to compensate is likely to be limited given the small market size.

The Potential Impact of an Extended Runway – Lessons from Jersey and the Isle of Man

- Across the network as a whole, air fares are likely to fall on average but these may vary by route and airline and may not outweigh the impacts of reduced frequencies of service.
- There would be business benefits from lower air fares but there is a tension between those stakeholders that want lower fares and those that place a premium on frequency and the timing of flights to ensure day return business trips – note that the Isle of Man to Gatwick service is once a day only in the early evening and, even for Jersey, non-based operations lead to a shorter working day available in London.
- It will be important for the States to be clear on the core objectives as a basis for determining the optimum solution.

Growth Potential with Low Cost Services (runway extension)

- We looked at the potential stimulus effect of low cost services directly using the price elasticity identified of -0.6, which is similar to that implied from the Jersey performance.
- The level of air fare reduction observed over a 10 year period of low cost entry on the other islands across all routes was:
 - Jersey – c.27.5% over a 10 year period;
 - Isle of Man – c.32% on the Isle of Man.
- Based on the evidence from other islands, the reduction at the individual route level, such as to London Gatwick, might be of the order of 20% assuming a competitor, such as Aurigny, remained on the route. However, evidence suggests that the network effects would be broader with passengers attracted from other higher fare services and the potential for some routes to cease altogether resulting in a greater overall impact on the average fare.
- We took 30% as the average fare reduction attainable if there was low fares entry on Guernsey based on experience on the other islands. Fare reductions at this level, if sustained, could result in a **stimulation of 18% to air service demand**, increasing Airport throughput to just over 1 million passengers a year (a potential increase of **145,000 passengers** over 2018 levels) assuming no other GDP based stimulation to demand. With concurrent economic stimulus, the effect of low fares would be greater, or lower with a smaller fare reduction.

- However, there is some doubt as to whether the fare reductions would be sustained if a low fares carrier led to the cessation of operations by Aurigny.

GDP Uplift	Average Change in Air Fare		
	10%	20%	30%
0%	853,000	901,000	949,000
5%	900,000	951,000	1,002,000
10%	947,000	1,000,000	1,054,000
15%	994,000	1,050,000	1,106,000
20%	1,040,000	1,099,000	1,158,000

Net Effects from Low Cost Services (runway extension)

Our analysis demonstrates that the effect of low fare services on Jersey and the Isle of Man was to see continued erosion of the market share of the sea mode of travel, consistent with the pattern observed on Guernsey.

- Hence, not all of the incremental passenger demand would be new for Guernsey and so give rise to real user benefits, other than those related to air fare and journey time savings on some routes.
- Based on the patterns observed on Jersey and the Isle of Man, around 54% or 27% respectively of the increased air passengers would be additional trips to/from Guernsey. Of these, 77% or 27% respectively would be expected to be visitors with the remainder outbound resident trips.
- Applying these percentages to the potential incremental air passenger uplift, using either the Jersey or Isle of Man precedent has the following results:

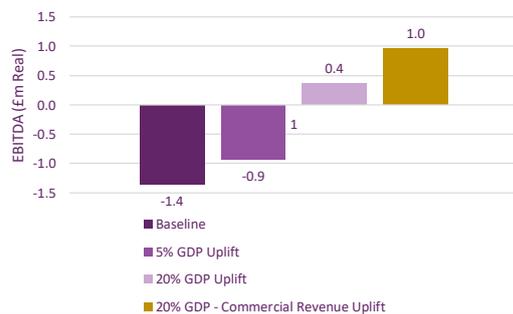
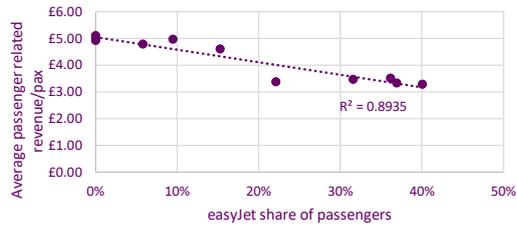
Net Additional Passengers to from Guernsey and Additional Visitors

	Model	Total Incremental Air Passengers	Net Incremental Passengers (after diversion from Sea)	Incremental Visitor Passengers	Incremental Visitors
Base uplift	Jersey	145,000	78,000	60,000	30,000
	Isle of Man		39,000	10,000	5,000
5% GDP Growth	Jersey	153,000	83,000	64,000	32,000
	Isle of Man		41,000	11,000	5,500
20% GDP Growth	Jersey	177,000	95,000	74,000	37,000
	Isle of Man		48,000	13,000	6,500

- In practice, we would expect the performance of Guernsey to lie somewhere between the other two islands, with the potential for around 20,000 incremental visitors but only with the main route to London included.

Airport Revenue and Cost Effects

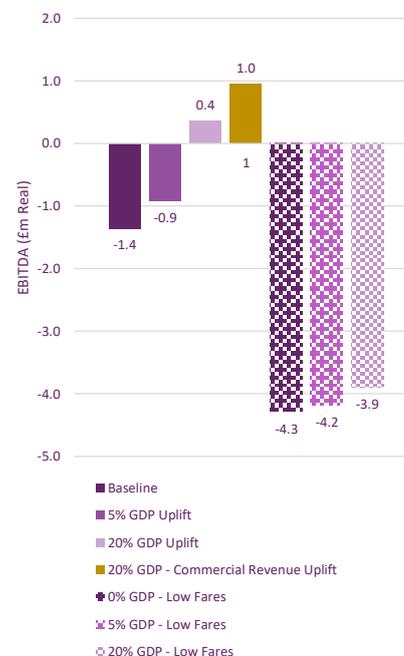
- **Low cost carriers pay substantially less in airport charges than the average of £10.48 per passenger currently being earned at Guernsey Airport**, with a charge of £3 per passenger more likely the maximum achievable from a low cost airline.
- The effect of easyJet entry on average aeronautical charges revenue at the Isle of Man Airport is shown on the right.
- Although previous studies made an allowance of £1 million a year for 10 years to support low cost entry, this is not likely to be sufficient to compensate the Airport for lost revenues.



- In the circumstances of growth at the Airport due to improved economic performance, **with existing aeronautical revenue levels and no low fares entry, there is the prospect of attaining profitability**, assuming there is commercial revenue growth from improved terminal retail & catering, albeit the scope for such revenue growth is more limited with the reduced scope and cost of the terminal improvement works now proposed.
- This potential profitability is consistent with the findings of our initial work for the Draft Masterplan.
- However, the level of profitability is unlikely to be sufficient to fund all of the required improvement works absent the development of other commercial revenue streams.

Overall Financial Impact on the Airport from Low Cost Entry

- There are 3 potential cost implications for the Airport from low cost entry:
 - **The updated capital costs of improving the terminal are now estimated at £20 million. Assuming the works are completed in any event, the incremental costs for handling low cost operations would only be c.£3 million but if not completed in advance the full £23 million expenditure would be triggered by low cost entry;**
 - **Increased operational costs (e.g. additional security) to handle peak passenger flows;**
 - **Reduced revenues to the Airport allowing for the lower airport charges required to attract low fare airlines and the loss of any Aurigny income (net of any incremental commercial revenues from additional passengers).** In the light of the reduced scope of the terminal improvement works, any scope for improved commercial revenue would be eroded by low cost entry due to the need to provide pre-board areas reducing commercial space again.
- In all scenarios, **the financial position of the Airport was materially worse at the EBITDA level, with losses increasing to £3.9-4.3 million a year.**



Effect on Aurigny from Low Cost Services (runway extension)

- We believe strongly that a low fares operation would require Gatwick (or a main London service) as its anchor route. For both Jersey and the Isle of Man, easyJet's growth was based on an initial anchor route— Gatwick and Liverpool respectively. This is consistent with the pattern of low cost route growth.
- Assuming this proved successful, the route network could grow and replicate the range of routes served on the other islands. This would largely overlap the Aurigny network (66% of total air pax in 2018 when substitution for Flybe is allowed for), rather than the residual Blue Islands network including Southampton.
- Based on the performance on Jersey and the Isle of Man, a low cost airline such as easyJet would be expected to take around a 50% share of the overall market over time and this would largely be at the expense of Aurigny.
- The net impact on Aurigny would depend on the extent to which there was general market growth from economic factors concurrently. Assuming all of the impact was felt by Aurigny, the effect relative to 2018/9 passenger volumes (incl. Flybe replacement) is shown below:

Impact on Aurigny

	Net Loss of Passengers	% Impact relative to 2019 volume
Base uplift	330,000	62%
5% GDP Growth	326,000	61%
20% GDP Growth	314,000	59%

- **We estimate that this could result in a loss of revenue to Aurigny of between £24.2 million and £25.5 million**
- There would be scope to ameliorate this through cost reductions but, ultimately, this could result in the major restructuring or even closure of the airline, with a loss of employment on the island and consequential GDP impacts.

Overall Economic Implications

- We have not replicated the GVA based analysis on the same basis as that carried previously for the States but have considered the economic welfare effects, taking into account:

- User Benefits:

- Journey time savings benefits;
- Air fare savings through reduced fares;
- Increased wait time costs associated with reduced frequencies;

- Producer Impacts

- Airport profit and loss impacts;
- Terminal and runway development costs; and
- Additional losses to Aurigny (assuming some cost savings are possible).

- **Runway costs assumed:**

- £40 to £130 million dependent on option
- mid-range £78 million as Frontier Economics assumed for purpose of appraisal but high risk of cost escalation.

Growth Scenario	£m	Journey Time Savings Total	Total Air Fare Savings Total	Wait Time Cost Total	Total Welfare & Productivity Benefits	40-Year NPV	40-Year IRR
0% GDP, £11m Terminal Cost, No Commercial Uplift		£3.1	£23.4	£-6.3	£20.2	£-10.1	2.7%
0% GDP, £34m Terminal Cost, No Commercial uplift		£3.1	£23.4	£-6.3	£20.2	£-28.5	1.6%

Key Conclusions

The Overall Market

- Travel demand, including air travel demand, to/from Guernsey has shown an abnormal negative response to limited GDP and population growth, suggesting that there are structural issues in the economy.
 - These structural issues would need to be addressed to stimulate growth in demand, regardless of low cost entry or not.
 - Jersey exhibits a more normal relationship and the market has responded to low fares entry, but the Isle of Man air travel market exhibits a much more sluggish response to GDP growth even with low cost airline entry.
 - In both cases, much of the growth in air travel demand with low cost entry has simply been a transfer from sea, with limited evidence of significant visitor growth but with increased resident travel.
 - There is a prospect of air passenger growth and attainment of profitable operations at the Airport with productive GDP growth, so long as accompanied by population growth and refreshed tourism policies. This is likely to require an increase in the labour market and those in active employment.
-

Key Conclusions

The Effect of Low Fares

- The evidence from the Isle of Man is that extending the runway to allow low cost airlines has not improved the connectivity of the Isle of Man or the volume of travellers overall. The performance of Jersey overall is little better.
 - Although lower air fares have been the result, at lower service frequencies, it is not certain that air fare reductions would be sustained if the low fares carrier displaced other airlines and attained a quasi-monopoly.
 - A low fare airline would almost certainly require to enter on the 'anchor' Gatwick route to provide a basis for their developing a network.
 - Entry of low fare airlines, enabled by a runway extension, would substantially worsen the financial position of the Airport due to the lower aeronautical revenues and increased operating costs that would not be compensated for by increased commercial revenues.
 - There would be substantial capital costs to extend the terminal to handle larger aircraft loads in peak periods.
 - It is unlikely that the market would support substantial service growth by other than low fare airlines even with a longer runway.
 - The development of a low fares network would potentially have a substantial negative impact on Aurigny's financial position and could result in the closure of the airline, with a potential loss of a large number of jobs.
 - Allowing for the cost of the runway extension and the required terminal redevelopment, the financial impacts on the Airport and Aurigny, along with the value of air fare savings net of the effect of reduced frequencies of service, there is unlikely to be a positive economic welfare gain for the States, absent more fundamental economic changes.
-

Recap of Key Conclusions

Overall Conclusions

- There is a tension between the requirements of those stakeholders that want lower fares and those that place a premium on frequency and the timing of flights.
 - Achieving both objectives is almost certainly mutually exclusive.
 - The States need to be clear the objectives that it wants to achieve in taking a policy decision:
 - Lower fares would be likely to:
 - lead to more resident leisure travel and spend off island;
 - benefit businesses seeking lower costs but at the expense of frequency of service and a loss of connectivity overall required particularly by the financial services sector;
 - negative business productivity impacts due to reduced service frequencies and reliability;
 - a reduction in passengers using ferries;
 - a small increase in tourist visitors;
 - major revenue losses for Aurigny.
 - Low fare service would require;
 - substantial capital expenditure at the Airport (runway and terminal);
 - negatively impact revenues unless subsidised directly by the States.
 - These factors need careful consideration to ensure that the proposed solution delivers against the key objectives for the States.
-

1. Background

- 1.1 York Aviation supported AECOM in the preparation of the Draft Masterplan for Guernsey Airport during 2021. The three forecast scenarios were agreed as the basis for the initial work on the Draft Master Plan, reflecting the expected continuation of existing economic and population policies for Guernsey as well as detailed discussions with the airlines regarding their probable response to the market.
- 1.2 These initial forecast scenarios indicated little scope for growing the volume of passengers using the Airport in the near term but were considered robust based on current known conditions, reflecting the limited population and economic growth projected for the Bailiwick and recent failure to stimulate additional inbound tourism. These initial demand forecasts were based on the current runway length only. The initial forecasts are described more fully in **Section 2**.
- 1.3 In discussions following the preparation of the Draft Masterplan, we were asked to give further consideration to what changes would be required to drive further growth at the Airport, particularly in the light of the financial challenges facing the Airport in the COVID-19 recovery period. Accordingly, York Aviation was commissioned, via AECOM, to undertake further analysis of the factors that could drive growth, including the potential for an extended runway and the financial costs and economic benefits that could entail.
- 1.4 The specific tasks that we were charged with undertaking are set out below:

Task 1: Sensitivity Testing of Master Plan Passenger Forecasts

- 1.5 Consideration of the impact on the passenger demand forecasts of a number of potential policy or development changes on the Island, including:
 - a. The potential impact of an increase in bed spaces on the Island and the quality of the hotel offer;
 - b. The potential for higher growth in GDP¹;
 - c. The potential for population growth;
 - d. State funding of aero charges/discounts.
- 1.6 We have set out to examine these factors individually, by examining the past trends and benchmarks with other islands to establish the circumstances that could lead to higher growth than is currently forecast.

Task 2: The Market Impact of a Runway Extension

- 1.7 We understand that the States is actively considering mandating that a runway extension be constructed at the Airport and that Guernsey Ports is keen to understand what implications that might have not just for the Masterplan but also the profitability of the Airport. Extending the runway has the potential to enable the Airport to attract a broader range of airlines, including those operating with a low cost business model or other flag carriers that rely on equipment not suitable for the existing runway length.

¹ Gross domestic product

- 1.8 We recognise that the States has previously commissioned work in this area, including most recently from Frontier Economics and previously from PwC, in the context of examining how to improve airlinks to the Bailiwick. We recognise that these exercises involved substantial engagement with a wide range of stakeholders across the Island, as did our original 2009 Report on the economic case for extending the runway, and we have not set out to duplicate this detailed work, albeit we have carried out a targeted consultation with selected key stakeholders. Rather, this initial task focuses on understanding the market implications from extending the runway in terms of the net additionality of any passenger volumes over and above the sensitivity analysis under Task 1.
- 1.9 In considering the market potential for an extended runway, we have taken into account:
- The length of runway extension envisaged;
 - The need for incentives (lower airport charges) to make it attractive for low fare airlines to operate;
 - The implications for frequency of service;
 - The implications for air fares;
 - The extent to which low fares airlines would stimulate the market;
 - Potential diversion from sea travel.
- 1.10 Our focus has principally been on the potential impact of a low fares carrier on the market as this was the focus of previous studies but we have discussed the extent to which other opportunities might be opened up by having a longer runway in place.

Task 3: The Financial and Economic Implications of Extending the Runway

- 1.11 We have split this task into two elements; the first relating directly to the Masterplan and the affordability of the incremental costs to the Airport of needing to accommodate larger aircraft in terms of operational and capital costs as well as the potential for additional revenues at the Airport. The second element relates to aspects of the economic case for the investment relating to economic welfare measures, such as air fare savings and journey time implications that derive directly from the market assessment analysis.

Financial Implications

- 1.12 We have been advised that the intention is for the States to fund the cost of the runway extension works and that this investment appraisal/business case will be undertaken separately.
- 1.13 Over and above the direct capital costs of extending the runway, there will be other consequential costs for the Airport in terms of increased operational costs and other capital expenditure requirements to increase passenger capacity in the terminal due to higher passenger numbers on larger aircraft, particularly in peak periods, and the potential need for support payments to the airlines or reduced airport charges to attract new airlines and additional services. To the extent that additional passengers are stimulated through the provision of a runway extension, there would be compensatory implications for growth in non-aeronautical commercial revenues.
- 1.14 We have drawn these factors together using the high level financial model developed for the Draft Masterplan to examine the implications for the profitability of the Airport and the consequential capital funding requirements. At this stage, we have not taken into account any other commercial development opportunities that may be brought forward as a consequence of the Draft Masterplan.

Economic Implications

- 1.15 We have also validated the broader economic case for investment in a runway extension based on updated projections of the market implications under Task 2, drawing on work already undertaken by ourselves and other consultants for the States. We have not sought to duplicate work already undertaken but have carried out some further stakeholder consultations to update views.
- 1.16 We have focussed on the broader economic welfare effects, i.e. the impact on passengers, such as the balance between air fare savings and any implications for journey times having regard to frequency effects, deriving from our market analysis, as an input to the economic appraisal of the investment being undertaken by the Office for Economic Development.

Structure of the Report

1.17 The report is structured as follows:

- In **Section 2**, a recap of the passenger forecasts within the Draft Master Plan;
- In **Section 3**, a summary of consultations undertaken and our understanding of key strategies for the future;
- In **Section 4**, an analysis of the past market performance on Guernsey and benchmarks with Jersey and the Isle of Man;
- In **Section 5**, the potential impact of a runway extension;
- In **Section 6**, sensitivity testing of the passenger forecast based on the current runway length and with an extended runway;
- In **Section 7**, the financial and economic welfare implications of a runway extension;
- In **Section 8**, we set out some broad conclusions and suggestions for the next steps

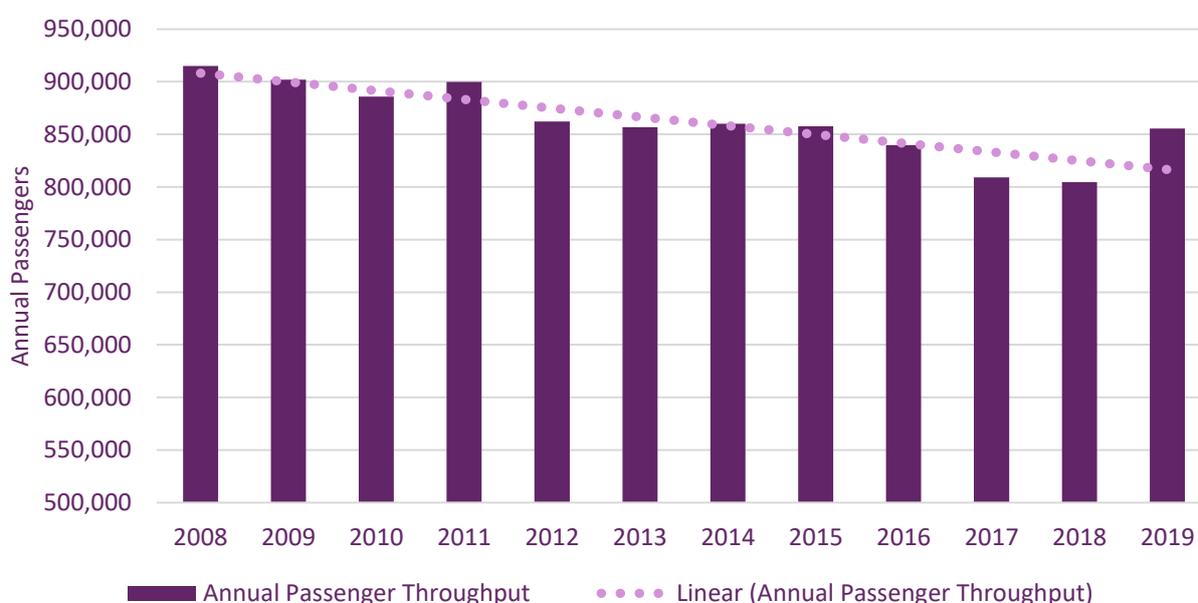
2. Passenger Forecasts within the Draft Master Plan

- 2.1 In this section, we outline our approach to the passenger forecasts produced for the Draft Master Plan². We describe here the passenger forecasts but do not repeat the conversion to aircraft movements, including cargo and business aviation activity, and the derivation of capacity planning parameters, which are set out in full in the Draft Masterplan.
- 2.2 At the outset, it is important to note that these passenger forecasts were prepared based on the existing runway declared distances and no account was taken of any future potential changes with the provision of a runway extension or other measures to increase declared distances. These forecasts represent a baseline forecast and we go onto consider further sensitivity analysis in the remainder of this report. It should also be noted that the forecasts do not consider the potential impact on the long-term fleet, routes or frequencies that may arise from the introduction in alternative fuels as these are unlikely to impact significantly until the latter part of our analysis period and the impacts and timing remain highly uncertain.

Existing Traffic Overview and Background

- 2.3 Over the decade pre-pandemic, annual passenger volumes at Guernsey Airport have remained between 800,000 and 900,000 passengers per annum, as illustrated in **Figure 2.1**. Overall, between 2010 and 2019, passenger volumes fell, with a compound annual growth rate (CAGR) of -0.4% during this period, despite this being a period of recovery from the global financial crisis. It is significant to note that the number of passengers using the Airport has not recovered to historic pre-recession levels. For the purpose of our analysis, we have focussed on the period to 2019 and what this tells us about long term trends rather than the short term impact of the COVID-19 pandemic, accepting that the timescale for recovery to past patterns remains somewhat uncertain. A key question posed for our current analysis is what would it take to achieve sustainable growth to above 900,000 passengers per annum?

Figure 2.1: Annual Passenger Volumes at Guernsey Airport (2008 – 2019)

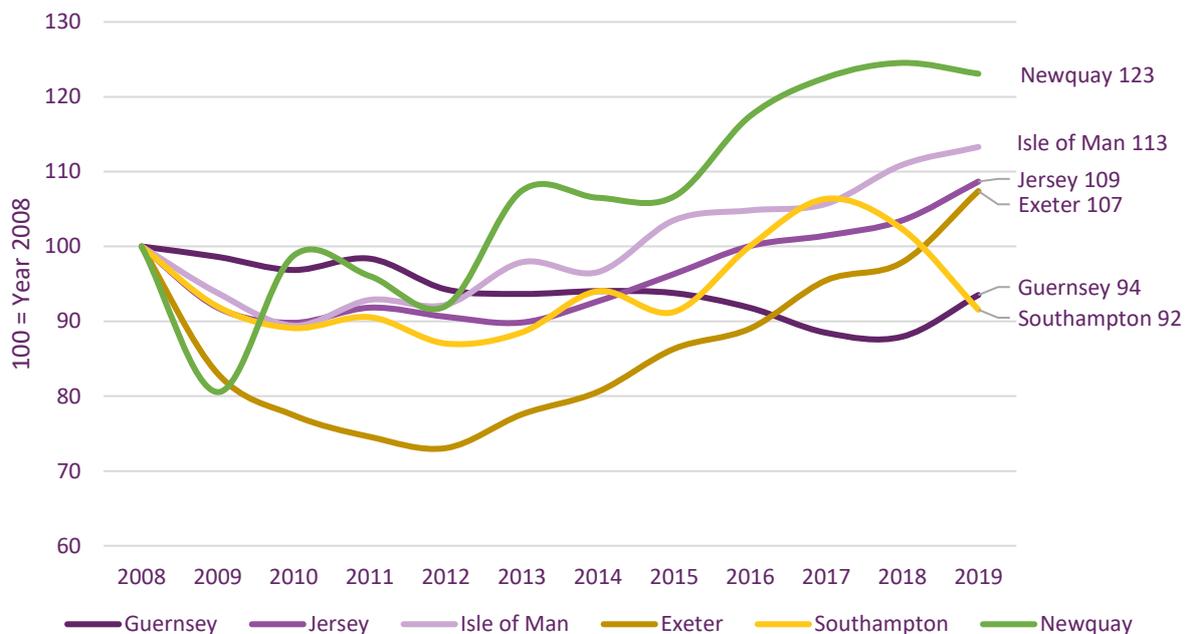


Source: CAA Statistics

² Further details are contained in the Draft Masterplan.

2.4 **Figure 2.2** compares the indexed growth of the annual passenger volume following the 2008 economic downturn through to 2019 at Guernsey Airport compared to selected comparator airports across the British Islands of a similar scale of activity. In the years immediately following the 2008/9 recession, growth in passenger numbers at most smaller airports across the British Isles stalled. Guernsey was no exception, although the initial decline in passenger numbers between 2008 and 2012 was not as significant in large part because of the dependence of the Island on air travel. Between 2012 and 2019, however, growth at most of these comparator regional airports outpaced growth at Guernsey, which continued to underperform relative to the other airports each year through to 2018.

Figure 2.2: Indexed Growth of Annual Passenger Throughput at Select Regional Airports (2008 - 2019)



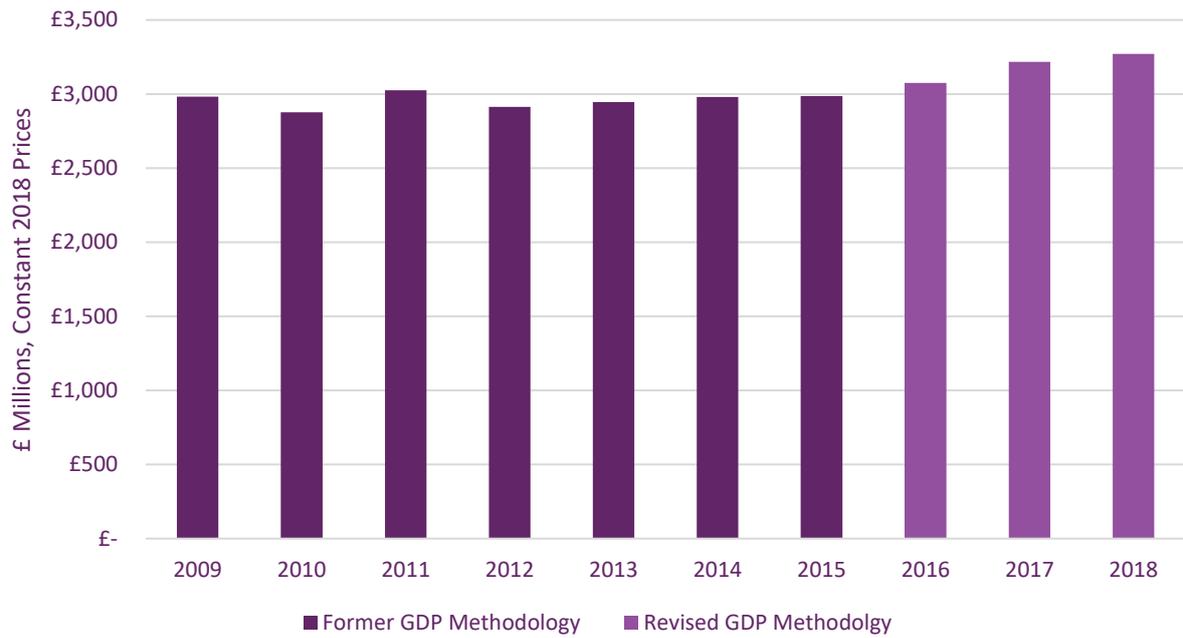
Source: CAA Statistics

2.5 There are a number of factors that may explain Guernsey Airport’s recent performance when compared to UK regional airports. These include:

- GDP is typically a key driver of demand for air travel, normally explaining around 80% of the change in passenger volume. Notwithstanding the growth in GDP as shown in **Figure 2.3**, air passenger demand did not grow despite a small uptick in GDP;
- The population has also been flat as shown in **Figure 2.4**. Whilst the Bailiwick’s population cap was removed in 2015, the Population Management Law, ratified in 2017, controls the number of working aged people who can work and buy certain types of property in Guernsey. We explore these factors further in the **Section 4**;
- Bed spaces have been declining over time, limiting the scope for inbound tourism growth. The Tourism Product and Customer Experience Review (PwC, 2017) found that the Island had faced a decline in accommodation stock and stagnating occupancy rates between 2012 and 2016, and anecdotal evidence suggests that this trend continued in the following years.

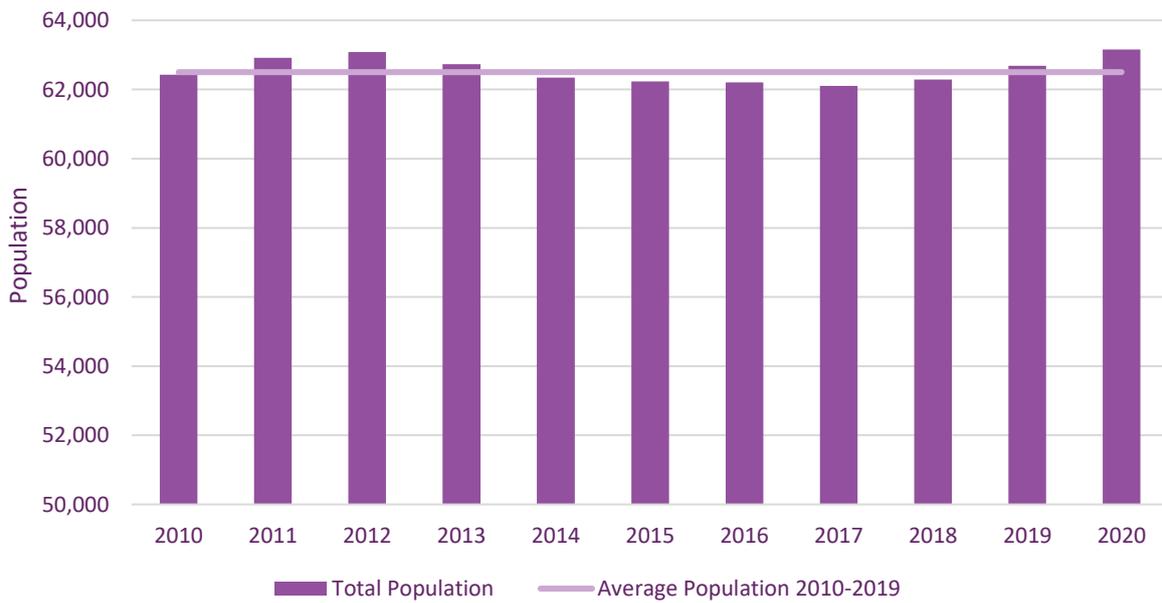
It is possible that the nature of the airlines serving the Island and the fares charged may also have been a factor and we explore this further through the later sections of this Report.

Figure 2.3: Annual GDP of Guernsey (2009 - 2018)



Source: States of Guernsey

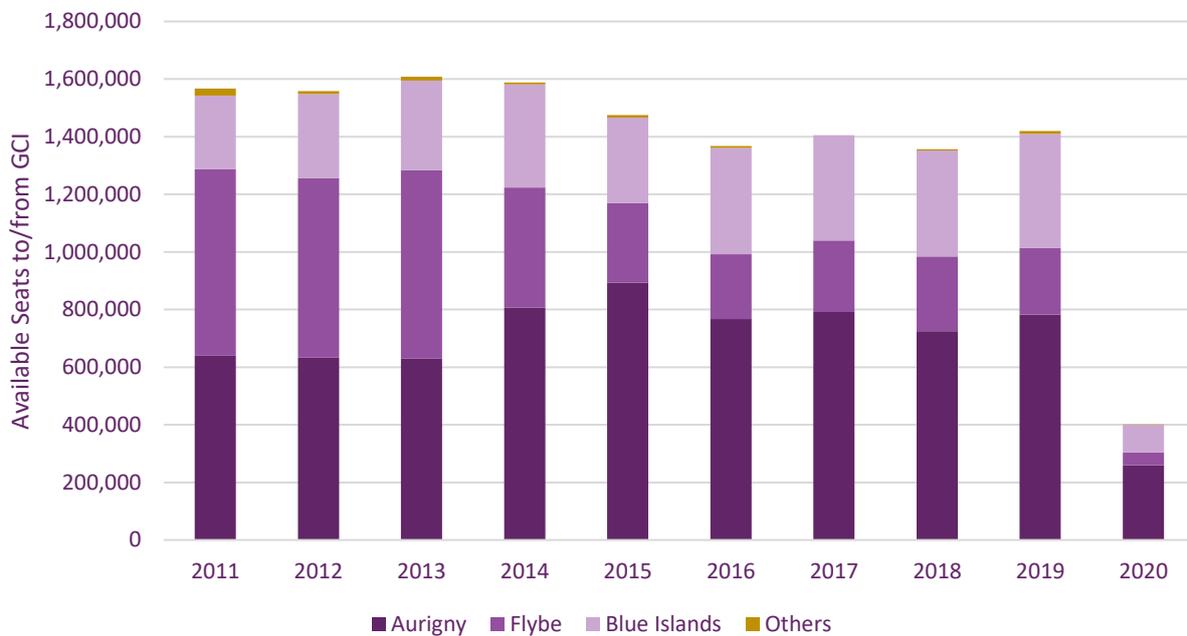
Figure 2.4: Total Population of Guernsey



Source: Guernsey Annual Electronic Census Report (States of Guernsey, 2021)

2.6 **Figure 2.5** shows the total seat capacity available on passenger services at Guernsey Airport by carrier between 2011 and 2020. Throughout this period, the majority of seat capacity at the Airport has been provided by the Bailiwick owned carrier Aurigny Air Services, which accounted for approximately 55% of the Airport’s total seat capacity in 2019, with Flybe and Blue Islands also providing substantial capacity until the former’s demise in early 2020³.

Figure 2.5: Available Seat Capacity at Guernsey Airport (2011-2020)



Source: OAG

2.7 As can be seen, there was a small increase in airline capacity in 2019, which drove an increase in the number of passengers using the Airport. This increase in services was as a consequence of route support provided by the Airport and the States to encourage new routes and support the re-introduction of services to Heathrow. This led to overcapacity in the market and lower air fares so stimulating demand growth. However, the airlines indicated that, even with the financial support, the over-capacity was commercially unsustainable given the scale of the market from Guernsey and the limited impact on stimulating new inbound travel.

Approach

2.8 In the light of the above analysis, it was originally considered that the application of traditional econometric techniques would indicate negative elasticities to GDP and would tend to lead to a projection of further declines in passenger numbers, even if GDP remained fairly flat and declines in bed space are halted. Given our consultations with the key airlines and their detailed understanding of the market, this did not seem a credible approach to project continuing decline in the market and, in any event, this could have resulted in the Masterplan failing to provide for potential future requirements if it was assumed that passenger demand would continue to fall as a basis for the plan.

³ To the extent that Flybe’s capacity and routes have been replaced, this has largely been by Aurigny so increasing its effective market share.

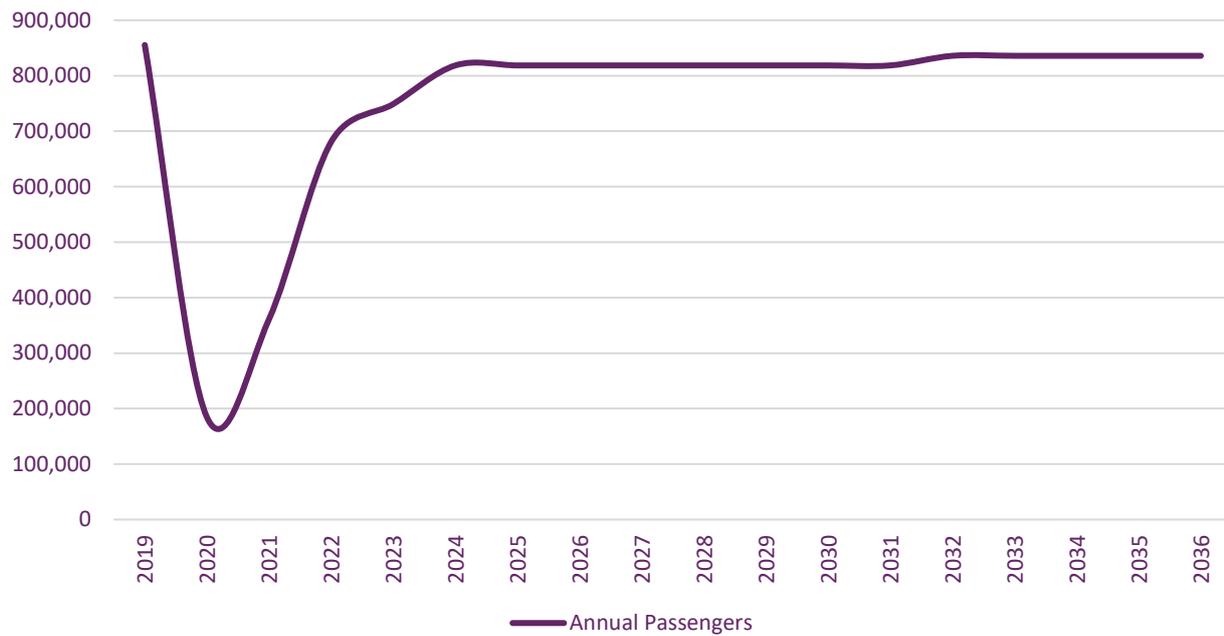
- 2.9 Hence, our forecasts for the Masterplan were developed on a purely bottom-up basis, taking into account market intelligence gained from consultations with the key airlines at Guernsey as well as reviewing population, economic and tourism strategies. The two main carriers at Guernsey expressed strong views that the overall market, without significant changes in drivers of air travel (bed spaces, economic output, population etc.) is likely to be limited to 800-850,000 passengers per annum. Based on recent experience of launching new services, it is felt by the airlines that the current airport charges incentives/discounts are not sufficient to generate further growth or new routes and, indeed, the evidence would suggest that even where additional incentives were offered, the overall effect was not significant in terms of securing a step change in passenger growth. The airlines specifically indicated that the 2019 route growth had not proved sustainable, with some new routes simply cannibalising demand from existing services, whilst capacity growth on routes such as Southampton had simply led to a 'price war' that, whilst stimulating additional passengers (and switching some from London Gatwick), was not sustainable for the airlines.
- 2.10 The bottom-up projection was, therefore, derived from adjustments to the 2019 network and frequencies based on feedback from the airlines and the Airport. In adjusting the capacity in the bottom-up forecasts, we essentially re-aligned some routes with the 2018 passenger levels, on the basis that this represented a sustainable level of demand absent step changes in economic growth, tourism or other factors⁴. Applying assumed aircraft capacity and load factors over time to the assumed frequencies of service enable the calculation of the projected passenger numbers for the Airport.
- 2.11 In addition to the bottom-up approach, we also reviewed CAA data from the main UK airports to Guernsey to identify any changes in underlying demand which could point to new opportunities for air service development, or which suggested a basis for growth (or reductions) in demand based on factors such as population changes, hotel bed space changes or economic growth. However, this analysis showed few consistent patterns of change, suggesting overall stability in the size of the market. It is this presumption that we now seek to test further within this Report.

Base Case Forecast

- 2.12 **Figure 2.6** illustrates the Base Case passenger forecast, reflecting a most likely forecast with no significant step changes in the States' economic performance as the underlying driver of demand, or any step changes in aeronautical charges that may generate additional activity. This suggested a recovery from COVID-19 to just under 820,000 passengers per year before the slight increase to around 835,000 over time. Implicit within this small growth is some marginal economic growth on historic patterns. At this level, the potential scale of the market fits with the airlines' view of the extent to which Guernsey could viably support an increase in air service provision. It should be noted that the projection for 2022 makes some allowance for possible on/off restrictions in travel associated with COVID-19 but, in practice, it is difficult to predict this accurately with the continuing uncertainties associated with the pandemic. We believe that, as in the wider UK market, air travel is likely to return to 2019 underlying demand levels by around 2024 and, therefore, have assumed Guernsey returns to its normal potential around the same time.

⁴ More detail on the route by route assumptions adopted is set out in the Draft Master Plan.

Figure 2.6: Base Case Annual Passenger Forecast



2.13 We recognise that this forecast is ultimately conservative but provides a realistic starting point for modelling the financial implications of development works consequent upon the Master Plan.

High and Low Cases

2.14 As well as a Base Case, we also developed High and Low Cases to be used as a basis to test the potential infrastructure requirements, as well as financial risk of underperformance. The High Case reflects the States' continued desire for a greater breadth of network, which may involve more UK destinations, points in France, or services to meet the outbound needs of leisure passengers heading to Europe. Although the airlines did not consider such additional routes as likely to be viable, we essentially made hypothetical adjustments to the route network to illustrate upper and lower bounds of likely passenger throughput. These are illustrated in **Figure 2.7**.

Figure 2.7: Comparison of Low Case, Core Case and High Case Annual Passenger Forecasts



2.15 It is notable that our headline financial modelling for the Draft Masterplan showed that only with High Case growth was the Airport likely to regain operational profitability but that, absent other initiatives, the level of profitability was unlikely to enable the require infrastructure development and refurbishment to be funded from internal Airport profits. This provides a context for exploring what might be required to deliver faster growth at the Airport and a more profitable future. Implicit in our High Case is an assumption that there will be changes to economic or other factors that would result in additional airline capacity being deployed on Guernsey but assuming a continuation of existing airline business models.

3. Consultations and Strategies

- 3.1 To inform our consideration of the issues and opportunities, we undertook a limited number of consultations aimed at understanding what had impeded the growth in air travel demand to/from Guernsey over the last decade (pre-pandemic) and what would need to change to deliver growth. We summarise key points from these consultations below.
- 3.2 We also comment on the emerging direction of key strategies on the Island, such as the emerging Tourism Strategy and other relevant strategies.

Consultations

- 3.3 We consulted with representatives of a number of stakeholder groups, as recommended by Guernsey Ports, to ascertain their views as to the reasons for the sluggish performance of the air transport sector as well as their perceptions as to the potential benefits of a runway extension. Below, we have highlighted the key points raised on behalf of each group.

Chamber of Commerce

- 3.4 We consulted specifically with the Transport Lead for the Guernsey Chamber of Commerce. Much of the concern centred on the performance of Aurigny and whether the airline was best placed to drive demand growth on Guernsey. It was felt that competition to Aurigny would, in any event, be a good thing. This was set alongside the perceived risks if the States were to cease to support Aurigny and leave reliance on other airlines to serve the market. In particular, there was a real concern that this could leave the Island reliant on other airlines that might not have the equipment (aircraft) capable of using the existing runway length so potentially leaving residents and visitors reliant on connecting via Jersey or Southampton, given that these two routes are the only ones operated on a purely commercial basis.
- 3.5 It was a strongly held view that if other airlines were to be attracted, low cost or not, the aircraft available to other airlines were likely to mean that an extended runway length would be required in any event. It was also recognised that services operated by other airlines on a purely commercial basis might result in a reduction in frequency and a different pattern of operations with aircraft based elsewhere resulting in later departures in the morning and earlier return flights in the evening. However, it was noted that businesses, other than the financial services sector, might value lower air fares more than the frequency of operations and day return connections. Hence, there was a strongly held view that a runway extension would be required to ensure that airlinks could be retained if Guernsey had to rely on airlines other than Aurigny to ensure the maintenance of air links to key points.
- 3.6 We were provided with the results of surveys of Chamber members in 2017, 2018 and 2021, which showed that airlinks were considered highly important by a large number of Chamber members. In the most recent survey, post pandemic, there was an emphasis on connections to London, with London City Airport being favoured for direct connections to London but the importance of Heathrow and then Gatwick for flight connections was also evident. There was relatively less interest in connections to the remainder of the UK but, amongst regional cities, Manchester figured most highly. There was also reported interest in more direct international services, but there was not a clear pattern of demand, with some respondents citing the desirability of connections to nearby points in France and others to major hub airports such as Amsterdam or Frankfurt.

- 3.7 In terms of the more general requirements for air service connectivity, priorities were reliability, early morning and evening flights, more competitive air fares and ensuring at least 1-2 flights a day to the main destinations.
- 3.8 Earlier surveys focussed on the impact of the changing pattern of air services and there were concerns expressed that the reductions in air service offer, coupled with concerns about reliability, were costing local companies business opportunities as well as having an adverse impact on productivity.
- 3.9 Taken together, the view of the Chamber members was generally one of dissatisfaction with the current (pre-pandemic) pattern of air services and a belief that the improved connectivity was required to support the economy of Guernsey. However, the balance between those seeking frequency and reliability versus those desiring lower air fares was less clear cut, recognising that achieving improved frequencies and lower air fares may be incompatible.

Guernsey Hospitality Association

- 3.10 The Guernsey Hospitality Association (GHA) believes the recent declines in air travel to the Island can be ascribed to an increase in air fares, which they believe will be exacerbated following the demise of Flybe. GHA claimed that there has yet not been sufficient replacement of seat capacity following Flybe's collapse, which may constrain the number of inbound visitors to the Island during the peak summer season. However, in practice, it is difficult to disentangle these impacts from the effects of the pandemic.
- 3.11 GHA noted that there had been a reduction in visitors from the Netherlands and Germany as the airline that used to operate these charter services no longer has aircraft types capable of serving the Airport. We note, however, that Visit Guernsey have not been promoting the Island in European markets for some years now and we believe that, if a sufficient market existed, a suitable airline partner could be found to continue these European services with suitable aircraft, for example Blue Islands has recently been championing its ability to serve European markets in partnership with tour operators now that it has consolidated to a fleet of ATR-72s⁵, albeit its primary focus appears to be Jersey. GHA cited research that found 80% of European visitors prefer Guernsey over Jersey as Guernsey is less built-up and offers a more traditional experience, but this does not appear to be Blue Islands' current focus. Aurigny have also been actively operating in the aircraft charter market away from Guernsey, indicating that it could have operated such services with its spare capacity had a tour operator engaged them.
- 3.12 It was suggested that Guernsey's tourism offering is lacking a stand-out world class attraction such as the Eden Project in Cornwall. GHA claimed that whilst bed stock has declined on the Island, quality has generally improved, and that there are now fewer rundown hotels on the Island. GHA believed that there was scope for increasing bed stock on the Island, particularly in St. Peter Port. Furthermore, it was felt that the quality of food and beverage outlets on the Island had recently improved, with some new high-end restaurants establishing themselves in recent years.

⁵ <https://www.ch-aviation.com/portal/news/116640-jerseys-blue-islands-ends-atr42-operations>

- 3.13 GHA suggested that there had been a lack of accountability in delivering against VisitGuernsey's tourism strategy, but were optimistic that VisitGuernsey's activities may become more focussed now that it is an arm's length organisation rather than being a branch of the Government. However, GHA believed that the Island's marketing still needs to be 'sharper' to match what had happened on Jersey where the Hospitality Association had worked closely with Government to improve connectivity to Jersey and to seek alignment across Jersey's tourism sector - factors which were believed to be a key in Jersey's success as a destination.
- 3.14 GHA felt that attracting a younger demographic, including young families, would be important for tourism growth on the Island and that more modern types of aparthotel-style accommodation would be necessary to support this. However, it was noted that self-catering visitors tend to use ferries as they prefer to bring their own cars to the Island and so developments of this type might not increase reliance on air services.
- 3.15 GHA believed that Aurigny did not have a focus on the tourism sector and that its route choices and marketing efforts should be more focussed on drawing inbound visitors to the Island, rather than choosing routes and schedules that are orientated towards resident travel off the Island. It was felt that the presence of a low fares carrier, in itself, would be a strong marketing tool for inbound visitors, citing that some tourists use the drop-down menu of destinations on a low fare carriers' websites to discover new places to visit. Lower fares were believed to be an important part of changing the demographic of visitors to the Island and would help attract tourists to Guernsey over other destinations.

Guernsey International Business Association (GIBA)

- 3.16 We spoke with a representative from the Guernsey International Business Association (GIBA) to understand their members' perspective of air connectivity on the Island.
- 3.17 GIBA explained that, approximately 10 years ago, Guernsey-based financial services firms were more independent and particularly outward looking, with a need to conduct a substantial amount of sales and marketing activity off-Island. Since then, there has been consolidation in the sector, with the major firms having a series of offices in locations such as Jersey, Guernsey, Singapore, the Cayman Islands, Luxembourg and Bermuda, which has somewhat reduced GIBA members' demand for air travel from Guernsey as sales and marketing activities are carried out more from these other locations.
- 3.18 Although, in 2019, new EU tax rules have meant that directors or board members of businesses registered in Guernsey now have to periodically meet on-Island, GIBA noted that this appeared to be a small driver of air travel demand to the Island compared to previous activities involving much more outbound business travel. This is consistent with the absence of any apparent increase of inbound business visitors to Guernsey in 2019 and apparent declines in outbound business trips.

- 3.19 GIBA claimed that the cost of air fares to access the Island are far less critical to the financial services sector than other sectors and that the relatively higher fares are not a deterrent to the sector conducting business on Guernsey. It was believed that the ability to conduct day return trips by air remains a critical requirement for the sector and that the reliability of air services at the beginning and end of the working day is perhaps more important than overall frequency. GIBA noted that their sister organisation on the Isle of Man was reporting that the changes in frequency, brought about by low cost entry into the Isle of Man air travel market, was resulting in its members struggling to conduct day return trips to some key destinations, which is having a negative impact on the sector. GIBA noted that Guernsey has the distinct advantage of owning its own airline that has a primary purpose of meeting the needs of travellers to and from the Island and suggested that this should be a mechanism to guarantee that flights would be available to key destinations at the beginning and end of each working day.
- 3.20 GIBA did not foresee any issue if Aurigny consolidated their fleet to exclusively ATR turboprops (i.e., no longer operated the Embraer jet) given the relatively short flight time from London. Indeed, GIBA did not believe that larger aircraft, such as those flown by British Airways or easyJet, were necessarily needed as they believed that the Island is well served by the existing mix of turboprops and small jets given the size of the Island's population and scale of business activity.
- 3.21 It was felt that there is merit in retaining at least one aircraft to be based on the Island to conduct the first flight of the day to London, as an aircraft based away from the Island may have difficulty landing in low visibility conditions, which would reduce the reliability of early morning outbound services to London. The need to operate a second departure from the Island in the morning, such as the 08.25 service operated in 2019 to overcome capacity shortfalls on the first flight, was also seen a positive as it gave members the opportunity to fly a little later if they did not need to be in London for the start of the working day.
- 3.22 It was also felt that Gatwick is not the best London airport for connectivity and that GIBA's members would prefer a route to Heathrow instead, but they recognise that securing year-round slots at suitable times would be an issue. GIBA believed that Aurigny were in talks with other carriers⁶ at Gatwick to offer through-connections to destinations elsewhere, which would be highly beneficial to GIBA's members.
- 3.23 Direct services to Manchester and Birmingham were seen to be important. In addition, regular, year-round, direct services to Scotland would be beneficial to support a growing community on the Island from Scotland related to the financial sectors in Edinburgh and Glasgow.

Guernsey Aviation Group

- 3.24 The Guernsey Aviation Group believed that Jersey has historically been very successful at promoting itself with large carriers such as British Airways and easyJet and suggested that runway enhancement works over previous decades at Jersey were a key factor in Jersey Airport's success (though there has been no runway extension since the 1970s). They cited the benefit that Jersey has in terms of onward connectivity provided by British Airways at its Heathrow hub, with the connections available at Heathrow generally well-timed to meet the Jersey flights. In contrast, self-connections with Aurigny via Gatwick can often result in dwell times of up to 4 hours, which puts the Island at a competitive disadvantage against Jersey in terms of international connectivity.

⁶ We understand that Aurigny has subsequently entered into codeshare arrangements with British Airways and Emirates.

- 3.25 The Group also suggested that the effective scheduling of services is more important than the overall frequency of a service, which echoed findings from our discussion with GIBA. It was highlighted by the Group that having a service at the beginning and the end of each day is critical but air fares are also important. In particular, Island residents want cheaper fares. Hence, members of the Group were keen to see low fare services to Guernsey.
- 3.26 In terms of tourism, the Group believed that accommodation on the Island could be better utilised during shoulder periods and that this could be achieved with low fare services to Guernsey (which would replicate the patterns of growth outside the peak seen in recent years on Jersey). The Group also believed that if the States were to invest in major infrastructure projects, such as development of the Airport, then the private sector will in turn invest in the Island's tourism product. By way of example, it was felt that the Victor Hugo Centre and a proposed arts centre would be delivered more quickly if there was confidence that more visitors would be attracted to the Island with improved air connectivity.
- 3.27 It was also pointed out by the Group that freight travelling by air to and from the Island could benefit from lower costs if larger aircraft could be operated from the Airport. This reflects what emerged from consultations with the freight sector when forming the Draft Masterplan.
- 3.28 We also subsequently received a separate submission on behalf of the Group, which raises a number of points that they consider relevant to the case for extending Guernsey's runway to 1,740 metres. The document set out a range of benefits that may come forward if the runway were to be extended:
- An extended runway at Guernsey would allow existing and new operators to operate to a wider range of destinations without payload restrictions and/or with larger aircraft types that may deliver economies of scale in terms of reduced air fares for passengers using the Airport. Increased passenger volumes could, ultimately, deliver a range of direct, indirect and induced economic impacts including the creation of jobs on the Island;
 - A runway capable of handling popular larger aircraft types, such as the Boeing 737 and Airbus A320, which are ubiquitous within the fleets of most European carriers, would reduce Guernsey's dependence on carriers that operate smaller regional-sized type aircraft. Reference was made as to how the demise of Flybe leaves Guernsey in a precarious situation compared to Jersey, which would be able to backfill lost Flybe capacity from a wide range of carriers, including those operating the larger 737 and A320 aircraft;
 - An extended runway at Guernsey would allow for 'triangular' routes shared with Jersey to operate in either direction, thus providing operational flexibility for carriers. It is claimed that with the current runway length, any triangular-pattern operations have to visit Guernsey first, continuing on to Jersey and then onwards back to a home-base such as Frankfurt or Amsterdam;
 - An extended runway at Guernsey would also unlock benefits for corporate jets. It is claimed that corporate jets operating commercially at Guernsey are not able to operate from a wet runway at its current length, and that such movements have to wait until the runway is dry.

Strategies

Economic Development

- 3.29 The 2018 Economic Development Strategy is the most recent policy document that sets out the States' vision for the Island's economic growth through to 2030. The Strategy revolves around four key principles:
- Maintaining and growing the Island's key sectors such as finance, retail and construction;
 - Diversifying the Island's economy by exploring how the Island can capitalise on emerging sectors such as renewable energy, clinical and medical services, and exploring the potential of having the presence of an internationally recognised university on the Island to secure long-term prosperity;
 - Reaffirm and promote that Guernsey is a good place to do business;
 - Active monitoring of the Island's economy to continue driving future economic growth.
- 3.30 The Strategy is primarily geared towards identifying and building upon Guernsey's existing key economic strengths. It explains that *"utilising these strengths will enable Guernsey to maintain and strengthen its status as a high value economy"*, which in turn will *"provide economic prosperity, enabling us to maintain and grow our existing economic sectors, to support emerging sectors and ideas, and to diversify into new areas that build upon what we do well today."*
- 3.31 The Strategy explains that a growing proportion of Guernsey's population is becoming economically inactive and that there is a general trend of net emigration from the Island. The Strategy is clear, however, that Guernsey's population will continue to be managed to maintain an *"appropriately-sized working population"*. This suggests that, despite the concern about the structure of Island's population, there are no plans to substantially increase Guernsey's population in net terms. This is a key factor in considering the scope for growth in the air travel market.
- 3.32 The Strategy outlines the importance of the tourism and hospitality sectors to the Island's economy, noting that Guernsey's tourism product helps to support and sustain air and sea links to the Island, which provides connectivity to the UK and beyond. It hypothesises that the rise of low fares airlines in Europe has had an adverse effect on UK-inbound tourism to the Island as UK-based tourists generally avail of low fares to European destinations, rather than opting for destinations such as Guernsey. As a result, the States of Guernsey's Marketing & Tourism service area had, initially, refocussed on attracting less price sensitive visitors and more towards affluent and older demographics. The Strategy sets out an aspiration to work with other tourism bodies in the Channel Islands to promote 'island hopping' tourism.
- 3.33 The Strategy also refers to studies conducted by other States' Committees that have examined the possibility of establishing a university campus in Guernsey, in partnership with an international university. It was estimated that a small-sized campus of initially 1,000 students could be a significant driver of economic activity for the Island, delivering direct economic impacts of up to £10 million per year. A university campus of 1,000 students, in addition to the associated academics and staff, would likely be a small driver of air travel demand on Guernsey, particularly if the campus is a branch of a university based overseas.

Tourism

- 3.34 In January 2020, Visit Guernsey updated their 10-year Tourism Strategy, which was originally published in 2015, covering the 10-year period up to 2025. The update in early 2020 was prompted by a review of the objectives by the Committee for Economic Development and consultations with the tourism industry, against a backdrop of annual declines in bed spaces and visitor numbers. The early 2020 update presented the following updated objectives:
- Develop affordable, reliable and sustainable air and sea links;
 - Strengthen the Islands' tourism product offering;
 - Deliver an exceptional visitor experience;
 - Develop a positive environment for growth and investment;
 - Promote Guernsey with compelling and consistent messaging and marketing.
- 3.35 In early 2022, there was a review of the Tourism Marketing Strategy, which set out the aim to re-focus on the post-pandemic emphasis on outdoor holidays and wellness. This change of strategic direction also links to the decision to allow Airbnb to be active on the Island and to seek to attract a changing demographic away from more traditional beach holidays.
- 3.36 We also consulted with a representative from Visit Guernsey/States of Guernsey who provided an insight into the changed position of tourism on the Island following the COVID-19 pandemic. Visit Guernsey believe that the pandemic has led to a shift in the dynamics of demand of UK-based tourists, which has provided an opportunity for Guernsey to market itself as an accessible, convenient and safe alternative to European destinations.
- 3.37 Indeed, since the onset of the pandemic, there has been a shift in the demographic of tourists visiting Guernsey towards those seeking to enjoy higher calibre experiences, who are generally more affluent and relatively older in age compared to before. We understand that Visit Guernsey's marketing in the future will focus on primarily attracting such visitors, rather than attracting the mass 'mainstream' market. Such visitors may be less sensitive to air fares compared to the family-orientated market identified for growth by other consultees, but at the same time these visitors may be more inclined towards discretionary trips based on good value and convenient air travel.
- 3.38 We also understand that there will be an emphasis placed upon major events such as the Guernsey Literary Festival, which often draws inbound visitors to stay on the Island for the event itself and spend time visiting other attractions on Guernsey. Specialist tourism sectors such as wellness and fitness will be targeted, in addition to other niche activities that are well-suited to an island destination such as swimming, fishing and bird watching.

- 3.39 The shift towards 'higher-end' visitors has led to recent investment on the Island in boutique accommodation and unique accommodation options such as 'glamping' and yurts. Furthermore, holiday home rental giant Airbnb is now permitted to operate on Guernsey and this offers a further range of bespoke accommodation options. These investments and developments are relatively small in scale so far and do not contribute significantly to net bed spaces available on the Island. However, on the other end of the scale, in February 2022, budget hotel chain Premier Inn opened a 100-room hotel in St. Peter Port, its first hotel on Guernsey, which represented the largest investment in a hotel in Guernsey in over 30 years. The combination of these developments results in Guernsey having a more diverse portfolio of accommodation options and an increased number of beds for potential visitors compared to before the pandemic, which in turn could contribute to a small increase of inbound air travel demand to the Island.
- 3.40 We understand that there are no new major stand-out tourist attractions planned for the Island, rather investment is being made in maintaining and enhancing existing attractions such as the Seafront Enhancement Area programme, which may incentivise a small number of potential inbound tourists. Guernsey does not have any significant standalone tourist attractions that would motivate a 'mass-market' tourist to visit the Island in the same way in that attractions, such as Jersey Zoo, may entice visitors to Jersey. Collectively, however, Visit Guernsey believes the attractions on Guernsey do contribute to a reasonable offering for inbound visitors. This view may not be shared by wider consultees in the tourism sector however.
- 3.41 Although Visit Guernsey's renewed strategy is expected to deliver a short term boost to hotel occupancy rates, it is unlikely to deliver a step-change in air passenger demand to the Island, particularly as it is not focussing on high volume 'mass-market' tourism. The evolving strategy is predicated on market dynamics that have arisen as a result of the pandemic, which may only prevail in the short to medium term and there may need to be further enhancements to enable Guernsey to compete with international destinations for UK-based tourists.

Conclusions

- 3.42 Overall, our consultations and reviews of the latest relevant strategies suggest only incremental change in the overall economic performance, including tourism on Guernsey.
- 3.43 Amongst the business organisations on Guernsey, however, there is a strong belief that the current air service offer is a constraining factor on economic and, particularly, tourism growth. However, there is a tension between a desire for lower fares, both to benefit residents and seek to attract more inbound visitors, and the clear desire, particularly of the financial services sector, for well-timed flights to enable day return business trips to London and improved connectivity more broadly. The two may be mutually exclusive given the overall scale of the Island in terms of both population and economy.
- 3.44 We go onto explore these issues further in the following sections.

4. Analysis of Past Performance

- 4.1 Before embarking on the sensitivity testing and consideration of the potential impact of extending the runway, we undertook some further benchmarking of the performance of the travel market to and from Guernsey and the role of air travel within this compared to benchmark islands of Jersey and the Isle of Man, whose apparent airport traffic performance has been better than that of Guernsey Airport. This analysis informs our consideration of how to achieve growth in the usage of Guernsey Airport and the role that extending the runway might play in that.
- 4.2 We presented some initial findings from this benchmarking to representatives of Guernsey Ports and the Economic Development Department on 14th February 2022. We have continued to refine our analysis and present key findings in this section.
- 4.3 We have also taken into account the views of stakeholders consulted, as set out in the previous section in interpreting our analysis.

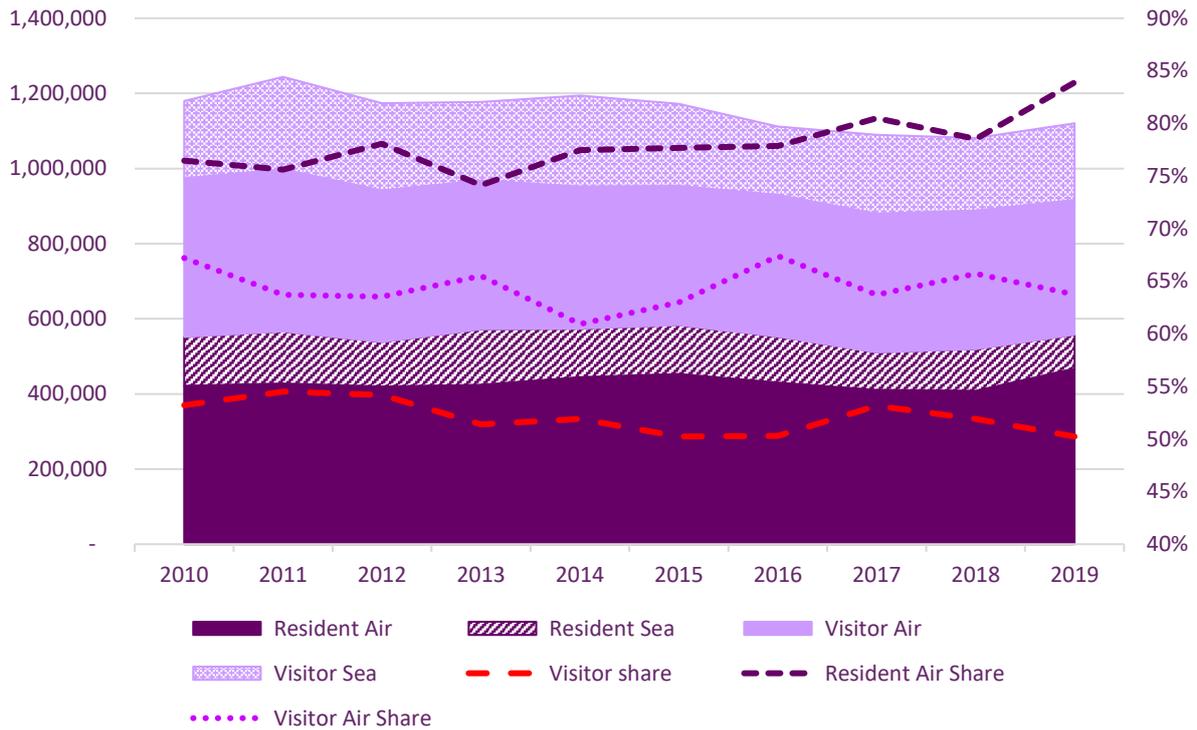
Guernsey

Overall Market Performance

- 4.4 As noted in the **Section 2**, Guernsey Airport has seen a consistent decline in the number of passengers using it in the decade since 2010⁷, apart from the uptick in 2019 as a result of lower fares that were reported by the airlines as being the consequence of excess competition in the market that was commercially unsustainable. The decline in air passengers has mirrored a decline in overall passenger trips to and from the islands, notwithstanding the problems of reduced frequency and speed of the ferry service, that might otherwise have been expected to have resulted in growth in the number of passengers using the air services.
- 4.5 In **Figure 4.1**, we illustrate the overall decline in the passenger market since 2010. The trends by passenger residence and journey purpose are shown in **Figure 4.2**.

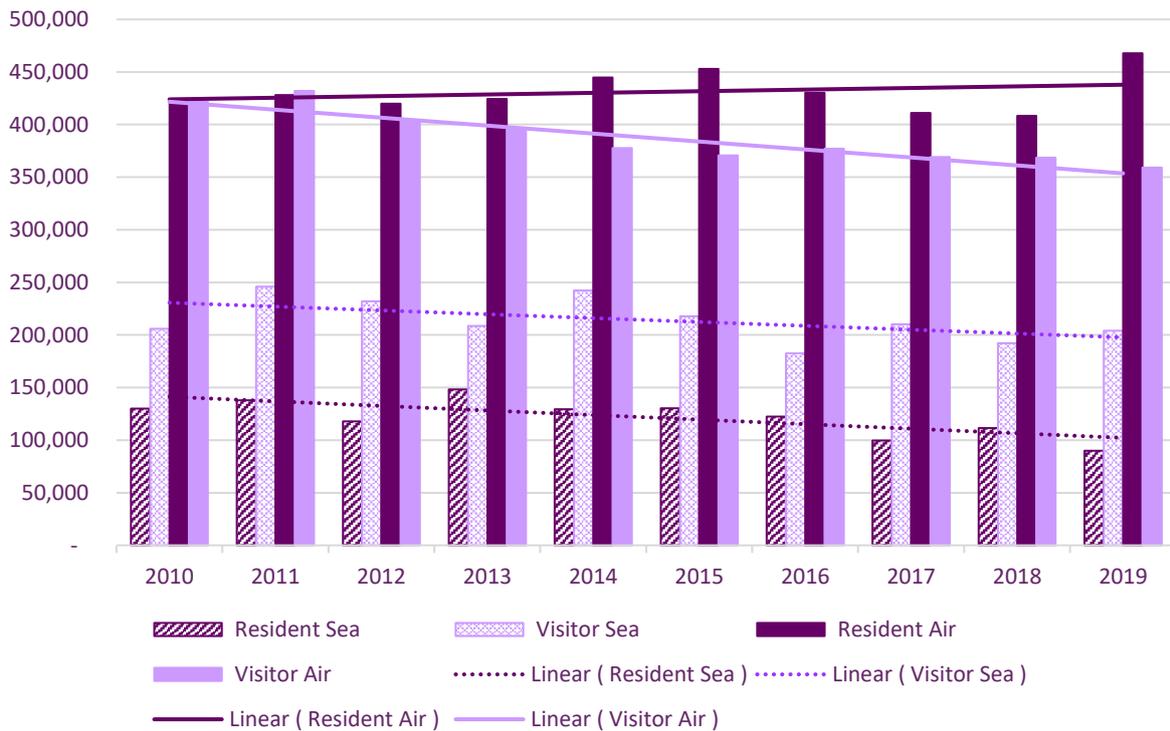
⁷ We exclude data from 2020 onwards from our analysis of the key market drivers due to the effect of the Covid-19 pandemic.

Figure 4.1: Passenger travel to/from Guernsey by Mode and Purpose



Source: Guernsey Departing Passenger Survey

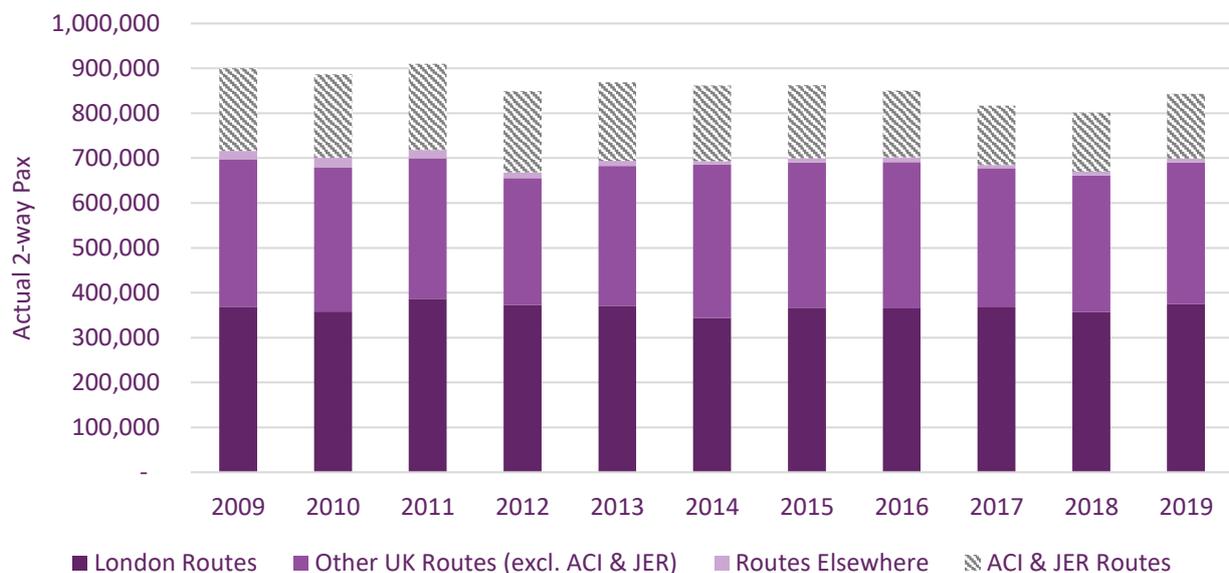
Figure 4.2: Passenger travel to/from Guernsey by Mode and Purpose with Trend Analysis



Source: Guernsey Departing Passenger Survey

- 4.6 It is evident that the trend in travel is downward in all market segments, except for resident air travel in 2019, stimulated by lower air fares. To some degree, this represented an increased shift from using the sea mode – a trend that we have observed on the Isle of Man when low fare services were introduced as we discuss further later in this Report. It is notable that the lower fare offer in 2019 did not stimulate additional visitor trips overall, which would tend to suggest that factors other than simply the availability of lower air fares were more important. However, it may simply be that the fares were simply not low enough to make a holiday on Guernsey more attractive than lower fare offers elsewhere and there may also be some time lag between lower fares becoming available and changes in visitor behaviour, which was the pattern on the Isle of Man as we discuss later. In considering the relative decline in tourism to Guernsey, it is important to recognise the broader competition with other short and longer break destinations across Europe for tourist visitors, which does suggest that the absence of a low fares offer may be one relevant factor.
- 4.7 At our February workshop, it was suggested that the patterns observed might be different if traffic to and from Jersey (and other inter-Island traffic) was excluded as it was perceived that this might have been an overarching cause of the decline in passenger volumes. We undertook further analysis and, whilst the fall in inter-Island traffic accounted for 70% of the fall in passenger numbers since 2009, the pattern of overall decline in the air travel market remained the same, as illustrated in **Figure 4.3** below. Most of the decline came on the Jersey route, with around 35% (or 22.5% of the overall decline in passenger numbers) accounted for by a fall in passenger numbers to/from Alderney. The Alderney passengers are excluded from the analysis set out in **Figures 4.1** and **4.2** in any event as these show traffic to/from the Bailiwick only.

Figure 4.3: Guernsey Airport Traffic by Segment



- 4.8 We then set out to examine a number of factors which could explain the market performance for travel to and from Guernsey and, specifically, the air travel component within it. We have continued to focus on the overall air travel market as, for example, passengers who previously flew to/via Jersey may have switched to flying via Gatwick or Southampton and so represent a component of the overall market demand to be considered.

Relationship to GDP

4.9 First of all, we considered the relationship of travel and air travel in particular to GDP. The results are set out in **Figure 4.4** relating to all travel (air + sea) to/from Guernsey, air travel on its own, all resident travel and resident air travel. The relationship of overall travel to GDP is negative. However, we recognise that, to some degree, this may simply be the effect of the change in the method of calculating Guernsey’s GDP from 2016. The relationship between GDP and resident air travel is just positive. However, it is clear that there is no strong relationship between GDP and the volumes of travel by sea and air, whether considered in terms of the resident population or overall.

Figure 4.4: Guernsey Passengers related to GDP



4.10 We also considered the relationship to GDP per capita and this, too, showed a counterintuitive negative relationship, i.e. demand for travel does not appear to grow with increasing prosperity. This is highly surprising as, normally, growth in GDP would be expected to account for around 80% of the growth in overall air travel demand, with the remainder accounted for largely by changes in cost factors.

4.11 From our discussions with stakeholders, a number of reasons have been suggested as to why travel, and air travel in particular, has not been as responsive as might have been expected related to growth in GDP. GDP growth has not been strong, in real terms, in any event and it was suggested that there may have been structural changes in the Guernsey economy that could have led to changes in the responsiveness of travel demand relative to the level of economic growth:

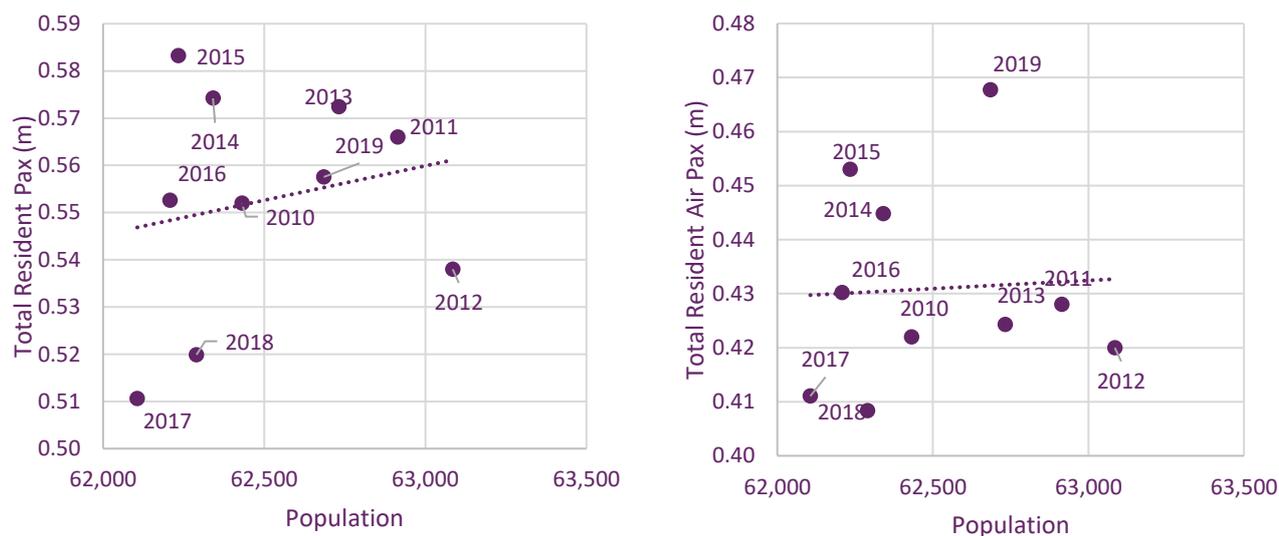
- Following the financial crisis, some Guernsey financial institutions became subsidiaries of larger organisations resulting in less travel associated with the head office functions;
- GDP growth may not reflect actual increases in economic activity but the accumulation of funds in Guernsey banks and so does not translate to general prosperity;
- Other changes in the structure of the economy, including an ageing population.

4.12 Hence, use of GDP may not reflect the actual impact on people’s disposable income, which would ultimately be expected to be the key driver of resident travel demand. We draw out comparisons to the travel demand performance relative GDP on Jersey and the Isle of Man later in this section.

Relationship to Population

4.13 In this case, we focussed on whether there was a relationship between demand levels and population for travel by Guernsey residents, which is shown in **Figure 4.5**. It is important to note that population growth is also a component/driver of GDP growth and, hence, this analysis is not independent of the broader GDP based analysis. It is for this reason that GDP is the more common metric used as the basis of forecasting demand.

Figure 4.5: Guernsey Resident Passengers relative to Population

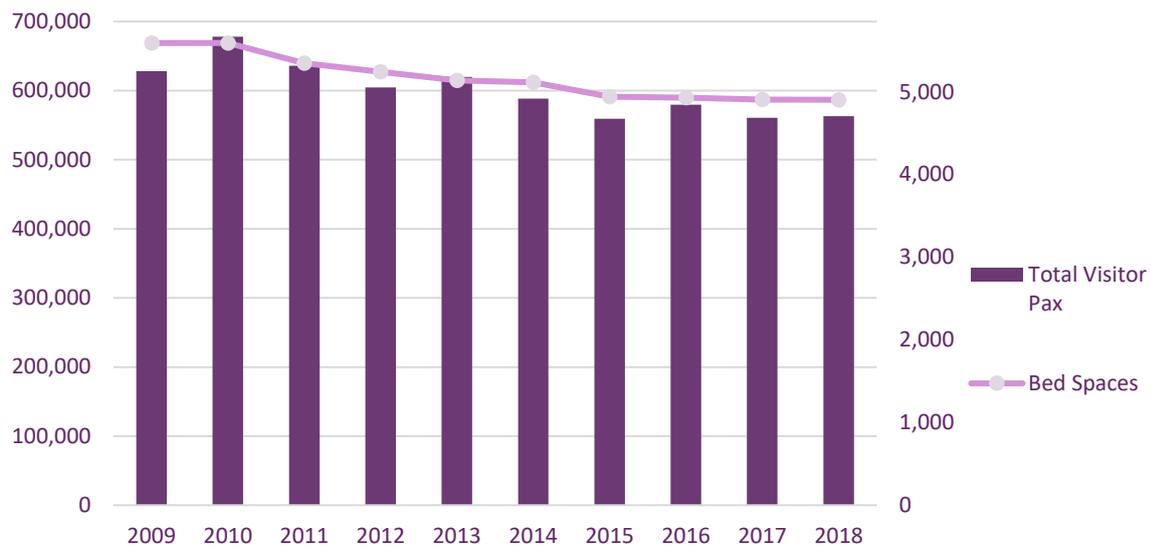


4.14 Despite population being an element of GDP, in this case, there was a stronger relationship between overall resident passengers travelling by air and sea combined than there was for air travel on its own, albeit neither relationship was strong. Ultimately, the patterns observed reflected the relatively limited change in population and the general downward trend in the total number of trips taken overall. What it may indicate is that it is economic factors that are the more dominant force determining growth or decline in demand.

Relationship to Accommodation

4.15 For visitor travel, we considered whether there was a relationship between the availability of accommodation on the Island and visitor numbers. This is shown in **Figure 4.6**.

Figure 4.6: Visitor Passengers and Bed Spaces



Source: Guernsey Departing Passenger Survey and Information from Economic Development Department

4.16 There appears to be a strong correlation between visitor numbers and the number of bed spaces, but it is not clear which is the ‘chicken’ and which is the ‘egg’, i.e. has bed stock declined due to the reduced number of visitors or does the reduced number of visitors reflect a reduction in the amount (and quality) of accommodation available.

4.17 From our discussions with stakeholders, including Visit Guernsey/States of Guernsey, we understand that there is now renewed investment in accommodation on the Island, which is both raising the quality and quantity of accommodation, with the number of bed spaces rising to over 5,000 in 2021, the opening of the Premier Inn in St Peter Port and the permitted operation of Airbnb on the Island. The potential impact of this is discussed further in the following sections.

Relationship to Air Fares

4.18 We also considered the extent to which there was a relationship between the change in the level of air fares to/from Guernsey⁸ and changes in the level of air passenger demand. This is illustrated in **Figure 4.7**. This analysis suggests a relationship between growth in air passenger demand and reductions in air fare but, as we have seen earlier, the air passenger demand response has to a large extent been a shift from sea travel rather than real growth in the total travel market to and from Guernsey. Nonetheless, it is evident that the increase in air fares, particularly in 2016/7 was a contributory factor to the underperformance of travel demand, and air travel demand in particular, to and from Guernsey.

⁸ Note that the air fares are taken from the UK Civil Aviation Authority Departing Passenger Survey. These are broadly indicative of air fare trends only.

Figure 4.7: Guernsey Air Passengers relationship to Air Fares



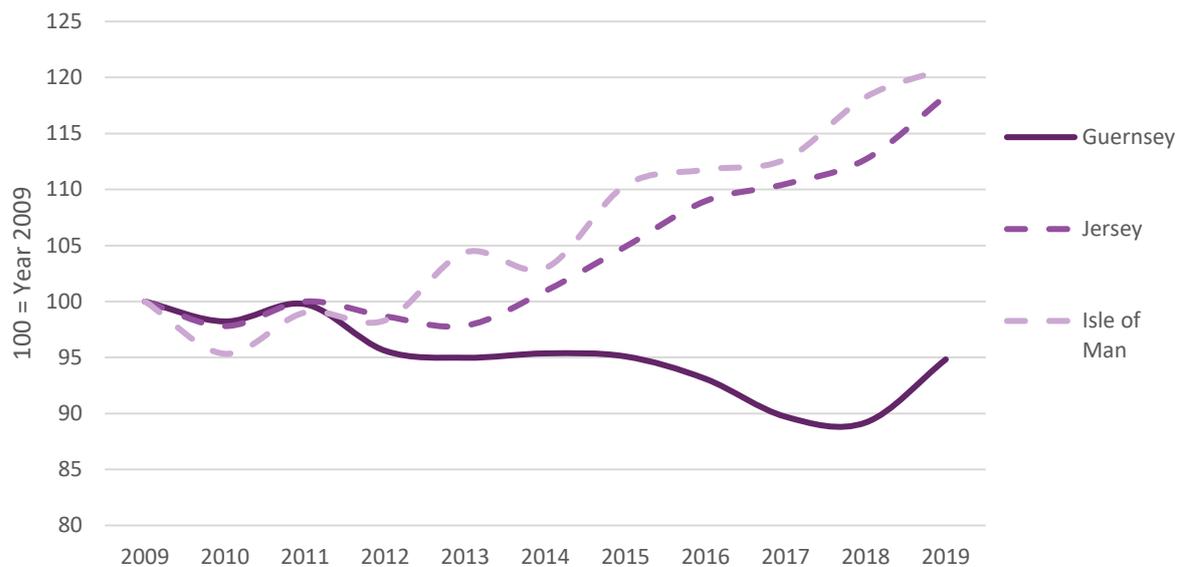
4.19 Overall, analysing the performance of Guernsey on its own, it was difficult to discern any patterns or relationships that would give confidence in predicting what might drive a change in travel behaviour in the future. Our analysis strongly suggested that there were other ‘invisible’ factors underlying the decline that were not directly evident from a conventional analysis of demand relative to GDP or the cost of air travel. We consider the potential impact of low fare air services if an extended runway is delivered further in **Section 5**.

Benchmarking Performance

4.20 Given the difficulties in identifying specific trends or factors that could explain the limited responsiveness of travel to and from Guernsey on GDP, population or other factors, we went on to examine its performance compared to two relevant benchmark islands: Jersey and the Isle of Man. These islands are often cited as comparators in relation to the potential for low fares airline services to be a ‘game changer’ if the runway at Guernsey was long enough to support such operations. However, the market performance of these islands also provides clues as to the more general drivers of travel demand to and from the islands and the position of air travel within the mix.

4.21 **Figure 4.8** shows the relative performance of the three airports since 2009 indexed to 100. It is evident that Guernsey has underperformed relative to the airports on the other two islands.

Figure 4.8: Comparative Performance of Guernsey, Jersey and the Isle Man Airports since 2009

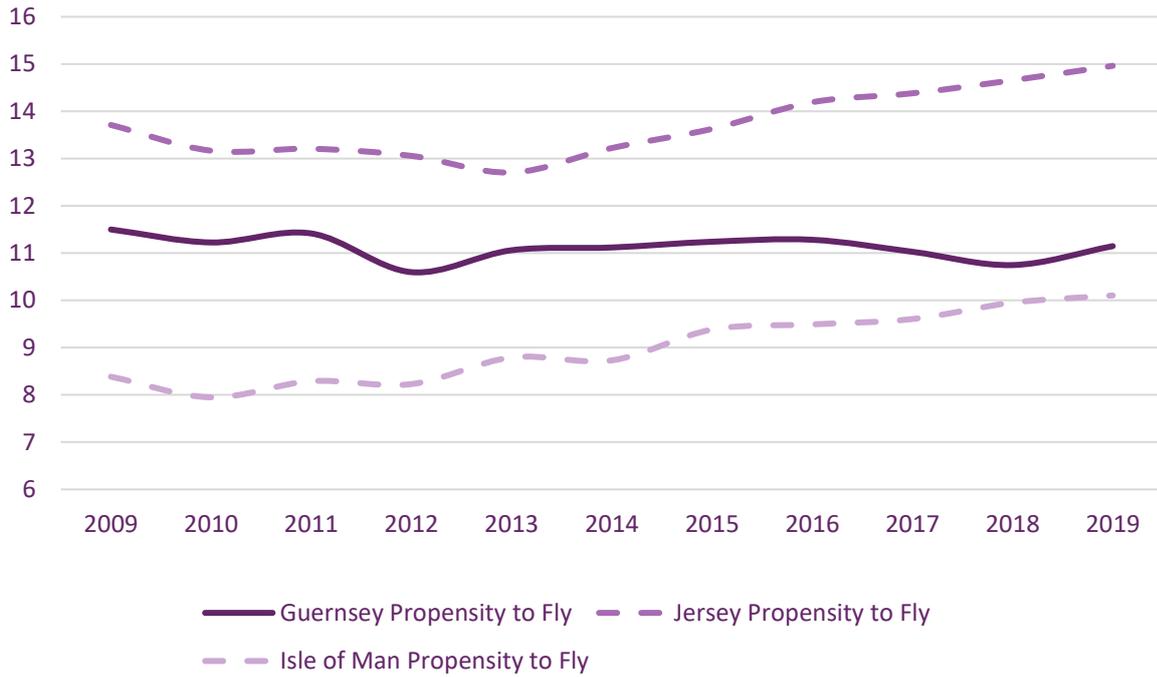


Source CAA Airport Statistics

4.22 In terms of propensity to fly (airport passengers per head of population excluding inter-island flights within the Channel Islands), however, the picture for Guernsey is more positive in terms of the relative propensity to fly compared to the Isle of Man but less so compared to Jersey. This is in part because of the higher number of visitors relatively to Jersey. **Figure 4.9** compares the propensity to fly (i.e. the total passengers excluding inter-island passengers divided by Island population) of Guernsey with the performance of comparator islands of Jersey and the Isle of Man between 2010 and 2019. In contrast to Jersey's propensity to fly, Guernsey's propensity to fly has fallen slightly during this period, reflecting the overall declines in air passenger numbers identified previously. As with Jersey, the Isle of Man's propensity to fly has steadily increased following the opening of its runway extension in 2011 and the entry of low-cost airlines into the market but, in the case of the Isle of Man, remains significantly below that of Guernsey. However, to some degree, the picture of growth on the Isle of Man is distorted by the fact the population was actually falling slightly through the initial period of low cost operations and only began to regrow to historic levels in 2018/9. Our analysis has sought to explore the reasons for the difference in performance⁹.

⁹ As far as possible we have used actual data sourced from the Isle of Man Government and the Ports of Jersey to segment the passenger traffic. However, there were some limitations in data available, particularly in relation to Jersey so we have used data derived from the UK Civil Aviation Authority Passenger Survey to supplement our analysis of resident and non-resident travel. Due to the limitations of sample sizes, this data is necessarily less reliable and, hence, the analysis should be treated with some caution.

Figure 4.9: Propensity to Fly of Guernsey, Jersey and Isle of Man (2010 - 2019)



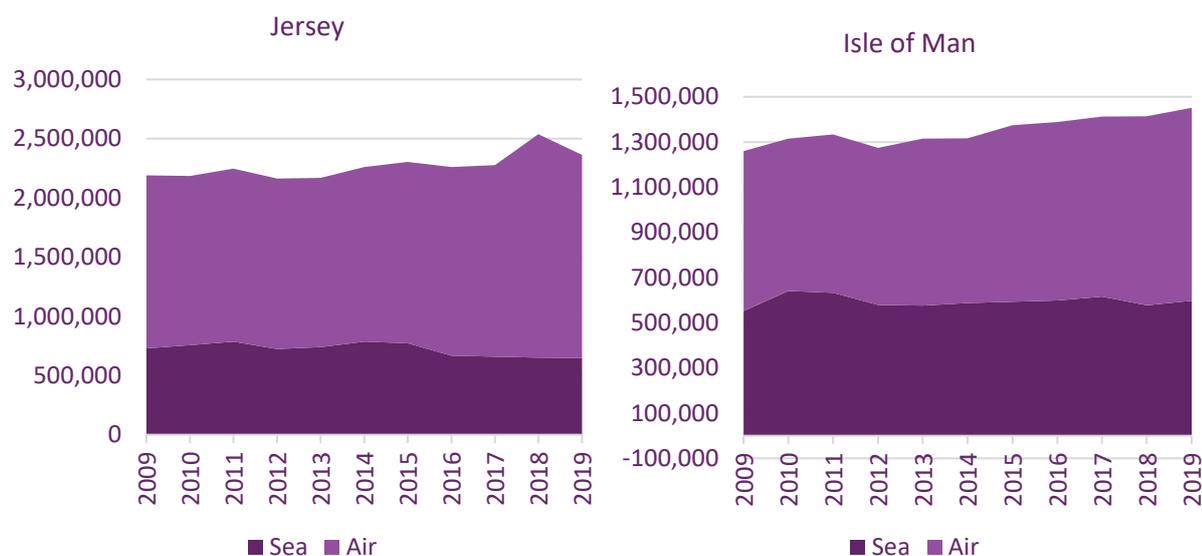
Source: CAA Statistics, States of Guernsey, States of Jersey, Isle of Man Government.

Figure 4.10: Propensity to Travel of Guernsey, Jersey and Isle of Man (2010 - 2019)



4.23 The pattern in relation to total travel including sea¹⁰, to and from the islands is shown in **Figure 4.10**. Although we have identified differences in the propensity to fly, with growth evident on Jersey and on the Isle of Man (subject to the note above regarding the decline in population), neither of the other islands have seen particularly strong growth in overall levels of travel, albeit this contrasts with the decline in overall travel seen to/from Guernsey. In fact, the propensity to travel to/from Jersey has actually declined over the period, notwithstanding the growth in air travel but there has been marked growth in the propensity to travel to/from the Isle of Man, but again this may be related more to the year on year variation in population through the period. It is noticeable that in terms of total travel, air and sea combined, the propensity to travel to/from Guernsey and the Isle of Man were very similar but have diverged since low cost airline entry.

Figure 4.11: Overall Passenger Market Jersey and the Isle of Man



4.24 It should also be noted that, as with Guernsey, 2009 represented a low point in total travel to/from the other islands following the global financial crisis and, in all cases, historic levels of travel had been higher.

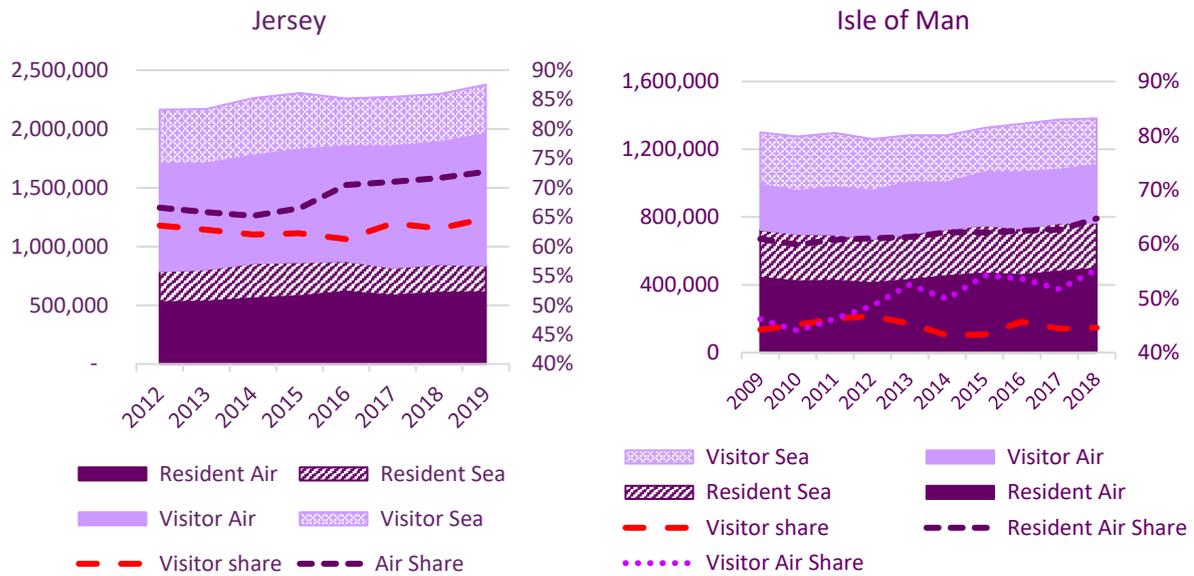
4.25 In the remainder of this section, we have sought to understand the reasons for the relative pattern of performance of the air passenger market and the total travel market across the three islands.

Trends in Resident and Visitor Travel

4.26 First of all, we sought to replicate the analysis of the overall travel market for Jersey and the Isle of Man on the same basis as for Guernsey, shown in **Figures 4.1** and **4.2** earlier. The results are shown in **Figures 4.12** and **4.13** overleaf.

¹⁰ Inter-island travel excluded for consistency.

Figure 4.12: Passenger travel to/from Jersey¹¹ and the Isle of Man by Mode and Purpose



Source: Isle of Man Passenger Survey Annual Reports, Government of Jersey Sea and Air Transport Statistics, CAA Passenger Survey

Figure 4.13: Passenger travel from Jersey and the Isle of Man by Mode and Purpose with Trend Analysis



Source: Isle of Man Passenger Survey Annual Reports, Government of Jersey Sea and Air Transport Statistics, CAA Passenger Survey

¹¹ Note that it was not possible to identify the air share of resident and visitor travel individually so it has been assumed for the purpose of this analysis that the market share of air is the same across both passenger categories. This may not be correct and is an important caveat to this analysis.

4.27 There are a number of observations that can be made by comparing the performance of Jersey and the Isle of Man to that of Guernsey:

- Visitors have always made up a higher proportion of travel to and from Jersey than either the Isle of Man or Guernsey. Although declining, the visitor share of trips to Guernsey continues to outperform that of the Isle of Man;
- Despite the introduction of low fare services, the proportion of total travel demand made up by visitors has not increased on either Jersey or the Isle of Man;
- Growth in visitors travelling by air reflects a switch from sea to a greater extent than for resident travel;
- The decline in the mode share for sea has been less substantial for the Isle of Man than for Jersey or Guernsey, possibly reflecting the State control of the Steam Packet Company more recently and also the reliance on cars for Manx travellers to the North of England;
- Like Guernsey, the air share of all trips has risen, more particularly for Jersey;
- The growth in air share of visitor trips to the Isle of Man is more substantive but from a lower base.

4.28 We now go on to consider what may have driven these trends, focusing first on the economic and population indicators before considering the tourism product and then the impact of low fare services more generally.

Relationship to GDP

4.29 **Figure 4.14** illustrates the relationship between GDP and all travel, air travel, all resident travel and resident air travel for the three islands. Lines of best fit are shown, indicating the trend across the three islands combined. When looked at across the three islands as a whole, it is evident that the demand response to GDP is lower for the Isle of Man and higher for Jersey, relative to Guernsey. The difference is less stark for resident travel across combined air and sea modes as this allows for greater use of ferries to/from the Isle of Man. This also highlights that tourism is relatively less important for the Isle of Man (to date) than for Jersey or Guernsey.

4.30 Although there appear to be structural differences in the response to the absolute level of GDP on Jersey and the Isle of Man, individually both show a more 'normal' positive relationship between GDP growth and growth in total or air passenger demand than Guernsey.

4.31 We have gone onto consider the implied demand elasticities deriving from this analysis in **Table 4.1** below for the main market segments. For visitor travel, we have related this to UK GDP as the more relevant driver, given that the majority of visitors to all of the islands are from the UK. We show the results individually for each island and combined for the Channel Islands, to the extent that Jersey and Guernsey could be considered as components of the same market.

Figure 4.14: Passengers relative to GDP across the three islands

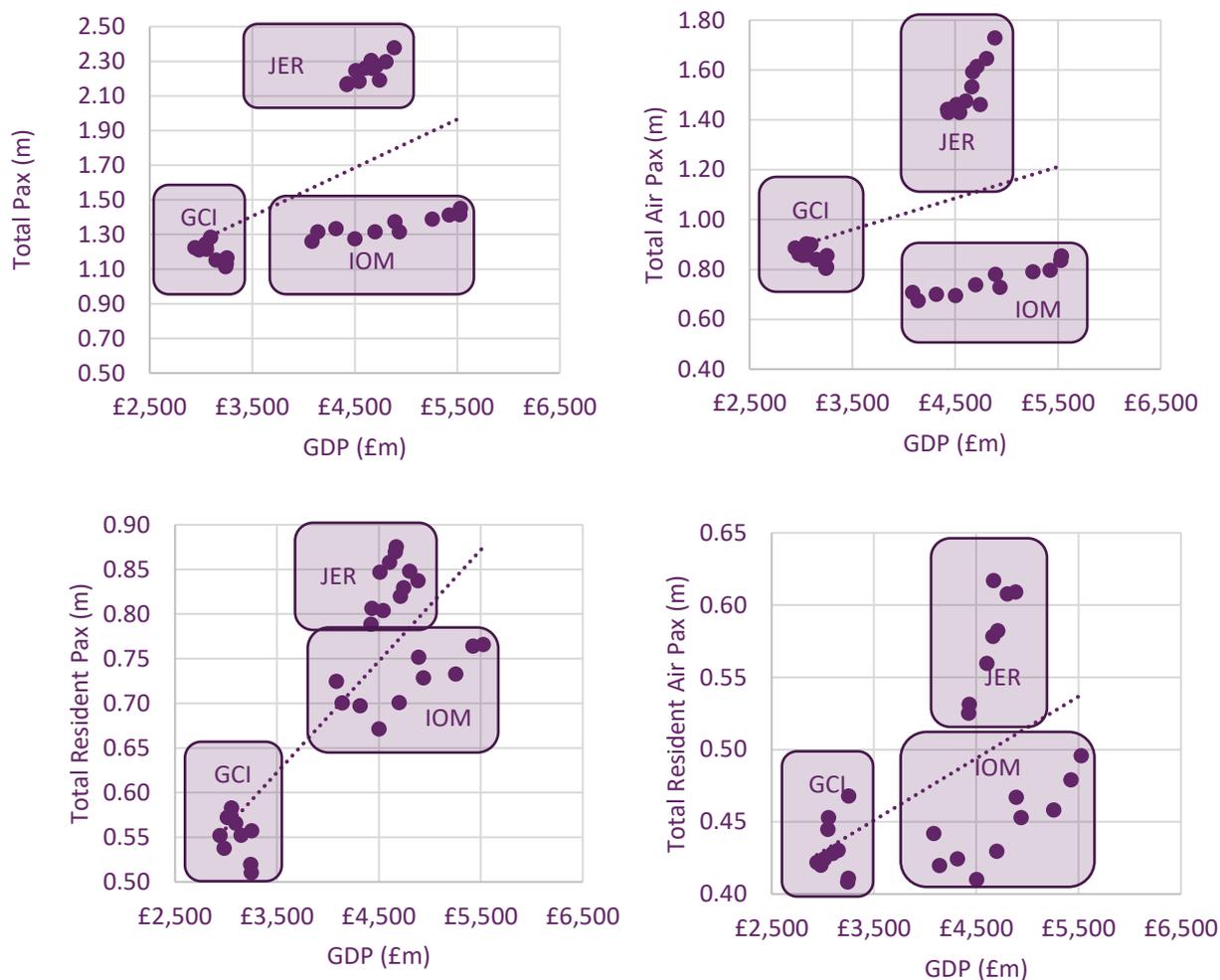


Table 4.1: Estimated Demand Elasticities to GDP by Passenger Segment

	Guernsey	Jersey	Isle of Man	Channel Islands
All Passengers	-0.91	0.72	0.35	0.22
Air Passengers	-0.71	1.74	0.65	1.07
All Resident Passengers	-0.60	0.51	0.29	0.07
Resident Air Passengers	0.05	1.60	0.46	1.01
All Non-Resident passengers to UK GDP	-0.8	0.4	0.7	0.2
Non-Resident Air Passengers to UK GDP	-1.0	1.3	1.4	0.7

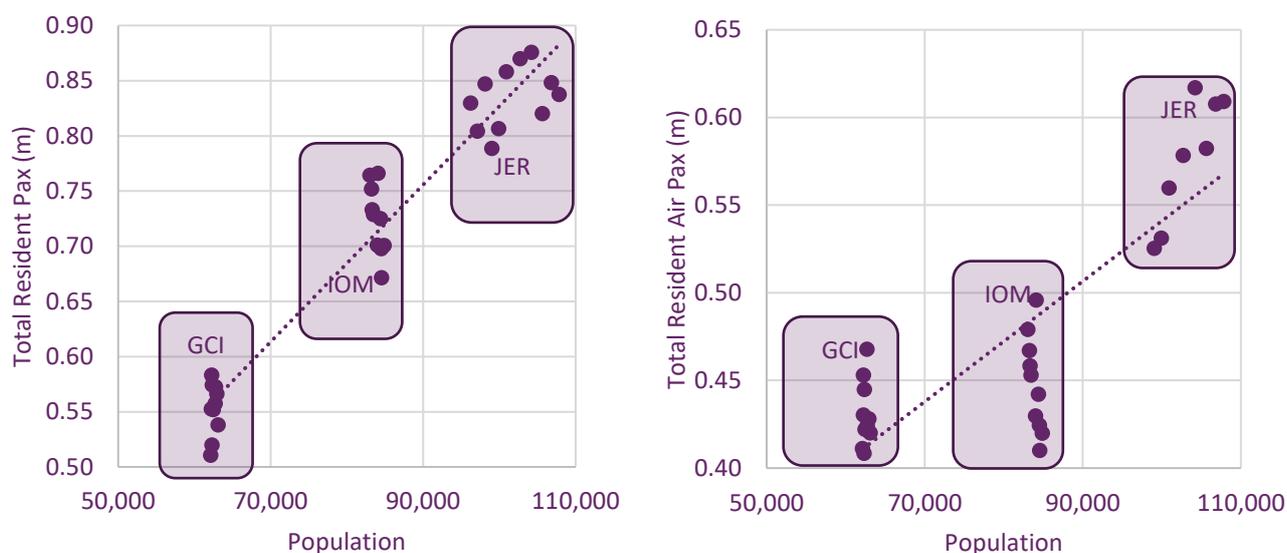
4.32 It is important to note that, to the extent that lower cost air services have driven demand growth on Jersey and the Isle of Man, this is embedded in the elasticities above so these elasticities do not strictly reflect elasticity to GDP on its own as should strictly be the case. As expected, it is notable that the elasticities for all passenger travel to and from the islands are materially lower than for air travel on its own due to the effect of switching from sea to air mode.

- 4.33 What is striking is that the elasticity to GDP for the Isle of Man is so much lower than for Jersey (and the Channel Islands combined) despite the low cost airline operations. This appears to be a consequence of the more rapid growth in GDP, which has not translated to equivalent growth in resident travel. We understand that much of the GDP growth on the Isle of Man GDP was fuelled by e-gaming, which does not appear to have translated into increased consumer income or expenditure, and may generate less business travel compared to traditional financial sectors.

Relationship to Population

- 4.34 As with the analysis of Guernsey alone, we have focussed on the relationship between resident travel and population. This is set out in **Figure 4.15**.

Figure 4.15: Resident Passengers relative to Population across the three islands



- 4.35 In overall terms, there is a clearer relationship between the scale of resident passenger demand on each island and the volume of total resident passengers and resident air passengers. However, given the very limited changes to the total population on Guernsey and the Isle of Man over the 10-year period under consideration, it is hard to discern a relationship between the volume of demand and changes in population growth. The relationship is clearer and follows a more normal pattern of growing demand for travel as population grows on Jersey. This would tend to suggest that population growth would be one lever to grow air travel demand on Guernsey. However, population growth is also a factor in GDP growth and so would, in practice, form part of the same driver.

Relationship to Air Fares

4.36 We have also considered the relationship between the pattern of demand growth across the three islands and changes in air fares, recognising that for Jersey and the Isle of Man these are due to low cost airline entry and growth. It should be noted that the air fare data that we have used derives from the UK CAA Passenger Survey on routes to the islands and, hence, the results need to be treated with some caution due to limitations in the data. The specific air fare effect of low cost entry is considered further in **Section 5**. We considered this both in terms of all passengers, including sea passengers, and air passengers given the extent to which lower air fares appear to have been a substantial contributory factor to the switch from sea to air travel. The analysis for all passengers is in **Figure 4.16**, with separate graphs for all passengers, resident passengers and visitors and that for air passengers only in **Figure 4.17**.

Figure 4.16: Relationship between All Passenger demand to/from the three islands and Air Fare

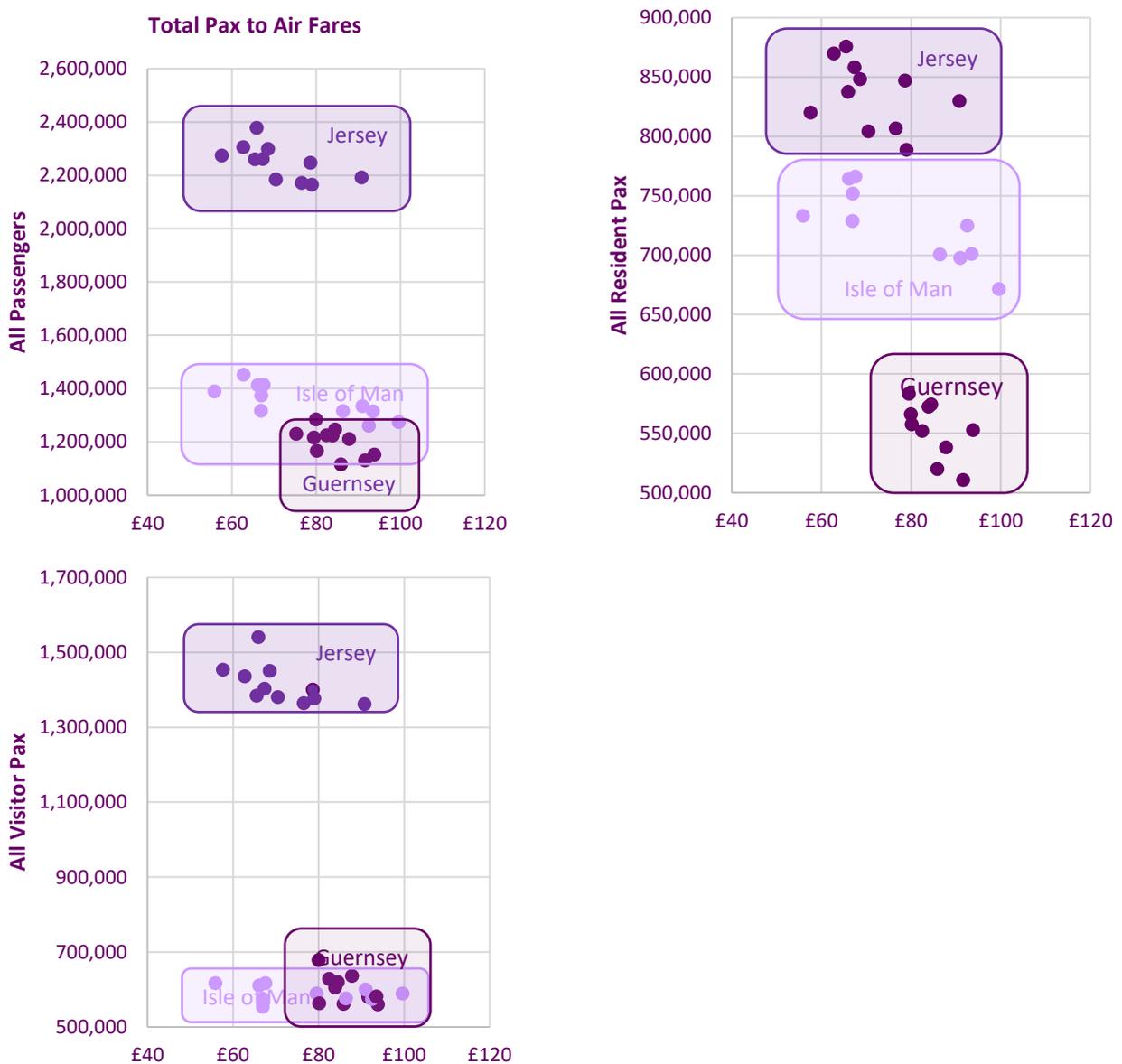
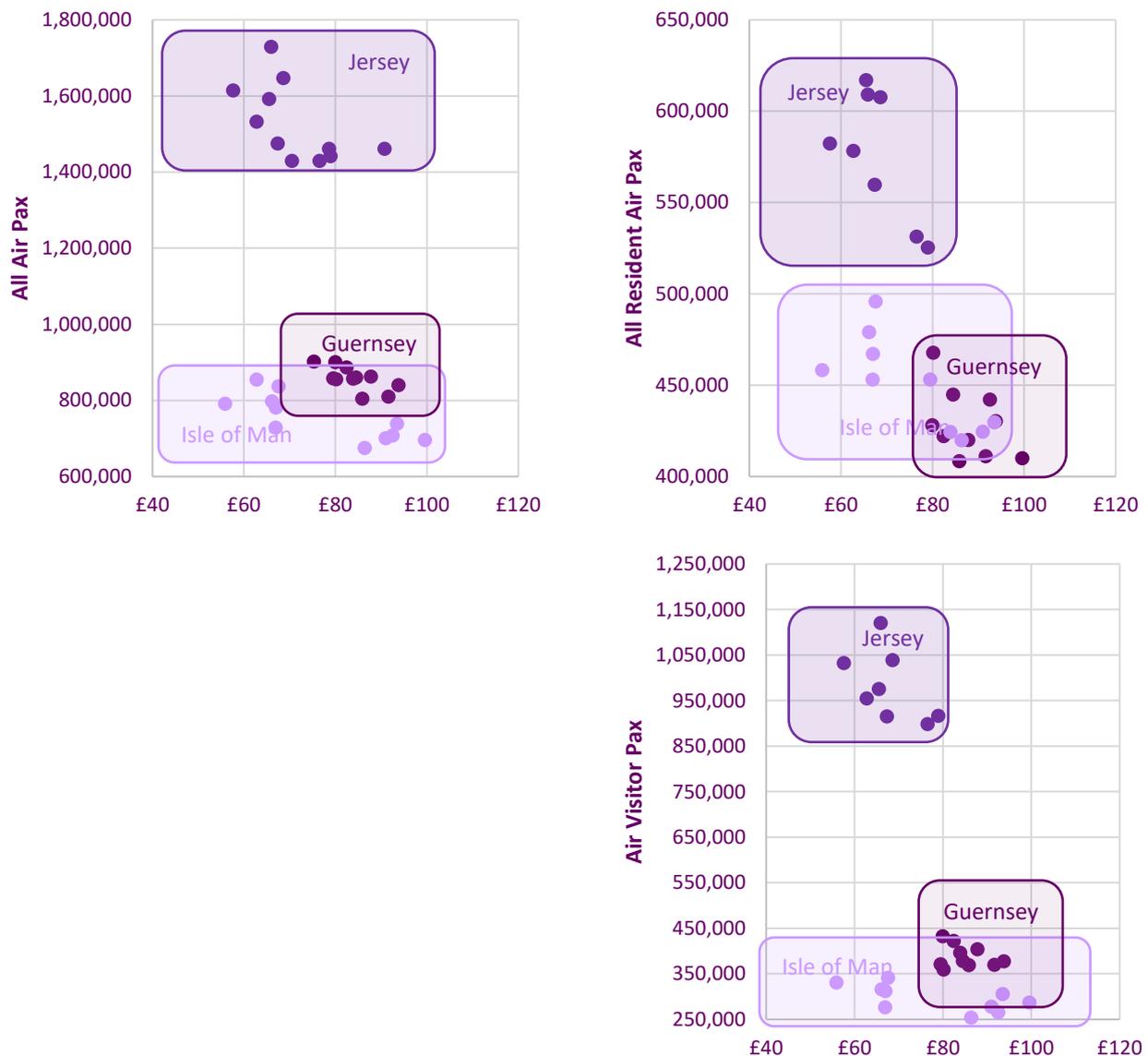


Figure 4.17: Relationship between Air Passenger demand to/from the three islands and Air Fares



- 4.37 In terms of all passengers to and from the islands, there is limited evidence that lower air fares have led to any material increase in the number of passengers travelling to and from the islands by air and sea combined. For the Isle of Man, the impact may have been slightly stronger for resident passengers, whereas for both Guernsey and Jersey, a somewhat stronger effect is visible on overall visitor numbers, albeit for Guernsey, this relates to the negative impact of the upward trend in prices over time.
- 4.38 For air passenger demand only, the evidence would suggest a slightly stronger response to lower air fares in terms of growth in demand. Except for Jersey, the effect seems to be stronger for resident passengers than for visitors.
- 4.39 As we have noted earlier, the air fare effect and the income effect are conjoined in looking at the overall results. Although we attempted to undertake some multiple regression analysis to see if we could disaggregate the air fare (price) elasticity from the GDP elasticity across the three islands, the results produced some perverse results that probably derive from uncertainties in the data, particularly regarding the resident/visitor split of demand by mode for Jersey.

4.40 Having considered all of the evidence in terms of actual performance and found inconsistent patterns of passenger behaviour, it is our view that it would be most appropriate to adopt the income (GDP) and price (air fare) elasticities calibrated over many decades by the UK Department for Transport (DfT)¹² as the basis for projecting potential future demand scenarios for Guernsey Airport with both the existing runway length and with a potential extended runway. The relevant ones are set out in **Table 4.2** below.

Table 4.2: UK Department for Transport Demand Elasticities

Passenger Type	Income Elasticity	Price Elasticity
UK Domestic	1.1	-0.6
All Business Passengers	0.9	-0.2
All Leisure Passengers	1.3	-1.1
All UK Residents	1.1	-0.9

Source: UK Department for Transport, Jet Zero Modelling Framework, March 2022

4.41 On balance, having regard to the dominance of the UK as the principal market to/from Guernsey and taking into account the observed elasticity for the Channel Islands combined and Jersey on its own historically, we consider that the most appropriate demand elasticities to income and price to adopt for the purpose of our analysis are those derived for all UK Domestic passengers, accepting that purely leisure routes might have higher elasticities to air fares. Assuming the 1.1 elasticity to GDP for Jersey, results in an implied elasticity to the reported reduction in air fares of around -0.53, which is broadly consistent with adopting a price elasticity of -0.6 as set out in the DfT analysis as applicable on UK Domestic air routes. This suggests that our proposed adoption of the DfT elasticities is valid and reasonably representative of the expected response for air travel to and from the islands.

Tourism Factors

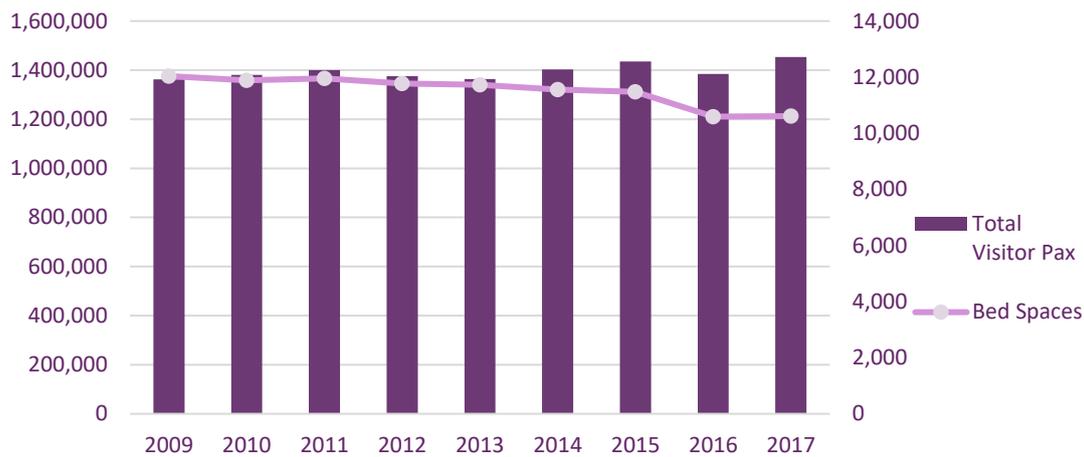
4.42 We have not been able to analyse this quantitatively, but the perception is that there has been relatively little investment in the tourism product on Guernsey until recently and the number of bed spaces has been declining as illustrated earlier in **Figure 4.6**.

4.43 However, Jersey has also seen a decline in the number of bedspaces, at least to 2017, as illustrated in **Figure 4.18** but has seen some growth in visitor numbers. There are reports about similar concerns regarding the quality of hotel bed spaces as reported historically for Guernsey¹³ and reports would suggest that there has been a relatively limited increase in demand for hotel bed spaces suggesting that the increase in visitors may be more aligned to self-catering/Airbnb provision, albeit the increase in total visitor numbers has not been as strong as consideration of air visitors alone would suggest. It also our understanding that there has been some greater investment in the tourism product on Jersey, which may also have contributed to the attractiveness of the Island.

¹² These have recently been recalibrated and the latest version published in March 2022 - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1061918/economic-metric-models-to-estimate-demand-elasticities-for-the-national-air-passenger-demand-model.pdf.

¹³

https://business.jersey.com/sites/default/files/components/pdf_download_row/STR%20Jersey%20Market%20Update%20October%202019.pdf.

Figure 4.18: Visitor Passengers (estimated) and Bed Spaces on Jersey

Source: Government of Jersey Sea and Air Transport Statistics and Tourism Statistics

4.44 We have been unable to source equivalent bedstock data for the Isle of Man, but their recent Tourism Strategy¹⁴ suggests similar trends and includes proposals to increase the amount, quality and range of accommodation to drive tourism growth. Like Jersey, the Isle of Man has seen some increase in visitor numbers from 2009, up by 7% to 2018, which is similar to the increase recorded for Jersey over the same time period. However, this lagged behind, by a number of years, the introduction of low fare services, which suggests that the impact of lower fares takes some time to penetrate the inbound market or that the increase in tourism did not arise until there was a wider network of services beyond the initial Liverpool route. It may also reflect a lag to other tourism initiatives that responded to the availability of low fare services.

4.45 Overall, this would suggest that bedstock availability is less of a driver or limitation in itself in terms of securing growth so long as there is capacity in terms of occupancy levels or the availability of alternatives to conventional bedstock, such as Airbnb. However, there may be a linkage to broader tourism strategies and developments on Jersey and the Isle of Man that have resulted in increased visitor numbers alongside the provision of lower fare air services.

Conclusions

4.46 It is evident that the performance of Guernsey has lagged that of the other islands in terms of both growth of travel demand overall and specifically of air travel demand. Although the presence of low cost airlines offering lower air fares is a factor on Jersey and the Isle of Man, there appear to be other factors that influenced the poor performance of Guernsey as well, namely:

- Limited population and GDP growth combined – the Isle of Man has seen GDP growth and Jersey population growth;
- Some structural changes in the economy which mean that demand from Guernsey has not been as responsive to GDP growth as would have been expected;
- Lack of investment in the tourism product to create the conditions for growth.

¹⁴ <https://www.visitisleofman.com/dbimsgs/Final%20VES%20Strategy%202022-GD-0036.pdf>

- 4.47 It is also clear that the impact of lower air fares through low fares airline entry into the market has had a much smaller impact on total travel demand than on air travel, with significant number of passengers switching from sea travel. It is also clear that the initial response for a low fares offer is to increase outbound discretionary resident travel with a lag before there is an upturn in visitor numbers.
- 4.48 In **Section 5**, we now go onto to consider the potential impact of low fare services, enabled by an extended runway, before setting out the potential market projections in **Section 6**.

5. The Potential Impact of a Runway Extension

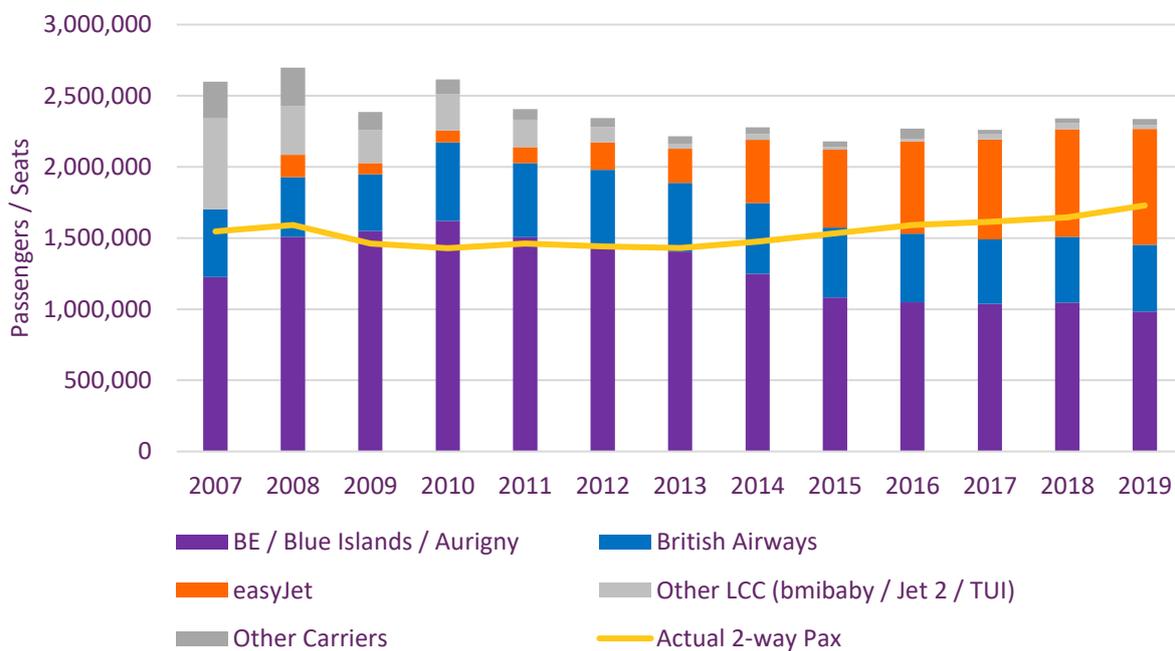
The Impact of Low Fare Services

Frequency and Capacity

5.1 In considering the potential impacts of low fares services on Guernsey, we have extended our benchmarking analysis to look more specifically at aspects related to the growth of the low fares carriers on Jersey and the Isle of Man and their impact on the markets there having regard to the analysis of the overall market drivers set out in the previous section.

Jersey

Figure 5.1: Jersey Total Air Passengers and Seat capacity (2007 – 2019)

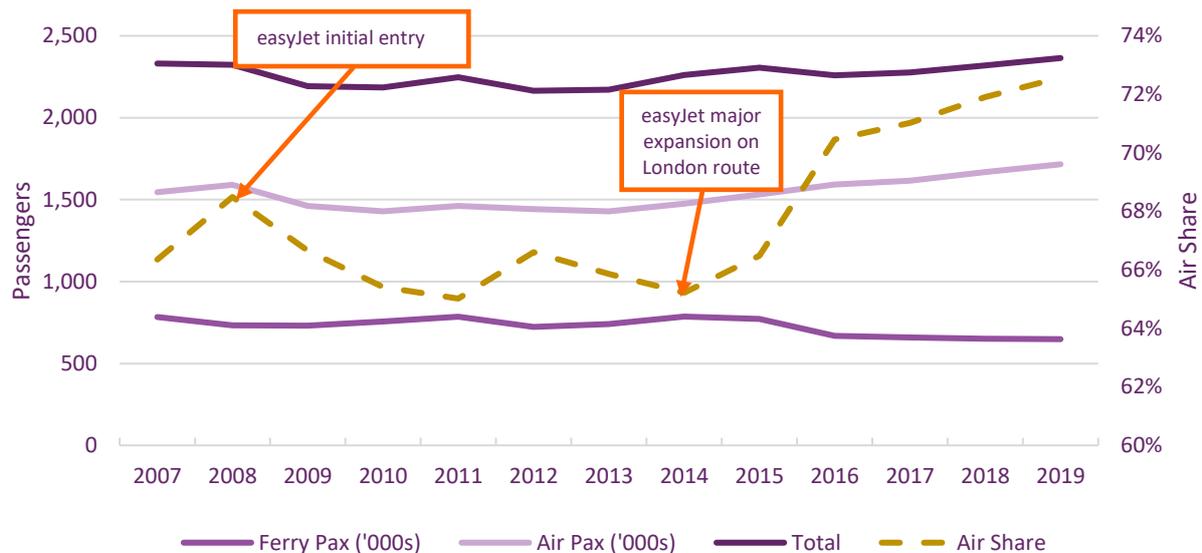


Source: OAG, UK CAA Airport Statistics

5.2 As can be seen in **Figure 5.1**, over the period from 2010 the total air seat capacity to/from Jersey has remained relatively flat but the seat share between key carriers has shifted towards easyJet over time, with significant reductions in seat capacity offered by the regional airlines. Despite the negligible growth in capacity overall, there has been a steady increase in overall air passenger volumes, driven by growth in the average load factor, which is itself likely to be driven by lower fares overall and the strategy of airlines such as easyJet to sell a higher percentage of all seats typically.

5.3 However, over the long term, the total number of passengers travelling to and from Jersey by air and sea combined has remained between 2.2-2.5 million per year and there has been relatively limited overall growth in travel overall, as described in the previous section, with the evident growth since 2010 largely recovering volumes lost during the global financial crisis in 2009. However, as noted earlier, the share of air travel within the total has grown since the accelerated growth of easyJet since 2014, climbing from around 65% historically to around 70-75% by 2019. In **Figure 5.2**, we highlight the entry of easyJet against the growth in the market share of air compared to ferries. Based on available data, we estimate that close to 46% of the total air passenger increase for Jersey switched from sea travel.

Figure 5.2: Jersey Total Passengers (000s)



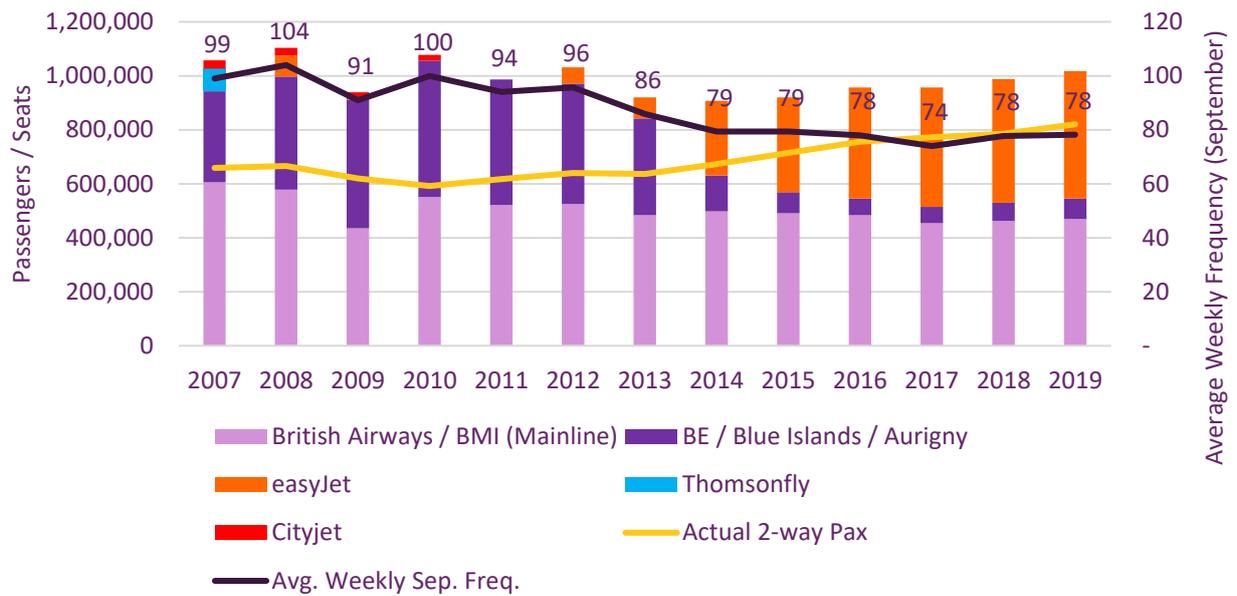
Source: Government of Jersey Sea and Air Transport Statistics and Tourism Statistics

5.4 Although the growth in overall passenger levels across air and sea modes is relatively minimal, there is some evidence that visitor numbers have grown by around 10% since the increase in easyJet activity in 2014. It is clear that the growth was associated with major expansion on the London Gatwick route, although the addition of other routes has continued the upward trend.

5.5 By 2019, easyJet accounted for 35% of all seat capacity on Jersey, up from 11% in 2013 before its major expansion of services on the Island. The carrier’s passenger share is almost certainly higher, due to the typically high load factors at which it operates. With virtually no change in overall capacity over the same period, this capacity share gain has come at the expense of other carriers (even before Flybe’s failure). This can be seen when considering the London market more specifically. **Figure 5.3** shows how easyJet squeezed out other carriers in the London market, particularly Flybe. British Airways has been able to broadly maintain its position, aided by the onward connectivity benefits of its services but for other airlines, such as Flybe, the increased capacity from easyJet resulted in their services ceasing to be viable. The growth of easyJet and the demise of the other services has resulted in an associated reduction in frequencies, falling from a peak of 104 departures per week to 78, an average of nearly 15 per day in 2014 and 11 per day in 2019. For Jersey, this frequency may well suffice across London as a whole and BA has retained a based aircraft but it important to recognise that the ability to sustain this frequency is underpinned by a substantially larger market than Guernsey.

5.6 The effect of easyJet’s expansion in the London market means that London now makes up a higher proportion of the overall network, although more recently easyJet has expanded to other destinations.

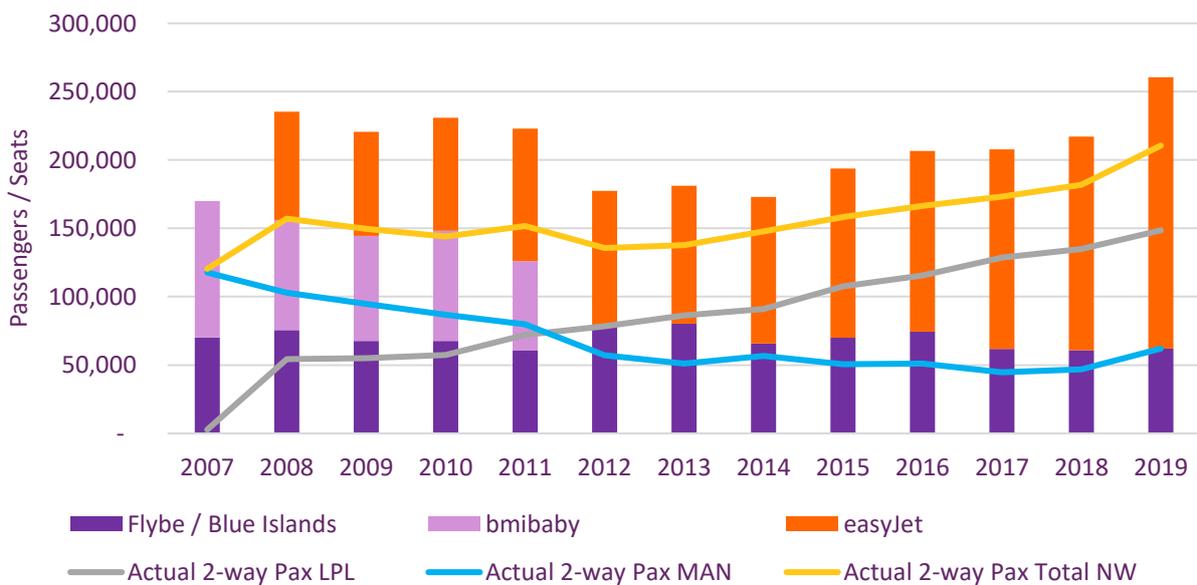
Figure 5.3: Jersey to London (all airports) Passengers and Seat Capacity (2007 – 2019)



Source: OAG

5.7 The market between Jersey and Manchester/Liverpool shows a similar pattern of cannibalisation of capacity by easyJet, as can be seen in **Figure 5.4**. easyJet launched services from Liverpool in 2008 and grew capacity over time, at the expense of other airlines and, in particular, at the expense of capacity and frequency to Manchester. The substitutability of these airports is clear, with growth overall in the Northwest market, but a switch of passengers from Manchester to Liverpool as the latter had the dominant level of capacity. easyJet finally launched low frequency services between Manchester and Jersey in 2019.

Figure 5.4: Jersey to Manchester & Liverpool Passengers and Seat Capacity (2007 – 2019)



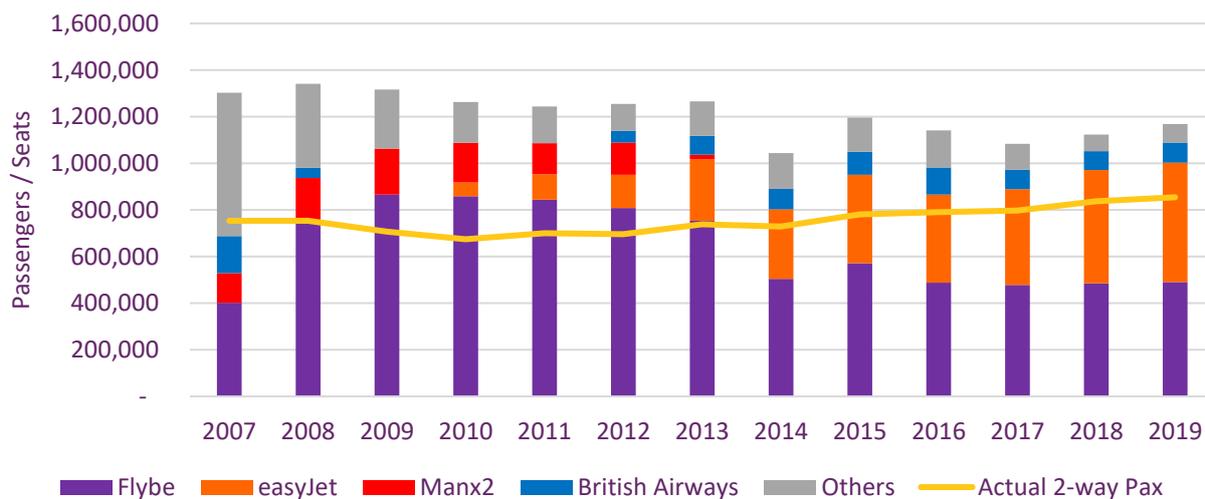
Source: OAG, UK CAA Airport Statistics

5.8 Growth in this market mirrors that in the London market, where the entry of low fares airlines has increased passenger volumes at the route/market level but the overall effect has to be seen within the context of a relatively static market overall to/from the UK, indicating that this growth has come at the expense of network breadth and wider frequencies. In 2010, Jersey had 31 UK and Channel Island routes with more than 1,500 annual passengers on each. By 2019, this figure had fallen to 24, illustrating how the low fares airlines undermined the market across a number of destinations and consolidated passengers through a smaller number of key airports to Jersey. This pattern is common to the historic experience of the impact of low fares services in the wider UK market as they expanded, with lower fare operations resulting in reduced services from airports without a low cost presence. Overall, by 2019, overall frequencies to/from Jersey had fallen by 35% across all routes compared to 2007, the year before low fares services commenced.

Isle of Man

5.9 The picture is similar for the Isle of Man where overall seat capacity has remained relatively flat in recent years, but total air passenger numbers have been growing. This can be seen in **Figure 5.5**, which also illustrates the increasing role of easyJet over time in providing capacity. By 2019, easyJet accounted for 44% of seats to the Isle of Man, though this is likely to equate to around 50% of passengers due to the higher typical load factors of the carrier.

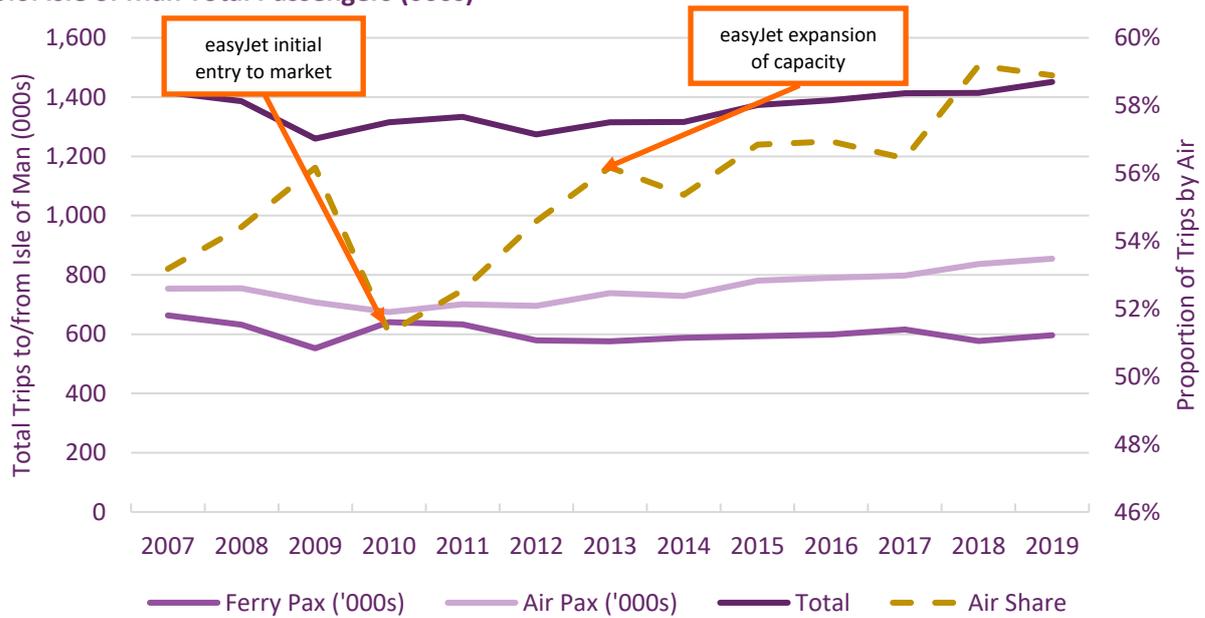
Figure 5.5: Isle of Man Total Passengers and Seat Capacity (2007 – 2019)



Source: OAG

5.10 As seen in the previous section and illustrated in **Figure 5.6**, since 2009 total travel has been growing on the Isle of Man but again only largely reinstating the volume lost through 2009/10. Air travel has grown at a faster rate than overall travel, once again as a result of a switch from sea to air travel, with the share of air passengers growing from 51% up to 59% by 2019. This switch has likely been driven by overall lower air fares making air travel more competitive. This mirrors the experience seen in Jersey.

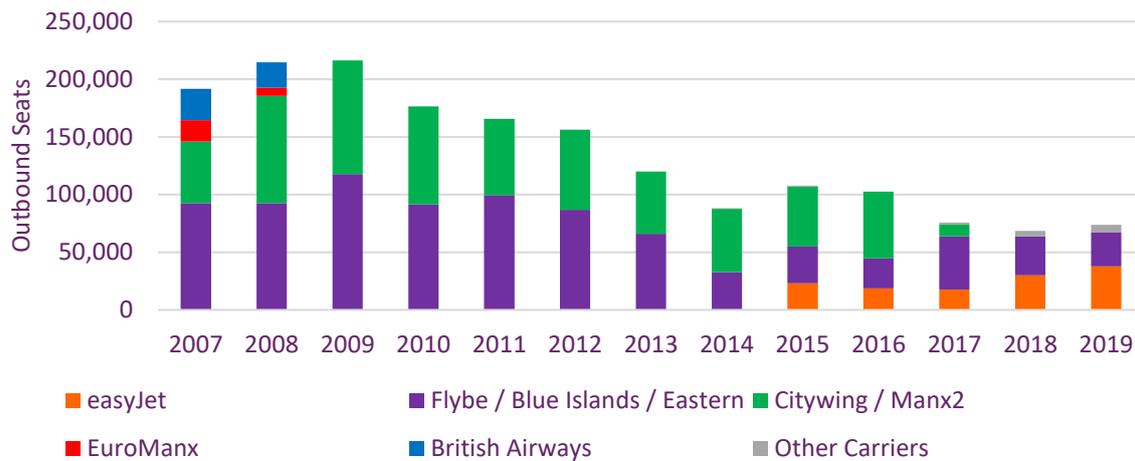
Figure 5.6: Isle of Man Total Passengers (000s)



Source: Isle of Man Passenger Survey Annual Reports

- 5.11 As with Jersey, frequencies on key routes also fell as a result of the entry of easyJet and, between 2008 and 2019, there had been a 55% decrease in annual flights frequencies to/from the Isle of Man. In the case of the London route, this dropped from 51 flights a week in the period 2009 – 2011 to 43 by 2019, equivalent to a reduction from 7-8 flights per typical day down to 6 flights per day. Significantly, whilst the frequency to London City by BA was maintained, the Gatwick route had been reduced to 1 flight a day in the evening by easyJet.
- 5.12 Frequencies to Manchester and Liverpool combined were largely unaffected by the entry of easyJet and total passengers to these two airports grew from the Isle of Man. Frequencies were maintained, in part as a result of the health service contract that continued to support the high frequency Flybe connection to Liverpool. However, the apparent growth in passengers to this Northwest market masked the reduction in passengers and services across the North as a whole, where services declined including the suspension of Leeds/Bradford and Blackpool flights. As with Jersey, this highlights the role that low fares services have in attracting passengers from a wider area and the substitutability between airports across a fairly wide region. The impact of this can be seen in **Figure 5.7**, remembering that low fares carriers launched on the Isle of Man in 2010 and grew rapidly after 2012. Between 2012 and 2019, the number of destinations served from the Isle of Man with more than 1,500 passengers per annum fell from 18 to just 10.

Figure 5.7: UK Outbound Seat Capacity from Isle of Man to Non-London/Liverpool/Manchester Destinations



Source: OAG

Operating Patterns

- 5.13 A further key aspect of low cost operations is that these airlines will not base aircraft overnight away from their base, with all aircraft returning to their base at the end of each working day. This is a key component of delivering lower fares (no hotels etc. for crew). The result is that, on both Jersey and the Isle of Man, the aircraft arrive on the islands later than the traditional first departure times to key destinations when aircraft are based on the island, with the first outbound flight later in the morning so impacting on the working day off Island, which is consistent with the feedback received regarding day return business trips to and from the Isle of Man.

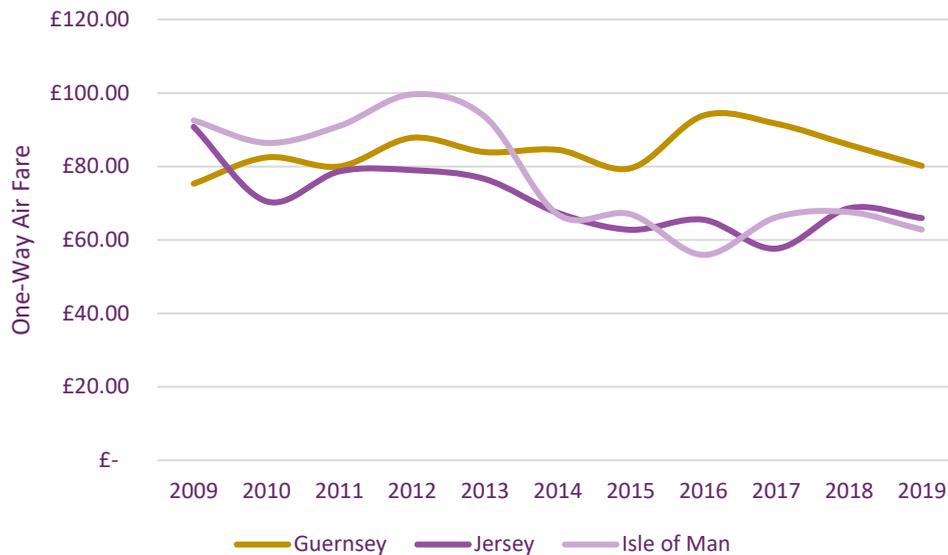
- 5.14 In the case of Jersey, on comparable September days in 2013 and 2019, there was a reduction in seat capacity for early morning departures to London (i.e. in the period 6.30-7.30am with aircraft based on Island overnight) of around 11% as the airlines lost some of their early morning demand to the easyJet services offered later in the day. On an individual day in 2019, the easyJet service arrived from London Gatwick at 8.15am and departed back to London at 8.45am. At the other end of the day, the opposite is true and as these airlines will operate their final flights as departures off the Island (rather than arrivals to the Island). In 2019, this meant the final easyJet arrival onto Jersey from London was at 6.35pm. These timings may be suitable for some travellers but will not be adequate to allow a day return to London for many business passengers when the surface access journey and pre-departure time at the airport is taken into account. In the case of the Isle of Man, the scale of the market means that easyJet only operates a single daily service to Gatwick, albeit we believe that the Isle of Man Government provides financial support for a new twice times daily service to London City Airport by Loganair (replacing frequency to London previously provided by Flybe/BA). Given the scale of the overall market, it is possible that an easyJet pattern of operation to Guernsey might be more like the Isle of Man than Jersey, indicating that Aurigny might need to be supported to maintain business critical services, an issue that we consider further in **Section 7**.

- 5.15 Such frequency changes will have had some impact on the value of services to the business community generally. Hence, the arguments made by some around improved access for business travellers with low fare services may not be fully accurate, as inbound aircraft services may not provide any further certainty or reliability than those starting their day on the Island. This is particularly so as the inbound services could be prone to fog delays on arrival, which might not similarly impact on the first outbound departure of an aircraft based on the Island overnight. In turn, any fog may have cleared by the time such a based aircraft makes its return leg. Similarly, the potential impact of higher winds and the reliability of turboprop operations, referred to by some, is less of an issue so long as Aurigny continues with the E195 operation. Overall, we consider there are likely to be equal reliability risks for different reasons with or without low cost operations.
- 5.16 Furthermore, reduced service frequencies could impact negatively business productivity due to longer waiting time between flights and less flexibility in the services that a passenger can book onto. This may be offset by lower fares, which will also be valuable to some businesses, particularly those outside of the financial and services sectors that are potentially more cost-sensitive. There is a clearly a trade-off between these aspects, but the evidence on Jersey shows that, even with a retained relatively high frequency, the lower fares may not have translated into improvements in business productivity if the Island's GDP performance was used as an indicator, as explored earlier in this report.
- 5.17 A further factor, which is clear from both the Isle of Man and Jersey, is the pattern of easyJet launching and expanding initially on a core anchor route and then, once established in the market, developing a wider network. In the case of the Isle of Man, this was the Liverpool route and, in the case of Jersey, it was the London route specifically from its main base at Gatwick. Whilst the airline did launch Liverpool to Jersey first, rapid expansion only came once the airline had started serving Gatwick. Such behaviour is typical of low fares carriers, where they will seek to embed themselves into a destination based on the highest volume and value routes, and then expand around this. These same principles would apply to any low cost carrier operation.
- 5.18 Since the easyJet launched services to the isle of Man and Jersey, the pattern of commencing services to any new destination from London before other destinations has become even more established. Between 2013 and 2019, 39 new routes were started from the UK and all of these started from London first. Of these new routes, 32% had a simultaneous launch from other UK points, but that means 68% of all routes were launched exclusively from London before services from other points, which followed later. Importantly, there were no routes launched from a regional airport first without a London link being in place. This clearly shows that, even if easyJet were minded to commence services to Guernsey from regional airports, this would need to be simultaneous to a London launch and more likely, based on recent trends, such regional services would follow a London route commencing.

Air Fare Effects

- 5.19 Clearly, a major impact arising from the launch of services on both Jersey and the Isle of Man has been a reduction in average fares. Although fares have fluctuated up and down over recent years from Guernsey, there has been a noticeable downward impact on average fares (across all routes) from Jersey and the Isle of Man since the rapid growth of easyJet in recent years. For Jersey passengers, this was around a 27.5% reduction over ten years, whilst for the Isle of Man the reduction was around 32% (in real price terms). This pattern of reduction compares to the increases in air fares on Guernsey, apart from the unsustainable reduction in 2019 as illustrated in **Figure 5.8**.

Figure 5.8: Average Air Fare Comparison Across All UK Routes (2021 real Prices)

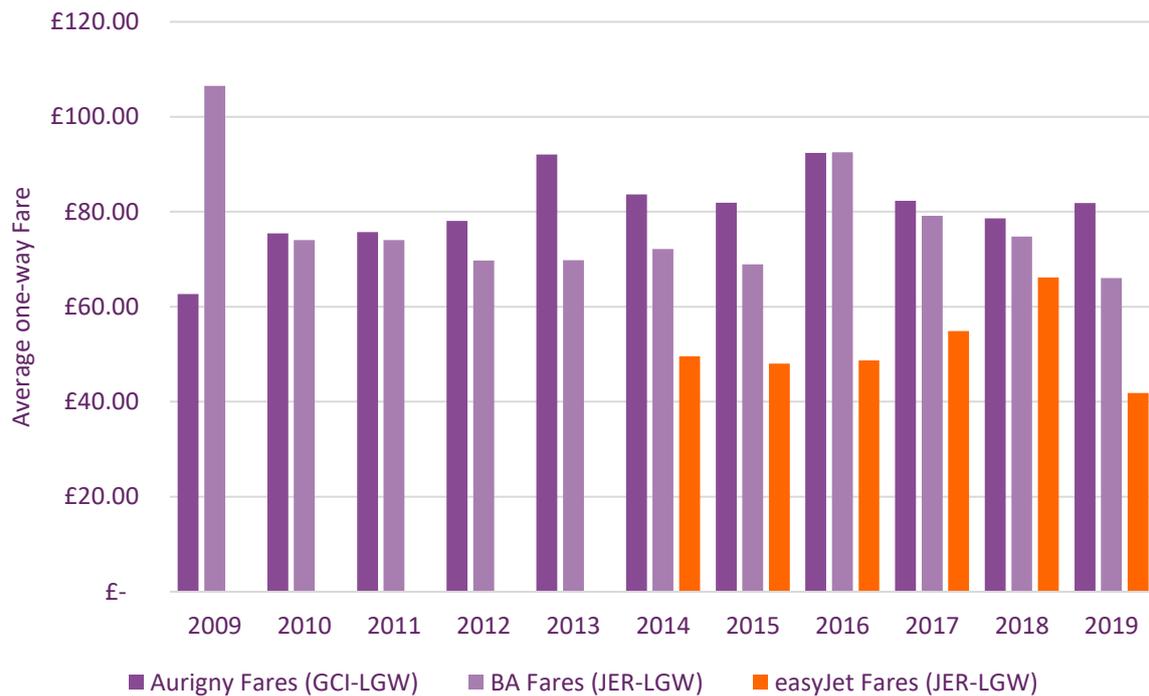


Source: UK CAA Passenger Survey

5.20 **Figure 5.8** shows the average fare across all routes but we recognise that the impact will have been specific to the routes operated. The impact on fares between Jersey and London can be seen in **Figure 5.9**¹⁵, which also shows the Aurigny fare from Guernsey. This highlights the difference in fares between easyJet and British Airways (as the alternative on Jersey) and Aurigny from Guernsey, with the difference in recent years across all routes between the islands being of the order of 22-23%. The pattern on the London route is more variable, with Aurigny historically being closer to the BA fare. It is interesting to note that some consultees also viewed an alternative British Airways service as having potential to offer benefits over Aurigny (mainly peak capacity and onward connecting benefits), but as can be seen, trends over recent years have indicated that this option would not necessarily generate lower fares than those currently paid from Guernsey, with Aurigny and British Airways being similarly priced. Aurigny has now signed a code share arrangement with British Airways that allows it to offer the onward connectivity in any event.

¹⁵ We have used UK CAA Survey data as a source for our air fare information. This data is subject to sampling errors and, as noted earlier, use of this data is indicative of broad trends but may be subject to some errors when individual routes are examined.

Figure 5.9: One-Way Air Fare Comparison (2021 Real Prices)

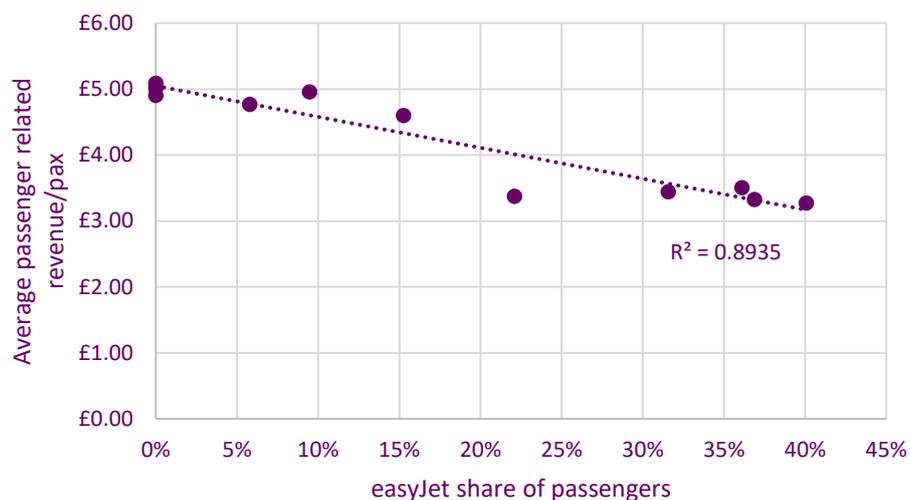


- 5.21 **Figures 4.12 and 4.13** illustrated the pattern of inbound and outbound travel for both Jersey and the Isle of Man, and the relationship between air and sea travel. In both cases, low fare services appear to have had some stimulus effect on visitor numbers as the network has grown, although as we have identified earlier there may have been other factors at play, particularly on Jersey. However, the evidence would suggest that the initial impact of low fare services is to stimulate outbound travel, consistent with the pattern seen when lower fares were offered from Guernsey in 2019. The airlines highlighted that, overall, their experience showed that it was mainly Guernsey residents that took advantage of any lower fares and that bookings from inbound passengers changed very little. This may suggest that, for inbound passengers, it is not the air service offer which is preventing them from travelling to Guernsey.
- 5.22 One reason for this may be that any price differential is an immediate and clear benefit for residents making it more attractive for them to switch from sea or leave the Island more frequently on a discretionary basis. By comparison, inbound visitors would still see lower fares to the islands in the context of the price and perceived value (weather, attractions, food, accommodation) of a holiday to alternative locations, such as Spain or European cities. One perceived benefit of having easyJet (or another major low fares brand) is that discretionary travellers may simply seek out new destinations and good deals on their website and, thus, there is a benefit in being visible on the airline website, for example. In principle, we agree with this sentiment and other airports that we have worked with have been clear that they have benefitted from being visible on a particular airline's website. However, given the differing levels of increased visitors, the evidence from the Isle of Man and Jersey indicates that this may not be enough alone and that attracting visitors is still dependent on the offer once they reach the Island.

Impact on Airport Revenues

- 5.23 Whilst it is true that an airport can earn extra commercial income from additional passengers with a low fares service, a further important factor in the attraction of low fares carriers is the impact on the airport as a business as a whole. In **Section 7**, we will explore these financial impacts further, taking into account the impact on capacity required in peak period on the scale of facilities and operational costs as well as opportunities for commercial revenue generation.
- 5.24 However, one immediate impact is likely to be on the net revenue from aeronautical charges. Low cost airlines require a much lower price point in terms of charges at the airports they serve. This price point is likely to be lower in new untested markets for them and in smaller markets more generally because of the greater perceived risk to them of initiating such services or from the scale of the market itself.
- 5.25 There is evidence of this effect on the Isle of Man. In our work for the Isle of Man Government, referred to earlier, we identified the overall impact of easyJet on the average aeronautical revenue per passenger as easyJet's share of the market grew. This is reproduced at **Figure 5.10**. Attracting easyJet required a tailored discounting scheme so the actual charges paid by easyJet were substantially lower than this average. Given that the Isle of Man Airport was operating as a Government cost centre, the effect of the lower aeronautical revenue was simply passed through to Government as effectively an increase in the cost subsidy to the Airport. The low levels of commercial revenue being earned at the Isle of Man Airport meant that the losses of the Airport were growing with every increase in the passenger volume being carried by easyJet.

Figure 5.10: Relationship between Average Passenger related Airport Charges Revenue per Passenger at the Isle of Man Airport and the Proportion of Passengers carried by easyJet FY2007/8-FY2017/8

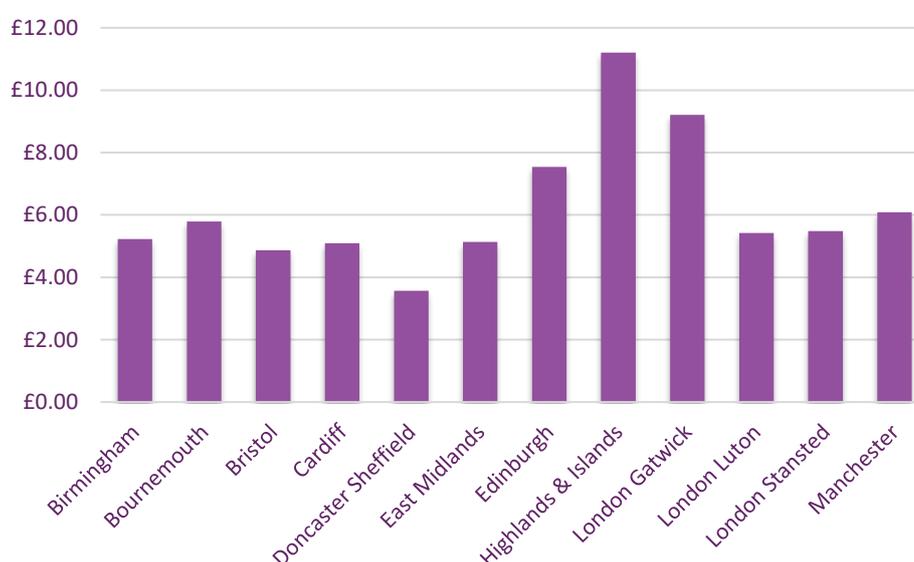


Source: Isle of Man Airport Statistics and Revenue Reports

- 5.26 Although we do not have the equivalent data, we understand that a similar principle of dilution of aeronautical revenue has been seen on Jersey, albeit in this case there may have been some compensating commercial revenue earned from passenger growth due to the stronger retail offer. It is our understanding that easyJet's willingness to pay on Jersey has been at a level typical of the charges paid at UK regional airports of a similar scale, i.e. substantially below the fees paid by mainline airlines such as British Airways and also below what Flybe would typically have paid.

5.27 In terms of the implications for Guernsey, in 2019 the average aeronautical income per passenger was £10.48 (or just over £20 for every departing passenger). This figure is high compared to many mainland regional airports but, even with this level of income, the Airport continued to make a loss financially. We illustrate the average aeronautical revenue published by a range of UK airports in **Figure 5.11**. We have used data for 2018/9 to exclude any pandemic related effects and excluded data for airports such as Heathrow or Biggin Hill that are unlikely to be representative. Data is not available in this form for many of the smaller regional airports, including several with a dominant low cost presence and for which the average revenue may be lower than those airports included in the sample. We are also aware that some airports report gross aeronautical revenue, which may be underpinned by marketing support payments or rebates paid out of opex, meaning that the average revenues presented may overstate the true net revenue position. It is notable that current average revenues at Guernsey are above the other airports for which data is available, except for the Highlands and Islands Airports where revenues are underpinned by a high level of PSO supported air services.

Figure 5.11: Average Aeronautical Revenue per Passenger across UK Airports 2018/9



Source: Jacobs UK Airport Performance Indicators

5.28 The key point is that low fares carriers will be unwilling to pay such high airport charges as currently earned at Guernsey and will require significant discounts against these levels to sustain services. On a long-term basis, these airlines are likely to seek charges in the region of £0-£4 per passenger (£0-£8 per departing passenger) based on our experience across UK regional airports. Initial incentives may need to be higher until routes mature for these carriers. Taking £3 per passenger as an example, every passenger lost from a current airline would need to be replaced by 3.5 passengers on a low fares carrier to retain the same income. Therefore, 2.5 new air passengers would be required for every passenger that switches to a low fares airline just for the total aeronautical income to remain the at the Airport, assuming that there is no downward pressure on the charges that Aurigny and Blue Islands are willing to pay on the services they retain. If this level of growth cannot be achieved then the revenues would reduce, further increasing the operational losses of the Airport unless compensated for by commercial income. We explore this further in **Section 7**.

5.29 Account should also be taken that any passengers that switch from sea to air may also reduce the viability of the sea routes and any income on a 'per passenger' basis to the Ports will also need to be factored into the costs to the States (although this goes beyond the scope of our work).

Alternative Opportunities for Securing Enhanced Services

Existing Runway Length

Low Cost Entry at Reduced Payload

- 5.30 There is some potential for Airbus A319 or Airbus A320 operations from the existing runway length, but with a significantly reduced payload. Any reduction in the number of passengers carried, compared to full payload, would almost certainly need to be offset by funding from the States in order to compensate the airline for the opportunity costs of deploying an aircraft to Guernsey. It is also worth noting that a reduced seat capacity may mean these aircraft would actually carry fewer passengers than the current capacity on the Aurigny Embraer E195 aircraft, which can operate with few restrictions from the current available runway length. Even if the States offered to compensate airlines for the reduced seat capacity, this is unlikely to be an attractive proposition for low fares airlines, such as easyJet, due to the operational complexity this would bring to their business and in the light of current operational difficulties and delays to aircraft delivery arising from the effects of the pandemic. In any event, it would require sufficient subsidy to compensate for any lost revenue and would also carry with it the same potential implications for the Airport, in terms of lost revenue and/or increased cost, as well as having detrimental implications for Aurigny as we discuss further later in this report in relation to services from an extended length runway. The costs to the States for such an operation, even on a trial basis, are likely to be substantial.

Fare Subsidy

- 5.31 An alternative approach might be to direct any subsidies towards securing air fare reductions based on the existing pattern of services, without triggering capacity increases of the form that were considered unsustainable by the airlines in 2019. This could be along the lines of Scottish Air Discount Scheme applicable in the Highlands and Islands, which provides residents of these areas with discounted travel. However, this would not of itself support the desired uplift in visitor numbers. Alternatively, a scheme could reward airlines for fare reductions overall but without, initially at least, incentivising new routes and services until the success of any fare reductions in terms of increased volumes of travel were known.

Aurigny Code Shares

- 5.32 We understand one area of concern is the lack of presence of Guernsey within the main global distribution systems and the lack of knowledge of the Aurigny brand. One main advantage cited for a runway extension has been that it could enable more mainline air services as well as or instead of a low fares offer. The main advantage of attracting a mainline carrier, such as British Airways, would be website exposure and onward connectivity, it seems likely that this could be better pursued by encouraging a partnership between Aurigny and, say, British Airways (or other airline), with Aurigny acting as a feeder service and having its flights available through the British Airways' website (as happens with Loganair on some routes and connections). Indeed, such a code share partnership has just been announced¹⁶. This solution may not see the increase in capacity on the early morning flights, but this would be no worse than the position if a low fares carrier entered the market due to the impact that may have on early morning capacity. It will, however, ensure a presence in global distribution systems and facilitate easier connections to and from Guernsey.
- 5.33 Finally, if brand recognition is perceived to be an issue, then consideration might be given to whether the name of Aurigny is appropriate to attract inbound passengers or whether some other rebranding would be required. Whilst there may be a strong sentiment in favour of the Aurigny name on the Island for historical reasons, this will not matter if entry by a low fares carrier means the business cannot be retained anyway. Therefore, consideration may need to be given as to whether rebranding the airline may widen its and Guernsey's appeal to the broader travelling public.

Extended Runway

British Airways

- 5.34 Some consultees indicated that if a low fares airline may not provide the frequency and flight timings offer that the States would desire, then an alternative use of a runway extension would be to encourage British Airways (BA) to base an aircraft overnight on the Island to serve London. It was suggested that this would add additional capacity during the peak summer season and that Aurigny could operate the route during the winter. It was envisaged that the States could offer its Gatwick slots to BA each summer.
- 5.35 This would be another means to secure the advantage of better onward connectivity in terms of BA selling through-tickets across its wider network from Gatwick (and potentially Heathrow) and would also potentially increase capacity on some peak time flights if the right aircraft was used. This would also bring a major airline name to Guernsey, which may see some increased recognition of Guernsey as a destination through increased exposure on a mainstream airline website.
- 5.36 However, this solution would be unlikely to meet the desire of other consultees to reduce fares (as can be seen earlier in **Figure 5.9** where BA and Aurigny fares are relatively comparable to London). Without reduced fares, this solution would be less likely to stimulate any new air passengers, which could make the case for a runway extension much less attractive, particularly if it the costs were incurred only to secure increased capacity for part of the year. This proposition would also likely increase the costs of retaining Aurigny as it would need to park aircraft for periods of the summer in order to bring them back to use in the winter on the London routes.

¹⁶ <https://www.islandfm.com/news/guernsey/aurigny-enters-partnership-with-ba/>.

Alternative Hubs

- 5.37 It has been suggested that a runway extension might also facilitate alternative hub connections to a European hub airport. Whilst such opportunities for hub connections would theoretically exist, this needs to be seen in the context of the often limited capacity available at these hubs, meaning that the airlines need to focus on the most profitable opportunities. In particular, achieving a connection to Amsterdam seems unlikely in the context of the recent decision by the Dutch Government to cut the Airport's capacity by 20%¹⁷. For a hub route to be of interest to an airline, there needs to be a reasonable point to point market, of the order of 20-33% of the capacity offered, as well as the opportunity for connecting passengers. It is not clear that these point to point markets from Guernsey would be sufficient to attract such a hub service, particularly at a frequency of operation that would make a range of connections feasible.
- 5.38 In any event, adding such hub connections without lower fares would not of itself increase the scale of the market and would simply divert passenger flows from other routes, principally Gatwick. Whilst hub connections might create the perception of easier access to Guernsey from other markets in Europe and so enhance tourism flows, the impact is likely to be marginal in terms of any real increase in tourist numbers given that fares levels are unlikely to be competitive within the context of broader leisure markets.
- 5.39 It should also be recognised that the runway length is not actually an impediment to such services now, with airlines such as KLM operating extensive feeder fleets which could operate from the existing runway length (and indeed operate from a shorter runway at London City). These airlines, including Air France as well as KLM, have got new aircraft on order that could equally operate from the existing runway length, such as the Embraer 190-E2/195-E2 and Airbus A220.

Air Freight

- 5.40 A further upside from a runway extension may be the possibility of Boeing-737/Airbus A320 freighter operations which could reduce the cost of air freight. This may reverse the trend of reductions in air freight to/from the Island (which has seen a corresponding increase in sea freight) but, from our consultations, it is not clear that there is a specific need for increased air freight capacity, other than in so far as some goods to Guernsey may not be available 'next day' as they would be in the UK. Furthermore, as with passengers, any shift from sea to air may impact on the financial performance of the sea routes and port.
- 5.41 For the purpose of our analysis in this report, we have not examined these options further as this was not part of the initial focus on the potential for low fares operations. We recognise that should the runway be extended, it would potentially enable such additional opportunities to be exploited over the longer term but the initial impact in terms of increased passenger volumes to pay for a runway is likely to be very limited.

Conclusions

- 5.42 Overall, the benchmarking of the impact of the growth in low fares services on Jersey and the Isle of Man suggests several key considerations which may be relevant to Guernsey if the runway at the Airport is extended and low cost services are attracted:

¹⁷ <https://www.businesstraveller.com/business-travel/2022/06/25/amsterdam-schiphols-capacity-to-be-cut-due-to-noise-pollution/>

- There should be some upside growth in air travel and some stimulation of new passengers to/from Guernsey in totality. Initially, new travel may be more focused on residents but will increase visitor numbers over time. However, overall growth in travel may be relatively limited and not of the scale perceived by consultees. Growth in air passengers could simply mask a switch from sea travel and across a broader market resulting in significantly less benefit overall;
- easyJet (or any other low cost carrier) is likely to only offer a significant network and capacity if this is underpinned by operations on a core route, almost certainly London in the case of Guernsey. Without a London route, any network may, at best, be limited to only a handful of inbound services a week and unlikely to justify the cost of a runway extension, particularly as even this could undermine the existing route network. Again, it is not clear that consideration of the case for a runway extension has so far properly accounted for the dominance of London in assuming that the benefits could be realised without low cost entry onto the Gatwick (or other core London) route;
- Allowing any low cost operations to London is likely to heavily impact Aurigny on its core route. Suspension of some frequencies by Aurigny may lead to the airline surrendering some slots, remembering that preservation of slots at Gatwick was the reason for the States taking ownership of Aurigny in the first place. Retaining Aurigny to operate early morning and late evening services may come at a significant cost to the States, particularly if the wider Aurigny network is undermined by a low fares carrier. This would almost certainly prevent Aurigny from ever attaining its 'break-even' objective. In such circumstances, it could not be guaranteed that Aurigny would be able to maintain, let alone increase, early morning capacity as desired by some consultees.
- Overall, frequencies are likely to reduce. The size of the Guernsey market means that, even with some market stimulation, frequency reduction may be greater than seen on Jersey and could be more akin to the experience of the Isle of Man;
- The number of destinations is likely to fall as low fares airlines would consolidate regional demand from the mainland through fewer airports. This may lead to a reduction in services to Manchester (if Liverpool were served) or suspension of East Midlands (if Birmingham was served). If the network at Jersey were replicated, this would also likely see easyJet take over the Bristol route from Aurigny (which may impact the Exeter route too). Furthermore, Southampton may be impacted in so far as it is interchangeable for London airports for some passengers. We estimate that, assuming a network similar to Jersey, Aurigny would be the most vulnerable airline and that routes accounting for around 70% of Aurigny's traffic could be affected as the impact on the Blue Islands network would be much less. Small reductions in passenger numbers may lead to whole routes being unviable and suspended;
- There is a real risk that the whole Aurigny business may be undermined so much that it cannot continue to operate or must do so with increasing losses. Closure of Aurigny may mean an end to early morning departures to London (and other points) if the Island is more dependent on inbound aircraft. This would also lead to a direct loss of jobs on Guernsey. Greater reliance on inbound aircraft may lead to greater unreliability in services as inbound aircraft may suffer more delays on morning flights due to the vulnerability of Guernsey to fog;
- Across the network as a whole, air fares are likely to fall on average. Some routes may not experience any specific fall in fares though and, in so far as Aurigny may continue to operate some London routes, these may not fall in price due to the cost of operating a more limited

network with fewer passengers (and therefore having to cover more off the fixed costs from fewer passengers).

- 5.43 Nonetheless, to the extent that the States is considering providing support for such air services, it will be important to bear in mind that the immediate benefit may be a social one in terms of facilitating additional resident discretionary leisure travel rather than increase business activity or tourist visits. There may be other initiatives required to deliver the benefit of increased tourism and subsidy may still be required to support the frequency of service required by business travellers.
- 5.44 In the next section, we draw on the above analysis and our broader experience in presenting a quantification of the potential impact of low fare air services enabled by a longer runway. Our findings from Jersey and the Isle of Man suggest that it is most appropriate to work at overall market level due to the likely impact on the network as a whole. Consideration of opportunities on a route by route basis is likely to understate and broader cannibalisation from both other air routes and sea.
- 5.45 We doubt that the business case for a runway extension would stack up based on alternative uses, such as a small number of operations from mainline carriers, as this would not stimulate additional passenger demand such as to deliver business and tourism benefits of a scale to warrant the costs of the extension and so have not considered this further.

6. Passenger Forecast Sensitivity Testing and Runway Extension Projections

- 6.1 As we have discussed in the previous section, there are currently no specific strategies in place that would warrant a definitive change in view as to the potential passenger demand forecasts for the Airport, compared to those set out in **Section 2**, other than relating to the potential for an extended runway, which we consider further later in this section.
- 6.2 Although we set out to investigate a number of hypothetical ‘what if’ scenarios to illustrate the potential implications of policy changes, our analysis in **Section 4** and comparisons with the performance on the other islands did not reveal any clear relationship to population growth or GDP growth that Guernsey ‘ought’ to be following. If anything, our analysis confirmed that, to the extent that there has been GDP growth (and some fluctuation in population numbers), overall passenger numbers and air passenger demand have not responded as would ‘normally’ be expected on Guernsey. Hence, it is difficult to define specific hypothetical scenarios.
- 6.3 We, nonetheless, set out below where some of the opportunities might lie.

Potential Opportunities

Population

- 6.4 To date, the States’ policy has to been to limit the number of people residing in Guernsey through the permit system. The original demand forecasts largely assumed a stable GDP and a relatively stable, but ageing, population over the medium to long term. Indeed, the implicit effect of the assumption of an ageing population was a slow down in relative economic activity, linking the scale and structure of the population
- 6.5 Changes to this policy have the potential to lead to increases in air travel demand, with increases in population in part driving air passenger demand growth on Jersey.
- 6.6 However, in effect, growth in population, and working age population in particular, would be one component of an increase in GDP. Generally, whilst propensity to fly relative to population is often used as a measure of the maturity of the air travel market, GDP is typically used as the explanatory variable rather than population.
- 6.7 As we have set out in **Section 4**, Guernsey already has a relatively high propensity to fly, albeit the overall propensity has declined over the decade pre-pandemic compared to Jersey. The propensity to fly is materially higher than the Isle of Man, although this is partly due to the greater tendency for the use of ferries there, with the overall propensities to travel being much more similar.
- 6.8 A change to population policies, particularly in terms of working age population, has the potential to be a driver of air travel demand growth but, ultimately, as our analysis in **Section 4** would indicate, the effects are likely to be subsumed into an overall GDP effect.

GDP

- 6.9 As noted earlier, the performance of the Guernsey economy pre-pandemic has been sluggish. To the extent that there has been growth in GDP or GDP per capita, it does not appear to have converted to growth in travel or air travel demand. To some degree, the change in the measurement of GDP during the period does not help statistical comparisons but, even so, there was little real movement in economic prosperity and a pattern of decline in travel, including air travel, was evident.

- 6.10 The economy remains heavily dependent on the financial services sector but neither this sector nor the economy as a whole has been showing evidence of real growth. From our discussions with stakeholders, we understand that there may have been some structural changes in the organisation of the financial services sector on Guernsey such that it is less of a driver of business air travel demand than might have been the case before the global financial crisis and also that the level of financial deposits on Guernsey, which underpins the total GDP, may not translate into actual prosperity and increased consumer disposable incomes leading to growth in travel.
- 6.11 Whilst detailed analysis of the prospects for economic growth is well outside the scope of our analysis, it is not immediately obvious what might drive a step change in economic performance and whether this would automatically translate into a step change in demand for air travel as might normally be expected.
- 6.12 For the purpose of our analysis here, we have assumed that there could, in future, be a 'normal' relationship between GDP growth and growth in air travel demand but there is some risk that this would not be the case in practice absent structural changes to the Guernsey economy.

Tourism

- 6.13 As noted in **Section 4**, there is an apparent relationship between the decline in hotel bed stock and the number of tourist visitors. However, declining bed stock has also been an issue on Jersey and on the Isle of Man, yet both have seen some increase in tourist numbers in later years leading up to the pandemic. It seems likely that the availability of a low fare services across a network of UK points has been one factor that has contributed to the improved tourism performance on the other two islands.
- 6.14 However, we believe that there have been other influences at play, including the availability of Airbnb accommodation on Jersey whereas Airbnb was not, until recently, allowed to be active on Guernsey. We also believe that there may have been more investment in visitor attractions and earlier investment in upgrading accommodation and the food offer on Jersey, which has contributed to the uplift in visitor numbers. We understand that there is greater focus now on upgrading the tourism product on Guernsey and focussing on new markets which could contribute to tourism growth with the right air service offer in place, as we have discussed in **Section 3**.
- 6.15 In our initial sensitivity testing, we have not assumed a step change in visitor numbers but linked this to a general uplift in GDP, which would include a contribution from tourism. We consider the extent to which low fares could drive an increase in visitor numbers later in this section.

Support Mechanisms

- 6.16 It was also suggested that the States may bring forward a new scheme to support air route growth, which would have the effect of reducing airport charges. To the extent that this applies to existing routes as well as new routes, lower charges should feed through to lower air fares and so act as a stimulus to growth. It is unclear whether this would be linked to low fares operations or mirror the initiative in 2019. As we have reported earlier, the discounts offered in 2019 resulted in a number of new services being trialled and an increase in outbound resident travel but this was considered unsustainable by the airlines as it resulted in excess competition in the market and the lower air fares, for which the level of discounts offered was insufficient to compensate. We considered the further role that discounting could play in the previous section.

6.17 As we do not have any detail of the possible scheme or incentives that might be offered, we have instead looked at the scope for low fares entry, assuming a runway extension was in place, and then estimated the potential financial implications later in this next section but we recognise that there might be other initiatives that the States might take to achieve lower air fares.

Quantifying the Impact of Economic Factors

6.18 We start by setting out the potential sensitivity of demand levels at the Airport to changing economic performance without taking into account the potential impact of a runway extension and the potential for low fare air services.

6.19 For the reasons explained in **Section 4**, in the end we have concluded that the most appropriate approach to quantifying the potential uplift to passenger numbers using the Airport is to assume that any structural issues in the Guernsey economy are addressed and that demand for travel in future responds to economic growth following a 'normal' relationship.

6.20 In broad terms, conventional air traffic forecasting models typically rely on a measure of income, typically GDP, and cost, typically air fare, although more sophisticated models may use subcomponents of these within an overall model. For the purpose of our analysis here, we have relied on a GDP elasticity in terms of the underlying potential for growth in air passenger volumes and an air fare elasticity to consider the impact of a runway extension and a low fares offer later in the section.

6.21 Having examined the implied elasticities of air travel demand to GDP growth on Jersey and the Isle of Man, as set out in **Table 4.1**, we have concluded that these are not necessarily representative of the expected response to GDP growth (and any embedded implicit growth in population) on its own as they include within them a low fares affect. For the reasons set out in **Section 4**, we have concluded that the most appropriate elasticities to adopt are those used by the UK DfT (**Table 4.2**) as applying to UK domestic routes, which separately identify a GDP elasticity and an air fare elasticity. These elasticities appear to replicate within a reasonable tolerance of error the pattern of air travel growth observed on Jersey over the decade pre-pandemic. In this case, the GDP elasticity is 1.1 and the air fare elasticity -0.6. We apply this GDP elasticity here to both resident and non-resident passengers combined to reflect the relationship between visitor numbers and GDP more generally as this is consistent with the basis upon which the elasticity was defined.

6.22 In **Table 6.1** below, we set out the projected passenger throughput attainable at Guernsey Airport using the 'standard' UK DfT income (GDP) elasticity, which represents our 'most likely' outcome from economic, including population, growth alone. These take 2018 as the base year against which traffic is grown, as the existing carriers considered 2019 traffic levels to be unsustainable. It is implicit in these projections that the average air fares, in real terms, remain at 2018 levels.

Table 6.1: Potential Airport Passenger Throughput at with Variant Elasticities to GDP Growth

	Assumed Income (GDP) elasticity	GDP Growth			
		5%	10%	15%	20%
UK based	1.1	849,000	893,000	937,000	982,000
JER based	1.75	875,000	945,000	1,016,000	1,086,000
IOM based	0.65	831,000	857,000	883,000	909,000

- 6.23 The impact of assuming the Jersey and Isle of Man derived multipliers is also illustrated but these multipliers are already composite measures, including within them the specific effect of the introduction and expansion of low cost air services and, hence, include lower air fare effects. Achieving the Jersey based projection would almost certainly rely on a strong low cost offer but the Isle of Man based projection indicates a downside risk that even a low cost offer would not stimulate strong growth unless other economic and tourism factors have been addressed concurrently. Also, much of the growth in air passenger demand on Jersey and the Isle of Man (46% and 73% respectively) was a shift from sea travel in any event.
- 6.24 The growth on Jersey was also underpinned by population growth, albeit with a relatively sluggish growth in GDP overall. In contrast, the Isle of Man saw strong GDP growth, not linked to population growth, but a sluggish response in terms of increased travel demand.
- 6.25 This suggests that other structural economic factors were in play, including the attractiveness of the tourism product and growth in GDP that translates into increased consumer disposable income in order to drive growth in travel. This could imply further changes would be required to the structure of the Guernsey economy to deliver growth in air travel as noted above, given the projections for an ageing population and decreasing levels of employment over time.
- 6.26 These demand projections are not dissimilar to our original base and high case projections prepared for the Draft Master Plan and described in **Section 2**. In essence, the original projections for the Master Plan assumed that some other economic stimulus would be required to achieve higher levels of growth but, with only modest GDP growth as has been the experience over the last decade pre-pandemic, the scope for growth in air passenger demand would be limited. As noted above, implicit within the higher levels of growth would be an assumption that such growth would in part be driven by population growth. In our previous work, we had noted specifically that achieving the High Case scenario would likely require some economic improvement and our new analysis confirms this position.
- 6.27 It is likely that sea travel would see a similar uplift in demand should the conditions outlined above arise. In other words, this growth at the Airport would not, of itself, depend on cannibalisation from existing sea or air services if driven by underlying improvement in economic performance.
- 6.28 We use the UK elasticity based projections as a basis for modelling the potential financial impact on the Airport of achieving higher GDP driven growth to test if this would be sufficient to deliver financial sustainability. This forms a new baseline for our modelling of the financial impact of a potential runway extension.

The Potential Impact on Demand of a Runway Extension

Impact on the Airport

- 6.29 Based on our earlier analysis, we believe that a material reduction in air fares would be required to drive tourism growth in particular but such lower fares would also stimulate additional outbound resident travel over and above that driven by GDP (income and population) factors.

- 6.30 We have focussed here on the potential uplift to passenger numbers through low cost services enabled by a runway extension relative to an overall reduction in the average fare, drawing on the pattern observed on Jersey and the Isle of Man. For the reasons discussed in the previous section, we do not believe that alternative service types that might be enabled by an extended runway would of themselves make a large material difference to the overall passenger or freight volumes and so would only contribute marginally to any business case for extending the runway. We have not undertaken a route by route analysis, not least as this would tend to overstate the overall potential in terms of travel and air travel to and from Guernsey as the responsiveness of a price decrease on an individual route may simply result in passengers transferring from another higher priced route or from sea. For the purpose of this high level analysis, we have focussed on the aggregate uplift to demand at the Airport from lower fares and then considered the extent to which there would be incremental visitor numbers within this who would not otherwise have visited Guernsey, recognising that some passengers would simply switch between air routes and some would transfer from sea.
- 6.31 As noted earlier, one view of the total impact on air passenger volumes is the potential throughput attainable if Guernsey was able to match the performance of Jersey was set out in **Table 6.1** relative to the composite effect associated with GDP growth. If the effect of low fare services on Guernsey mirrored that seen on Jersey over the last decade, then passenger demand at the Airport could rise to around 945,000 based on 10% GDP growth as observed on Jersey. With higher GDP growth of 20% over time, the total passenger volume could reach just under 1.1 million if Guernsey was able to replicate the performance of Jersey. If the performance of Guernsey was more like that of the Isle of Man, however, passenger volumes would be materially lower.
- 6.32 Looking more specifically at the potential market stimulus effect of low fare services, we have adopted the price elasticity identified of -0.6 related to air travel within the UK domestic market, which comprises most of the passengers to/from Guernsey. We have applied this on top of the UK based elasticity GDP projections to be consistent and produced more specific estimates of the impact of low fare services.
- 6.33 We looked at the level of air fare reduction observed on Jersey (UK CAA Passenger Survey recorded air fares), which was of the order of 27.5% over a 10 year period and of the order of 32% on the Isle of Man. This fare reduction was across the whole network and the reduction on individual routes could be lower, of the order of 20%. However, a low fare service would potentially draw passengers from other higher fare routes potentially leading to some routes ceasing meaning that the overall average fare charged fell more than the reduction on the individual routes where the low cost carrier started service.
- 6.34 Having regard to the evidence from the other islands, it seems reasonable to assume an overall average fare reduction of c.30% as applicable for Guernsey if low cost airlines were able to serve Guernsey. This reduction is assumed to be at the overall market level based on a developed low route network over a 5-10 year period, i.e. fares on some routes would see a bigger reduction but fare levels on other routes would remain at broadly existing levels. In broad terms, this would put average air fares to/from Guernsey on a par with the average observed to/from Jersey. Route by route impacts could be more or less initially dependent on the specific fare reduction and relative frequency but this would not necessarily represent the net effect once route switching and switching from sea was accounted for.

- 6.35 It is important to note that there is some uncertainty as to whether this level of fare reduction would be sustained if other airlines, in the case of Guernsey, Aurigny exited the market. There is some evidence of fares rising to and from the Isle of Man¹⁸ when Flybe exited the market but it is unclear whether the increase in air fares in 2021/2 represented a Covid-19 effect. Overall, since easyJet entered the Isle of Man market in 2008, the cost of air fares has reduced relative to overall inflation. Data as at December 2022 suggests that fares have increased by 19% since 2008, with overall inflation running at over 49%, i.e. air fares have fallen in real terms by 20% since low cost entry notwithstanding easyJet having increased its market share from 44% in 2019 to over 55% in 2022. The more recent expansion by Loganair to fill some of the service gaps left by the failure of Flybe may lead to lower fare levels being reintroduced in line with historic data suggesting a 32% reduction as having been realised.
- 6.36 With a fare reduction of 30% across the whole Guernsey air travel market and an elasticity of -0.6, this would result in a stimulation of 18% to air passenger demand if this level of fare reduction was sustained, increasing Airport throughput to 950,000 passengers a year (a potential increase of 145,000 passengers over 2018 levels) assuming no other income (GDP) based stimulation to demand. In **Table 6.2**, we set out the effect of a 30% reduction in air fare on the overall passenger throughput at the Airport against each of the hypothetical GDP uplifts, noting that stakeholders believe that a lower fare air service offer would, of itself, stimulate increased economic activity.

Table 6.2: Total Airport Passengers with a 30% Average Fare Reduction at Different Levels of GDP Growth

Assumed GDP Uplift	0%	5%	10%	15%	20%
Annual Airport Passengers	950,000	1,002,000	1,054,000	1,106,000	1,159,000

- 6.37 Hence, when compounded by high economic growth there is a potential for lower air fares to lift the volume of passengers using the Airport to almost 1.2 million a year assuming a range of measures in place to exploit the potential benefits of lower air fares, including improving the tourism product creating a 'virtuous circle' between increased tourism demand and GDP growth. When coupled with potential economic growth, the range of the direct contribution from lower fares on Airport passengers lies between an uplift of 153,000 to 177,000 if compounded with economic growth effects. The combined impact would be an increase in 197,000 to 354,000 additional Airport passengers over 2018 levels. The latter figure represents an upper bound for the medium term, assuming strong and productive economic growth is delivered alongside a low fares air service offer. It is notable, that these estimates are a close fit to the relative impacts observed on Jersey as reported earlier.
- 6.38 If the air fare reductions were less than 30%, the impacts would be lower and vice versa if the average air fare reduction was greater. We summarise the effects on total Airport passenger throughput of both air fare reductions and economic growth in **Table 6.3** below.

¹⁸ Isle of Man Inflation Reports.

Table 6.3: Future Airport Passenger Throughput with Different GDP Assumptions and Air Fare Assumptions

GDP Uplift	Average Change in Air Fare		
	10%	20%	30%
0%	853,000	901,000	949,000
5%	900,000	951,000	1,002,000
10%	947,000	1,000,000	1,054,000
15%	994,000	1,050,000	1,106,000
20%	1,040,000	1,099,000	1,158,000

Net Increase in Visitor Numbers

- 6.39 Our analysis, as set out in **Section 4**, has demonstrated that the effect of low fare services on Jersey and the Isle of Man was to see continued erosion of the market share of the sea mode of travel. This is consistent with the pattern observed on Guernsey over the last decade. Hence, not all of the incremental passenger demand would be new for Guernsey and so represent an economic uplift, other than those related to air fare and journey time savings for those who would have travelled any way, which we consider further in **Section 7**.
- 6.40 Based on the patterns observed on Jersey and the Isle of Man, around 54% or 27% respectively of the increased air passenger would be additional trips to from Guernsey. Of these, 77% or 27% respectively would be expected to be visitors with the remainder outbound resident trips.
- 6.41 Applying these percentages to the potential incremental air passenger uplift due to lower fares, using either the Jersey or Isle of Man precedent, results in estimated incremental passengers and visitors as set out in **Table 6.4**. In practice, we would expect the performance of Guernsey to lie somewhere between the other two islands, particularly if broader economic opportunities are not addressed concurrently.

Table 6.4: Incremental Air Passengers at 30% Air Fare Reduction and Incremental Visitor Numbers

	Model	Total Incremental Air Passengers	Net Incremental Passengers (after diversion from Sea)	Incremental Visitor Passengers	Incremental Visitors
Base uplift	Jersey	145,000	78,000	60,000	30,000
	Isle of Man		39,000	10,000	5,000
5% GDP Growth	Jersey	153,000	83,000	64,000	32,000
	Isle of Man		41,000	11,000	5,500
20% GDP Growth	Jersey	177,000	95,000	74,000	37,000
	Isle of Man		48,000	13,000	6,500

- 6.42 It is notable that our estimated uplift in overall visitor numbers to the island is similar to those we understand to have been estimated in previous studies, although we approached the analysis from first principles. However, significantly, our assessment inherently assumes the London Gatwick route is part of the mix and that it would be a major driver of any demand increase. We believe that previous analyses may have explicitly excluded the Gatwick route and we doubt that the uplift of visitor numbers would be attainable without low fare entry onto the main London route.

Impact on Aurigny

- 6.43 We have also considered the potential impact on Aurigny from low fares entry, again drawing on the precedent observed for the effect on other airline services on Jersey and the Isle of Man.
- 6.44 It is our understanding that a low fares operation would require Gatwick (or a main London service) as its anchor route. Without such a high volume anchor route it is considerably less likely that they would serve Guernsey from other points as this would not establish a strong enough market presence. For both Jersey and the Isle of Man, easyJet's growth was based on an initial anchor route – Gatwick and Liverpool respectively where the airline could be confident of a viable market size.
- 6.45 Assuming this initial route proved successful, it is expected that the route network could grow and replicate the range of routes served on the other islands over time – this took around 7 years on the other islands. We would expect that any route network developed would largely overlap the Aurigny network (66% of total air pax in 2018 when substitution for Flybe is allowed for), rather than the residual Blue Islands network including Southampton. This is because a low cost airline would seek out the larger markets such as Manchester/Liverpool and Birmingham.
- 6.46 Based on the performance on Jersey and the Isle of Man, a low cost airline such as easyJet would be expected to take around a 50% share of the overall market over time and this would largely be at the expense of Aurigny. Whilst BA was able to maintain its market share on Jersey, this is because of its wider network and hub role. We would not expect Aurigny to exhibit such brand strength.
- 6.47 The net impact on Aurigny would depend on the extent to which there was general market growth from economic factors concurrently, with the potential for an economically driven market growth to ameliorate the impact somewhat. Assuming all of the impact was felt by Aurigny rather than Blue Islands, the effect relative to 2018 passenger volumes (incl. Flybe replacement) is in **Table 6.5** shown below:

Table 6.5: Passenger Impact on Aurigny

	Net Loss of Passengers	% Impact relative to 2019 volume
Base low cost uplift	330,000	62%
5% GDP Growth	326,000	61%
20% GDP Growth	314,000	59%

- 6.48 The effect of this level of passenger reduction on Aurigny would be significant. A detailed consideration of the cost implications for Aurigny is outside the scope of our report, but we will set out an initial assessment of the broad implications further in the next section as it is highly likely that there would be service reductions as well as revenue losses.

Conclusions on Market Potential

- 6.49 Overall, our analysis suggests that strong economic and productive growth coupled with low fares entry could see Airport passenger volumes increase to 1.2 million passengers per annum over a 5-10 year period. This would represent a 35% increase on the number of passengers handled pre-pandemic in 2019. Dependent on the extent to which low fares entry coincided with improved economic performance more generally, almost half of the increase in airport passengers might be attributable to low fares entry, assuming that an overall reduction in the average air fare charged to and from Guernsey reached 30% and was sustained with Aurigny remaining active in the market to ensure competition.
- 6.50 On its own, improved economic performance is unlikely to increase the number of passengers using the Airport above 1 million passengers a year over the medium term. Similarly, low fares entry absent of other initiatives to improve economic and tourism performance would be unlikely to increase the number of passengers using the Airport above 1 million a year. It is the combined effect of the two that could increase volumes to 1.2 million passengers.
- 6.51 However, not all of the passengers would be net additional trips to and from Guernsey as the evidence from Jersey and the Isle of Man would suggest that low fares entry results in further cannibalisation from sea travel. Our estimate is that the number of net incremental visitors would be somewhere in the range 5-35,000 a year.
- 6.52 Low fares entry would also draw passengers from existing air services and this could have a substantial effect on Aurigny. Evidence from Jersey and the Isle of Man would suggest that low fares entry is likely to result in low cost airlines taking around 50% of the air passenger market as they grow their networks, following initial entry onto a main anchor route. On Jersey, British Airways has been able to maintain a presence because of the broader network and hub connectivity that it provides. On the Isle of Man, retention of other services has, we believe, required fairly substantial levels of Government support, particularly since the demise of Flybe.
- 6.53 We now go onto consider the financial implications for the Airport of the potential growth scenarios set out in this section.

7. The Financial and Economic Welfare Implications of a Runway Extension

- 7.1 In this section, we first set out an estimate of the financial impact on the Airport of increasing passenger volumes through improvements in economic performance, and the responsiveness of air passenger demand to improvements in the economy to provide a baseline against which to consider the impact of handling the additional passengers that could be attracted with an extended runway and low fare services. The impact of an extended runway and low fare services is compared against an updated baseline financial position derived from the updated passenger projections set out in **Section 6**, driven by a 'normal' response to economic growth.
- 7.2 We then undertake an initial high level economic welfare based appraisal of the potential costs and benefits of investing in an extended runway taking into account the broader cost and revenue implications for the Airport and Aurigny. This is not intended to be a detailed business case assessment, not least given the considerable uncertainties in the analysis at this stage, but is presented to assist the States in the development of its own business case.

The Potential Impact of Securing Growth through Economic Improvements Only

Updated Baseline Financial Model

- 7.3 Based on the initial projections set out in **Section 6**, we have updated the financial model used to undertake some initial affordability analysis for the works proposed in the Draft Masterplan. For the purpose of our analysis here, the financial modelling in this work has been driven off a baseline of the 2018 passenger levels (804,500 passengers) as the base case against which to consider GDP based and/or low fares based effects. The approach and assumptions are consistent with the previous financial modelling, which was outlined in Section 9 of the Draft Masterplan. Key assumptions within the baseline, which are consistent with the previous financial modelling, include:
- Aeronautical revenues per passenger remain flat in real terms throughout the financial assessment;
 - Commercial revenues are assumed to grow at 1% real per annum on a per passenger basis for duty free, retail and catering. Other revenues are assumed to remain flat real on a per passenger basis including car parking and advertising;
 - 0.5% annual increase in real terms staff wages and salaries;
 - All other costs remain flat in real terms.
- 7.4 Where these assumptions are adjusted to reflect the different passenger scenarios within this Report, these changes are outlined later in this section, including specifically where these are varied for the GDP related growth scenarios identified in **Table 6.1** (but which are not runway extension dependent). In baseline terms, we report a slightly greater baseline loss in our indicative future year than in the Draft Masterplan due to taking the 2018 passenger throughput as our baseline against which to measure the impact of either economically driven passenger demand growth or the impact of low fare operations. The actual cost and revenue assumptions remain the same as the previous assumptions, i.e. with some real increases in both costs and revenues, but we have started from a baseline of no increase in passenger numbers whereas the Draft Masterplan assumed some growth.

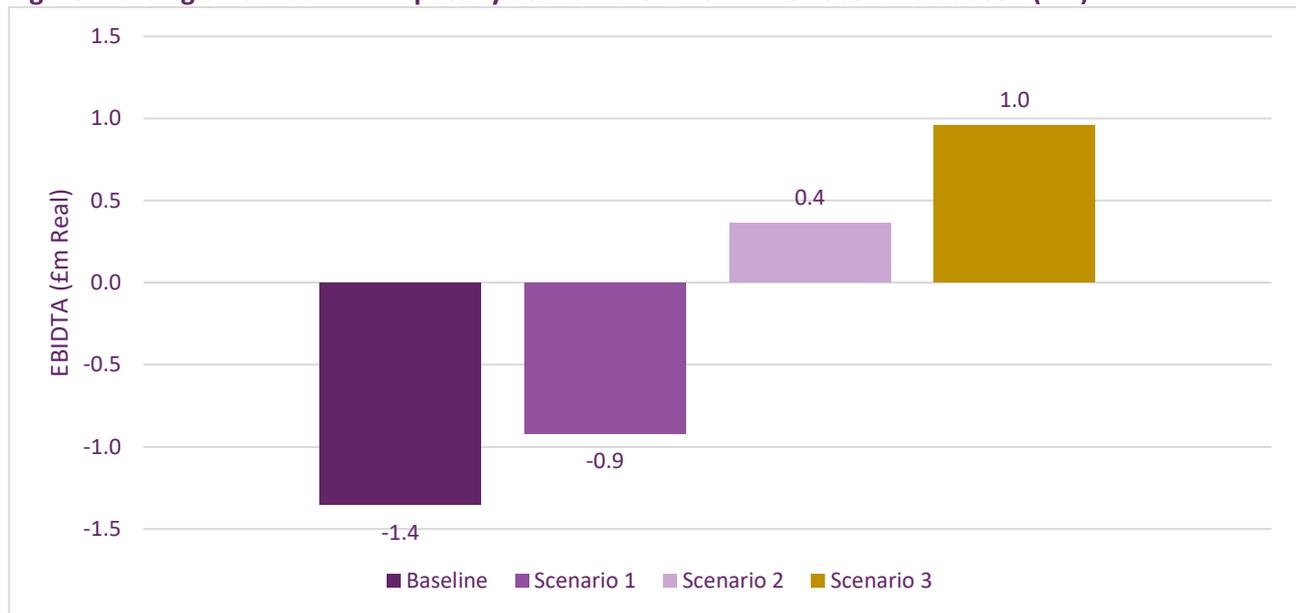
Economically Driven Scenarios

- 7.5 In the first instance, we note that there is an intention to redevelop the passenger terminal at the Airport to improve customer service and the potential for commercial revenue generation, as well as overcoming other current shortcomings. The timing for these works is uncertain and still subject to more detailed business case appraisal. Under our higher economic growth scenarios, the timing when the improved terminal might be justified is earlier than with slower growth. Extending the terminal also offers the prospect of some increase commercial area and an increase in potential commercial revenue per passenger but the updated proposals (May 2023) reflect a much smaller increase than earlier versions of the scheme developed for the Master Plan. We have factored these considerations into our initial model and describe the relationship between our initial scenario assumptions and those related to the cases where low cost entry following a runway extension are assumed later in this section.
- 7.6 The assumptions underpinning our baseline scenarios, without a runway extension, are set out in **Table 7.1** and the results in **Figure 7.1**.

Table 7.1: Economic Growth Driven Scenario Financial Assumptions

	Baseline	GDP Uplift Only Scenarios		
		No Commercial Revenue Uplift		With Commercial Revenue Uplift
		Scenario 1	Scenario 2	Scenario 3
Scenario Description	Baseline, 0% GDP Uplift, No Commercial Revenue Uplift	5% GDP Uplift, No Commercial Revenue Uplift	20% GDP Uplift, No Commercial Revenue Uplift	20% GDP Uplift, 25% Commercial Revenue Uplift
GDP Uplift Assumption	0%	5%	20%	20%
Runway Extension Opening Year	n/a	n/a	n/a	n/a
Terminal Improvements Year	2030	2030	2027	2027
Scenario First Full Impact Year	2030	2034	2034	2034
<i>New Full Service Passengers</i>	0	45,000	178,000	178,000
<i>New Low Fares Passengers</i>	0	0	0	0
<i>Low Fares Impact on Full Service</i>	0	0	0	0
Terminal Improvements Required for LCC	n/a	n/a	n/a	n/a
Low Fares Income Per Passenger (£)	n/a	n/a	n/a	n/a
Increase in Commercial Revenue/Passenger	0%	0%	0%	25%
Increase in Security Cost Per Passenger	0%	0%	0%	0%

Figure 7.1: Single Year EBITDA Impact by Economic Growth Driven Scenario at 2034 (£m)



7.7 Consistent with the conclusions in Section 9 of the Draft Masterplan, if the conditions could be created whereby there was economic growth that translated to growth in air passenger demand, the Airport would be in a position to return annual profits. However, at lower levels of economic growth, the prospects of profitability are materially diminished. Assuming that the terminal improvement works are delivered, which arguably would be essential at the higher levels of growth in Scenarios 2 and 3, then any associated improvement in commercial revenues could translate into an even greater improvement in profitability. However, whether this improvement on its own would be sufficient to justify the expenditure on the terminal extension in pure commercial terms would remain doubtful and other commercial initiatives would be required to generate sufficient incremental revenues to fund the full anticipated capital programme requirements.

Options and Costs for a Runway Extension

7.8 We understand that the intention is for the States to cover the cost of extending the runway as a States' capital project, without a direct pass through of these costs to the Airport. Although these costs are intended to be met by the States, we have set out the overall costs as they are considered within the context of the economic welfare benefits at the end of this section.

7.9 We understand that the assumed costs of for the works in the previous economic analysis were £88 million but we are aware that a number of options for achieving an extended runway length are still under consideration:

- ➔ Option 1 – extension to 1,700m and a 240m traditional RESA;
- ➔ Option 2a – extension to 1,700m with a 120m EMAS RESA;
- ➔ Option 2b – extension to 1,700m with 120m EMAS RESA on a stilted structure to the east;
- ➔ Option 3a – extension to 1,740m with a 120m EMAS RESA;
- ➔ Option 3b – extension to 1,740m with 120m EMAS RESA on a stilted structure to the east;

- ➔ Option 4 – reconfiguring within the existing airfield boundary to achieve a runway length of 1,583m and a 90m minimum RESA.

The costs for these options could vary significantly and as a result we have assumed three cost points based around the original **£78 million** capital cost estimate used in the previous analysis (being retained as the mid-point cost), albeit this does not account for any inflation since that work was undertaken in 2020 and the potential start of works. We understand that the remainder of the costs were assumed to be route support costs over 10 years to attract a low fares airline.

- 7.10 Cheaper solutions are being considered and this could see costs lower by say 50% of the original cost estimate, therefore £40 million. Alternatively, a more comprehensive solution now seems likely to cost significantly more and discussions with Airport Management suggest that more comprehensive works could cost between £120-130 million. In our initial appraisal, we have retained the estimated cost used previously to assist in comparing the results and this would need to be refined once the outcome of the optioneering work is concluded.
- 7.11 It is assumed that, following any decision by the States to extend the runway, there will be a period of time to implement the development and so we have assessed the earliest opening year as being 2027. This informs our consideration of the financial implications on the Airport and how the relationship between the timing when the runway might be delivered compared to the implementation of other elements of the Draft Masterplan, specifically any required works to the passenger terminal.

The Financial Implications for the Airport of an Extended Runway

- 7.12 It is highly likely that, over and above the costs of a runway extension, the ability to handle low fares airlines (or larger aircraft more generally) may come with other costs which need to be considered in any financial and economic analysis of developing such services. These arise from larger aircraft and a bunching of passenger loads putting more strain on airport facilities at peak periods.
- 7.13 The focus of our analysis was on the impact of these larger aircraft on:
- ➔ The capital costs of extending the passenger terminal to accommodate increased peak passenger flows;
 - ➔ The increased operational costs (e.g. additional security) to handle peak passenger flows;
 - ➔ Reduced revenues to the Airport allowing for the lower airport charges required to attract low fare airlines and the loss of any Aurigny income (net of any incremental commercial revenues from additional passengers); and
 - ➔ Whether there was scope for increased commercial revenues associated with terminal expansion and refurbishment.
- 7.14 We have assumed that low fares airlines would grow in a similar manner to the experience seen at Jersey and on the Isle of Man, starting with limited routes and building up to a full network over time. Based on these airports, we have projected that the full impact of low fares carriers will be achieved after 7 years. This relates to 2034, assuming the runway and terminal developments needed to support such services could be completed by 2027, with low fare services initiated from that date.

7.15 A feature of the low fare operations on the other islands, once the network is developed, is some bunching of operations such that it is not uncommon for two or three aircraft to depart within a fairly short time period. This would require expansion of the departure facilities at the Airport compared to those currently existing, in particular the departure lounge and gaterooms/pre-board areas as well as expanded security facilities and staffing.

Associated Terminal Development Requirements

7.16 It is recognised that, over time, a major terminal refurbishment is required to address current customer service issues and improve the commercial offering and revenues as described in Section 3 of the Draft Masterplan. An initial cost estimate of the minimum investment required to deliver some improvement in commercial opportunities and/or improved customer service on the ground floor of the terminal has been prepared by AECOM at of the order of £20 million. The ability to increase the commercial space available on the ground floor assumes that the departure lounge continues to function as currently without defined pre-board or gate room areas that would be required with low cost operations.

7.17 With a runway extension and larger aircraft loads with low cost entry, there would need to be further modifications to the terminal to increase the security processing area at an estimated cost of £3 million. Furthermore, the need to provide specific pre-board areas would erode the space available to enhance the commercial offer, removing the scope to improve commercial revenues per passenger even with the above enhancement works completed. If there were to be bunching of operations by larger aircraft facilitated by a runway extension, there would remain some risk of the need for further terminal development over and above the scheme outlined above. Any such increase in costs is unknown and not included in our analysis at this time.

7.18 The timing and triggers for when the terminal refurbishment might be carried out are currently unclear and remain subject to a business case. The works would be triggered either by the need to improve the passenger experience and achieve commercial revenue growth or due to underlying market demand growth consistent with higher economic growth.

7.19 In the event of low fares entry, however, the works would need to be undertaken concurrently with the runway extension to ensure that there was sufficient capacity to handle the peak flows of passengers associated with larger aircraft due to the introduction of low fares services (or other larger aircraft).

7.20 Hence, we have considered two possible scenarios for the terminal works for the purpose of our initial appraisal:

- The total cost of the terminal works at £23 million is triggered by low fares entry to be completed concurrently with runway extension assumed in 2027; or
- The core terminal improvement works are undertaken in any event to meet passenger expectations in terms of level of service and/or improve commercial revenues, ahead of any extension to the runway, at a cost of £20 million but that low cost entry triggers an additional £3 million of cost to improve security processing capability by 2027 for initial operations.

7.21 Whilst the runway extension costs are assumed to be covered by the States, the terminal costs would need to be covered by the Airport. We consider the affordability of this later in this section by reference to the levels of income which could be generated by each passenger scenario.

7.22 It is also worth considering that there may be some further apron works required if multiple large aircraft need to be handled simultaneously. Management believes that, if only two larger aircraft were required to be handled simultaneously (which is our view of the likely pattern of operations), then the existing apron layout could be reconfigured at minimal cost to handle this. However, if a third larger aircraft was regularly being handled, then there may need to be further apron works and these may come at a cost of around £2 million and would require the relocation of the existing air traffic control tower. For the present analysis, we have not assumed that such additional costs would need to be incurred. As low cost carrier operations increased over time to deliver a meaningful increase in passenger numbers, further costs would need to be incurred to re-configure and extend the terminal to cope with flights to multiple destinations within short time windows.

Operational Costs

7.23 As we identified in our Draft Masterplan financial analysis, operational costs at the Airport are relatively low per passenger compared to other benchmark airports and this suggests little scope for significant productivity gains as passengers grow.

7.24 We believe that the main cost area that may be impacted by step changes in growth would be in relation to security screening and the potential need for additional staff to support higher passenger throughputs in the busy hours. Management believes that, with the introduction of new security equipment, they will be able to handle an increased number of passengers per hour without needing to increase staffing in this area. Whilst this may be a valid assumption for any growth scenario which is dependent on a similar pattern of operations to those currently, i.e. increased frequencies by smaller aircraft with a spread of departure times over a busy hour, this is less likely to be so in terms of peak demands on security from a bunching of passengers associated with larger aircraft movements.

7.25 Hence, we have not increased costs in our baseline and GDP growth related scenarios but have factored in an increase in security costs for scenarios with a low fares/larger aircraft presence. Having fewer movements in an hour and having these operated by larger aircraft can be expected to lead to more bunching of passengers entering the terminal and being processed simultaneously. This is commonly observed in smaller airports when they have some movements operated by larger aircraft. Therefore, we believe it would be unsafe to assume no additional costs for security as this is likely to remain the main operational pinch point in processing passengers without generating departure delays. An additional security lane is likely to be needed at peak periods, requiring additional capital costs, as set out above, and additional manpower. Experience on the Isle of Man, where the security area and staffing needed to be materially extended, tends to confirm this.

7.26 We have, therefore, assumed that, in any financial projections which includes low fare airline services, there is a 25% uplift in security costs per passenger to reflect the need for the contractor to provide more staff. In 2019, the contract cost for security was £2.8 million, so we have used this to generate a base cost per passenger for security which is then adjusted upwards.

The Effect on Airport Aeronautical Revenues

- 7.27 As identified in **Section 5**, low fares carriers are unlikely to pay the current levels of charges at Guernsey and will require significant discounting of charges (or subsidy) to initiate services. For the purpose of the analysis here, we have assumed that the costs of supporting the development of new low fare air services would be implemented directly as a reduction in Airport charges resulting in lower aeronautical revenue per passenger for these airlines. However, it is possible that such costs could be met by the States in terms of direct subsidy to the airline. Either way, it is a potential cost to the States unless the Airport has attained a position of self-sustaining financial viability and is willing to offer the discounts on a commercial basis. It is possible that some additional marketing support might be required in addition, but we have not attempted to quantify this at this stage.
- 7.28 Low cost airlines are likely to be willing to pay around £0-£4 per passenger at a regional airport like Guernsey and until negotiations commence with such a carrier, it is not clear what price point they will place on Guernsey. It is likely to be influenced by their experience in Jersey and the Isle of Man, however, where significant discounting was required to attract and retain such operations. On the Isle of Man, the average revenue per passenger has fallen to around £3, of which easyJet are likely to be paying well under this, given that the other airlines will be paying more than this average. However, for the purposes of this financial analysis, we have used £3 as an assumed revenue per passenger for a low cost carrier in order to test the impact. This applies only to passengers assumed to be carried on low fares airlines (including newly generated any passengers diverted away from the traditional airlines). This is likely to be a conservative assumption, certainly in terms of the level of discounting that might initially be required until the market has been proven.
- 7.29 For existing carriers, we have assumed that the current level of aeronautical revenue per passenger can be retained. This may be an optimistic assumption, particularly where these carriers must compete against low fares airlines. Where passengers using low cost services might otherwise have used existing services, this represents a loss in aeronautical revenues of £7.48 per passenger. Based on our scenarios set out in **Section 6**, the cost to the Airport in lost revenue could be £2.5 million a year in perpetuity whereas previous analyses assumed a cost to the States of only £1 million a year capped at 10 years. This level of marketing cost might well be required in any event, alongside any airport charges discounts, but we have omitted this from our initial analysis to be conservative.

The Effect on Airport Commercial Revenues

- 7.30 Additional passengers would generate additional commercial revenues simply through having more passengers using shops and catering outlets. However, without any significant change in the provision of commercial facilities on site, there may be less scope to increase the revenue per passenger.
- 7.31 As identified in the Draft Masterplan analysis, the current revenue per passenger (pre-COVID) was around £3.88. However, this included rent and advertising which seem less likely to increase pro-rata to passenger throughput. We noted that overall commercial revenues per passenger were relatively low, reflecting the product offering, but indicating that there would be some scope for growth with an improved product offering.
- 7.32 Therefore, in considering the scope for growth in the commercial revenue, we have focused on retail, catering and duty free, for which wider terminal development could increase the product offer and, hence, revenues per passenger, and car parking, where revenues could be increased through increases in off-Island trips as low fare airlines grow. Presently, these combined revenues equate to around £2.26 per passenger in the baseline and this is the figure we have adjusted upwards in some scenarios.

7.33 However, given that the current proposed terminal scheme would not significantly increase the overall commercial floor area, there remains a high degree of uncertainty as to the extent to which revenue per passenger might be increased. Given the uncertainty, we have tested two potential outcomes:

- No change to average commercial revenue per passenger; and
- An increase of 25% to commercial revenues per passenger.

We have applied these increased revenues across all passengers from the point when any refurbished/extended terminal is assumed to be in operation, but only in scenarios with no low fares airlines as the need to create pre-board areas and any potential congestion in the terminal from larger aircraft loads will require any increased space to be used for passenger holding rather than to increase the commercial area. It is important to note that even on our most optimistic assumptions, the incremental commercial revenue per passenger is less than the cost of the airport charges discounting required to attract a low fares airline and so it would only reduce the negative financial impact from low cost growth on the margin.

7.34 These assumptions provide a range for consideration of the potential revenue benefits from low fare services but would need to be refined as the terminal redevelopment proposals are worked up in more detail.

Overall Financial Implications for the Airport

7.35 Taking the range of passenger projections from **Section 6**, along with the possible variations in cost and revenue assumptions, we have developed 9 potential future scenarios for comparison to the baseline. These scenarios and their core assumptions are shown in **Table 7.2** overleaf.

7.36 Based on these scenarios, we have estimated the net financial position of the Airport at the EBITDA level for the spot year 2034¹⁹, which has been selected as this allows for the time required for the low fares airlines to become fully established on Guernsey. As a reference point, the baseline projection shows an annual loss of £1.4 million²⁰. **Figure 7.2** provides the EBIDTA results for each scenario. As can be seen, only a limited number of these scenarios generate positive EBITDA figures, and these are based on high GDP growth and no low fares airlines. In all cases, the effect of low fares entry is to materially worsen the financial position of the Airport.

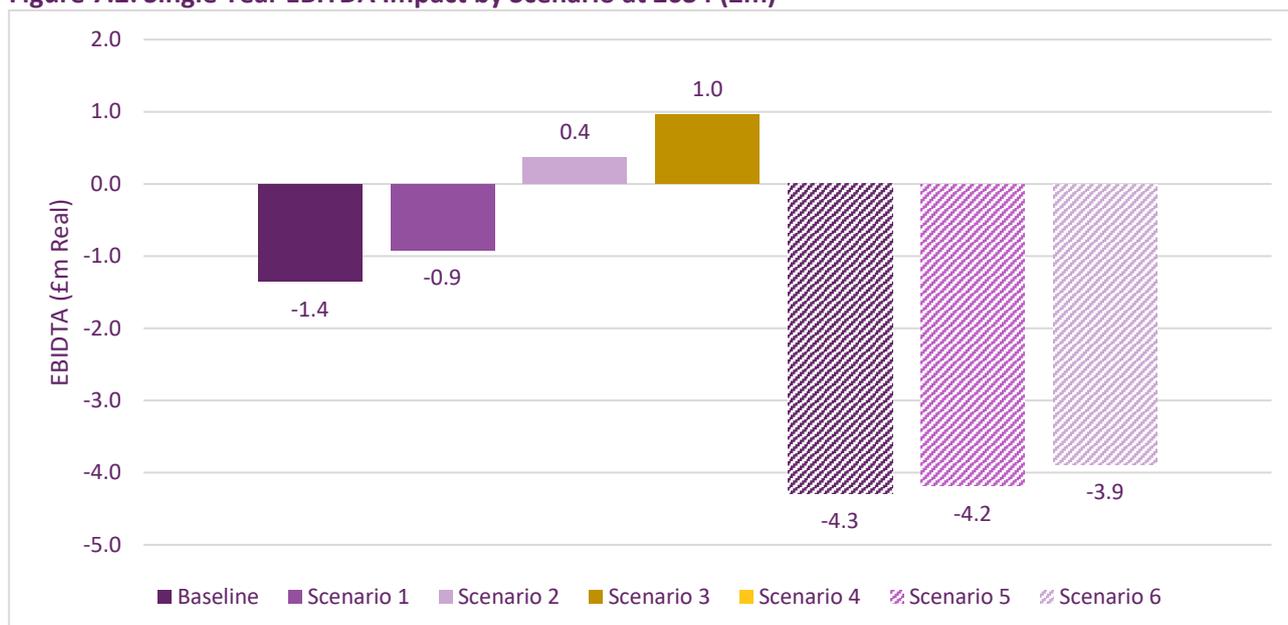
¹⁹ In the later economic welfare appraisal, we have taken into account how this would build up to 2034 but assumed steady state thereafter.

²⁰ This figure differs slightly from the analysis in the Draft Masterplan as we have stripped out any passenger growth assumption to provide a baseline for our current analysis.

Table 7.2: Financial Modelling Scenarios

		GDP Uplift Only Scenarios			Low Fares Airlines Scenarios		
		No Commercial Revenue Uplift		With Commercial Revenue Uplift	No Commercial Revenue Uplift		
		Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Scenario Description	Baseline, 0% GDP Uplift, No Low Fares, No Commercial Revenue Uplift	5% GDP Uplift, No Low Fares, No Commercial Revenue Uplift	20% GDP Uplift, No Low Fares, No Commercial Revenue Uplift	20% GDP Uplift, No Low Fares, 25% Commercial Revenue Uplift	0% GDP Uplift, Low Fares Carrier, No Commercial Revenue Uplift	5% GDP Uplift, Low Fares Carrier, No Commercial Revenue Uplift	20% GDP Uplift, Low Fares Carrier, No Commercial Revenue Uplift
GDP Uplift Assumption	0%	5%	20%	20%	0%	5%	20%
Runway Extension Opening Year	n/a	n/a	n/a	n/a	2027	2027	2027
Terminal Improvements Year	2030	2030	2027	2027	2027	2027	2027
Scenario First Full Impact Year	2030	2034	2034	2034	2034	2034	2034
<i>New Full Service Passengers</i>	0	45,000	178,000	178,000	0	0	0
<i>New Low Fares Passengers</i>	0	0	0	0	145,000	198,000	354,000
<i>Low Fares Impact on Full Service</i>	0	0	0	0	-330,000	-326,000	-314,000
Terminal Improvements Required for LCC	n/a	n/a	n/a	n/a	Yes	Yes	Yes
Low Fares Income Per Passenger (£)	n/a	n/a	n/a	n/a	3	3	3
Increase in Commercial Revenue/Passenger	0%	0%	0%	25%	0%	0%	0%
Increase in Security Cost Per Passenger	0%	0%	0%	0%	25%	25%	25%

Figure 7.2: Single Year EBITDA Impact by Scenario at 2034 (£m)



7.37 In the absence of low fares growth, low GDP growth effects (5% assumed) sees a small improvement in the financial position of the Airport. However, strong economic growth would drive growth in demand to the point where the Airport would attain profitability. Growth in commercial revenues would further reinforce this operational profitability to c.£1 million a year if coupled with GDP growth.

7.38 However, low fares entry would materially worsen the financial position of the Airport with losses deepening from c.£1.4 million to c.£4.3 million per annum in the absence of underlying economic and market growth. Even with GDP growth, the operating losses would be in the range £3.9 to £4.2 million.

7.39 These results are not surprising and are consistent with the financial impacts seen with low cost entry at other smaller airports, with limited commercial revenue potential. To an extent, the financial position of the Airport currently is underpinned by substantially higher airport charges than is the norm at smaller airports operating in commercial and competitive environments.

7.40 Clearly, with negative EBITDA and potentially deepening losses, the ability to fund works at the Airport, including the required terminal refurbishment are likely to be a problem.

Potential Financial Implications for Aurigny

7.41 If a low fares carrier were to commence operations at the Airport, there would be a degree of passenger switching away from Aurigny towards the low fares carrier as identified in **Section 6**, which, in turn, would impact on Aurigny's passenger revenues and costs.

- 7.42 Based on our analysis of the position on Jersey and the Isle of Man and Jersey, we estimate that a new entrant low fares carrier would be expected to capture up to 50% of the air passenger markets (including new air passengers) assuming a similar range of points served. Considering the likely points to be served, we would expect the Aurigny network to be disproportionately impacted by a new low fares entrant at Guernsey as a low fares carrier would likely seek to eventually commence services to a small basket of high volume domestic destinations such as Manchester/Liverpool, Birmingham and Bristol, in addition to the anchor London route, which mirrors a large proportion of Aurigny's existing flying programme (or in the case of airports such as East Midlands, would be vulnerable to lost passengers that may switch to a Birmingham service). Blue Islands' more limited network from Guernsey is likely to be less vulnerable because the economics of operating from Guernsey to Jersey may not suit a low fares carrier, whilst the runway length at Southampton would be a limitation at least in the short term. Therefore, we would expect that Aurigny would bear the brunt of any market cannibalisation from a low fares carrier. Based on the levels of switching seen on the comparator islands and taking account of Aurigny's expanded network following the demise of Flybe, we estimate that up to 62% of Aurigny's 2019 passenger volume would switch to a low fares carrier (see **Table 6.5**), depending on the extent to which there was underlying market growth driven by GDP.
- 7.43 The 2019 annual report of Aurigny's parent company, Cabernet Ltd., suggests that the airline's average revenue per passenger was £77.18, which forms the basis for our revenue impact modelling. Based on the passenger diversion figures shown in **Table 6.5**, we estimate the following impacts on revenue based on average fares:
- In a scenario where GDP remains static, we estimate that approximately 330,000 of Aurigny's passengers would be lost to a low fares carrier. This would represent an annual loss in revenue of £25,469,400;
 - If there were a 5% uplift to GDP, we estimate that approximately 326,000 of Aurigny's passengers would be lost to a low fares carrier. This would represent an annual loss in revenue of £25,160,680;
 - In a scenario where GDP increases by 20%, we estimate that approximately 314,000 of Aurigny's passengers would be lost to a low fares carrier. This would represent an annual loss in revenue of £24,234,520.
- 7.44 The revenue that Aurigny would lose in each of the three example scenarios is significant given the extent to which passengers would be lost to a low fares carrier.
- 7.45 Typically, an airline placed in such a difficult competitive situation, whereby its passenger numbers are so significantly reduced, would seek to drastically change the structure of its operation in order to survive. This would include making cuts to its route network or reducing frequencies on some routes in an attempt to stem its losses. The extent to which Aurigny may do this will be dependent upon the political desire to retain the airline in order to maintain route frequency and/or network breadth, for example to support an early morning departure to London or to serve routes not operated by low fares carriers (but which may be subject to competitive pressure nonetheless). Any corresponding reduction in the route network (and fleet size) should allow a reduction in direct operating costs, although it is not clear that this would be proportional to the lost revenue because even routes which are retained by Aurigny are likely to suffer some lost revenue.

- 7.46 Furthermore, it is generally more difficult for an airline to reduce its fixed costs given that there are a range of overheads that generally do not reduce commensurately as an airline reduces its flying programme, for example, head office functions, building rent, aircraft maintenance and some staff costs. These fixed costs would consequently be distributed across a reduced number of passengers, thereby actually increasing the airline's cost base on a per passenger basis compared to the current position. This may require the airline to pass these increased costs on to its passengers, potentially increasing its average fare, which in turn would reduce demand for its services. These fixed overheads further explain why costs could not be reduced proportionally to revenue reductions.
- 7.47 Whilst Aurigny currently has a strategic goal to break-even and eventually become profitable, we believe it would be impossible to achieve these goals with such a massive hit on revenues (particularly on the airline's own anchor route to London). Under these circumstances, in order to retain Aurigny to preserve some of the Island's connectivity, the States would need to accept not only a likely significant increase in losses, but that these would be long term and unlikely to be reversed. Whilst we have made an estimate of the potential loss in revenue, it is much more difficult to make an estimate of the net impact as this would depend very much on the strategic response.
- 7.48 An alternative would be to allow the closure of Aurigny but, faced with competition from low fares carriers, it is unlikely that routes and frequencies would be backfilled by alternative carriers. Whilst this would remove any ongoing cost burden from supporting the carrier from the States, it may still require some form of Government support to support any services or frequencies which are deemed critical for the Island's connectivity but which are unlikely to be operated on a purely commercial basis. In essence, this is what we understand has occurred on the Isle of Man where we understand the Government has now stepped in to financially underpin flights to London to sustain the day return capability.
- 7.49 Furthermore, it would need to be recognised that, if Aurigny was closed, the slots at London Gatwick would no longer be within the control of the States for the long term security of the Island's connectivity. Legally, slots can only be held by an airline with a valid operator's licence. There may be scope to lease out some slots if they were not being used (which may partly offset some of the increased losses), but this would still require the airline to be retained at a cost to the States. Given that the security of these slots was a key reason for the States taking control of the airline, this would represent a shift in political position.
- 7.50 Finally, it should be remembered that, if closure of Aurigny was a preferred option, this could lead to a direct loss of jobs for Guernsey residents and these may not be backfilled if any replacement airline is not based on Guernsey or does not replace all of Aurigny's operation. Indeed, even with passenger numbers and operations, there would be some loss of jobs. We understand that Aurigny, prior to the pandemic, employed around 250-300 people on Guernsey. These potential job losses are not included in any economic calculations as we have assumed the carrier continues to operate as considered below.

Implications for Passengers (Economic Welfare Effects)

- 7.51 We have given initial consideration to the extent to which broader economic welfare benefits would justify the total of the financial cost of introducing a low fares operation to the Island if the Airport runway is extended. This is based on the UK Treasury Green Book approach but represents an initial high-level order of magnitude estimate of the costs and benefits and not a full business case appraisal. We recognise that previous analyses used a hybrid of such an approach and a 'Development Economics' type approach and we presented both forms of appraisal in our previous report in relation to the case for a runway extension on Alderney, but we have confined our analysis here to the economic welfare benefits so as not to duplicate any analysis being undertaken by the Economic Development Department.
- 7.52 We recognise that the previous analysis assessed the breakeven position to cover the assumed capital costs of the runway and a £1 million a year (over 10 years) allowance for marketing support payments as being achievable with just 8,200 additional visitors being attracted each year over 40 years. However, as articulated above, this analysis excluded several material cost impacts on the Airport and Aurigny, which would also ultimately fall to the States. Hence, our outline appraisal presented here includes all of the cost impacts that we have identified.
- 7.53 Our economic appraisal has been calculated based on Scenario 4 from the financial analysis, i.e. based on no underlying economically driven improvement in air travel performance so as to isolate the effect of low fares entry. In the event of underlying economic growth driving air travel demand on Guernsey concurrently, we recognise that the benefits would be slightly greater and the cost impact on Aurigny relatively less but, given the wider uncertainties regarding the deliverability of GDP driven growth in the underlying market, we considered the adoption of the baseline position without underlying growth as being more representative of the net effects at this stage.
- 7.54 The analysis is made up of 6 components, with each is considered in more detail below:
- User Benefits:
 - Journey time savings benefits;
 - Air fare savings through reduced fares;
 - Increased wait time costs associated with reduced frequencies;
 - Producer Impacts
 - Airport profit and loss impacts;
 - Terminal and runway development costs; and
 - Additional losses to Aurigny.
- 7.55 In each case, other than the capital development costs, the impacts increase gradually over time to reflect the 7-year period over which we have assumed low fares airlines will develop at Guernsey, as identified previously. From 2034, when the full impacts of low fares airlines are assumed to occur, all figures are flatlined going forward. There is potential for increases in operating costs above inflation or commercial revenue growth above inflation after this time, but it is assumed, for the purposes of this appraisal, that the impact is neutral between the two and, hence, the long term flatlining of all costs and revenues is assumed to be neutral for the purpose of this initial appraisal.

7.56 It should be noted that, for the purpose of this initial appraisal, we have used the mid-point of the two levels of sea diversion impact as presented in **Table 6.4** earlier in this report. There is insufficient robust data from Jersey and the Isle of Man to define the impact on business passengers more specifically but, given that our initial appraisal of the low fares impact has stripped out any underlying economic growth effects, it is less likely that low fares alone would result in an additional requirement for business travel and there is unlikely to be any improvement in reliability so as to drive growth in business visits. Hence, new stimulated passengers are assumed to be 10% business passengers and 90% leisure passengers due to the increased price sensitivity of the latter and, therefore, the likelihood that this market will respond more actively to the introduction of low fares services (particularly as frequency reductions and reduced network breadth may not add further significant value for business passengers over the existing network).

Journey Time Savings Benefits

- 7.57 These have been calculated by assuming that any passenger diverting from a current airline to fly on a low fares service gains a flight time benefit of 5 minutes compared to the current range of services. This figure is relatively low to reflect that, on short domestic flights, there is little time saving from using jets compared to turboprops and also to reflect that some of the passengers will be diverted away from Aurigny's jet services anyway, where there will be little or no flight time savings.
- 7.58 Passengers diverted from sea travel to air travel are assumed to gain a benefit equivalent to the difference between a direct ferry service (3 hours and 10 minutes to Poole) versus a 60-minute flight, therefore, these passengers have a time saving of 2 hours and 10 minutes. We are assuming that the pre-boarding wait time is broadly consistent. This may overstate the benefits if this takes passengers further from their ultimate origin or destination on the mainland, but there is insufficient evidence with which to make more detailed assumptions.
- 7.59 Stimulated passengers, the net gain in air passengers, are allocated a 5 minute saving per passenger, as with diverted passengers, however a 'rule of half' is applied whereby only half of the benefit is counted. This is in line with UK Treasury Green Book guidance.
- 7.60 The values of time used are taken from the UK Airports Commission, as these represent the most up to date estimates of the values of time for air passengers, adjusted to 2022 prices. For business passengers this equates to £68.15 an hour (which represents a blended value for London Gatwick, Manchester, Birmingham, Bristol and Exeter business passengers). For leisure passengers, the figure is £9.05 per hour and this is constant across all airports.
- 7.61 If the route network is reduced, as seen from both Jersey and the Isle of Man, as a result of low fares entry, then some passengers may actually suffer from increased journey times as they will no longer be able to use the airport closest to their origin or destination on the mainland. We have not attempted to calculate this impact here, but instead have made allowance for it through the Wait Time Costs, covered later in this section.

Air Fare Savings

- 7.62 The ultimate air fare savings are assumed to be 30%, blended across all passengers in line with the assumption used in our market analysis in **Section 6**. In practice, the savings would be greater on some individual routes where low fares airlines commence services but, as outlined earlier, the market assessment within this report has been done by reference to the whole market and so the air fare savings are calculated across all passengers. The impact is ultimately the same as if we had estimated greater fare differences on some routes and lower differences on others. The starting air fare for this analysis was £86, the adjusted 2018 figure (i.e. before the unsustainable competition in 2019 reduced the average fares on the Island). We have assumed that, on a blended basis, the level of average fare reduction increases gradually to reach 30% at the end of a 7 year period over which we have assumed low fares services will grow to comprise a reasonable network. This is calculated by reference to the proportion of low fares passengers within the traffic mix, which grows over the period. Should the level of fare reduction be less, this would result in the value of air fare savings being lower but there would be lower market stimulus effects and less diversion of passengers away from Aurigny in terms of the overall balance of benefits and costs.
- 7.63 Passengers transferring from sea travel are also assumed to benefit from fare savings. The base fare for these passengers has been determined by undertaking a booking search for a 7-day return journey from Guernsey to Poole for a car, 2 adults and 2 children²¹. This equated to an average one-way fare of £81.50²². The fare difference was calculated by determining what the new average air fare could be (£60.20) and applying this to the lower ferry cost.
- 7.64 Finally, stimulated passengers are also assumed to gain benefit from the lower fares but, as with the journey time savings, only 50% of the benefit is included in the calculation, in line with UK Treasury Green Book guidance.

Increased Wait Time Costs

- 7.65 Earlier in this report, we have presented evidence that it is likely there would be air service frequency reductions if low fares airlines commenced services on Guernsey. It can be expected that this would lead to increased wait times between flights and, for business passengers, reduced productivity. We have followed the standard UK DfT approach to calculating this, which considers the difference in average frequencies before and after changes in the air network.
- 7.66 As we have not produced route by route projections, the frequency calculations are based on the average impact seen on Jersey and the Isle of Man on an annual basis, looking at the reduction in frequencies in the year before low fares services commenced and 2019. For the Isle of Man, this showed that in 2019, there were only 44% of the historic annual frequencies, whilst for Jersey the impact was less, with the Island sustaining 65% of the frequencies seen before easyJet launched operations. For this appraisal, we have used the average figure of 55% to reflect the expected impact of a low fares operation.

²¹ Search undertaken on Condor Ferries' website on 29th June 2022 for a 3rd-10th September return trip

²² To the extent that passenger switching to air then incurred car hire costs, the estimate of savings might be overstated.

- 7.67 We have used the annual figures to calculate a proxy average frequencies per route figure based on the 2018 route network of 16 main scheduled and charter routes from Guernsey. This equated to 1.7 departures per day per destination and forms our baseline frequency. For the future years, we have taken the reduced annual frequencies and divided these by the 16 routes, leading to, in 2034, an average of 0.9 frequencies per destination. In practice, we would expect the average frequencies per destination to be higher because it can be expected, as identified earlier, that some destinations will be lost from the Guernsey network. However, we have taken this average approach as a proxy for adjusting for those passengers who will lose their preferred destination and so would incur higher costs because their journey times would increase.
- 7.68 The difference in frequency is fed into a standard DfT formula which calculates the wait penalty for each type of passenger (leisure and business) and this is multiplied by all passengers. The values of time figures set out earlier are then applied to these to calculate the cost impact. For stimulated passengers, the 'rule of half' is once again applied and only half of their impact is included in the appraisal.

Airport Profit & Loss Impacts

- 7.69 These are taken directly from the financial analysis presented earlier in this section and includes the incremental difference between the baseline EBITDA and those calculated for Scenario 4 and 7. In each case, this sees increased EBITDA losses being fed into the appraisal as identified in **Figure 7.3**.

Terminal and Runway Development Costs

- 7.70 The runway costs have been included as £78 million to allow comparison with the previous Frontier Economics analysis. We have tested both potential terminal costs within the appraisal, both an uplift from the baseline £20 million to a total of £23 million to handle low fares airlines (so £3 million is the appraised figure) and also allocating the full £23 million to the appraisal as a worst case to reflect that this may all be required and triggered by the introduction of low fares services, as discussed earlier in this report.
- 7.71 In all cases, runway and terminal, these costs have been spread evenly over an assumed four year build period from 2024-2027 inclusive.

Additional Losses to Aurigny

- 7.72 The appraisal assumes that the States would wish to retain Aurigny to guarantee some service continuity, but that the impacts of the low fares carriers on its passenger base would be significant and costly. The figures included in the appraisal are based on the assessment earlier in this section, taking into account the lost revenue based on the average revenue per passenger and the number of passengers lost to the low fares airline.
- 7.73 As noted earlier, we have not sought to estimate the cost savings that could be made by the Aurigny as this would very much depend on the strategic response made by the carrier/the States. However, it seems reasonable for us to seek to make some adjustment for costs which could be cut due to reduced frequencies and services. Such cost reductions are unlikely to be proportionally equivalent to the lost revenue both as a result of fixed costs, which could not be reduced, and also because the States may wish to support services which will operate with lower load factors due to diversion to low fares airlines, but which are considered economically or socially important. Therefore, in this appraisal we have reflected reduced costs by only counting 50% of the revenue loss within the calculations, and assuming the remainder can be offset by operational cost reductions.

7.74 Clearly, the States may decide not to continue to support Aurigny in this way and these costs could be removed from the appraisal. However, it is likely that any lost Aurigny services would not be fully picked up by alternative carriers, with a further subsequent reduction on average frequencies. This would lead to the Wait Time Costs increasing within the appraisal calculation and would likely have a similar impact on the overall outcome. It should be born in mind that, in the case of the Isle of Man in particular, the historic average reduction in annual frequencies was likely lessened by Government support for key routes other commercial airlines, which would come at an equivalent of supporting at least some Aurigny activity.

Appraisal Results

7.75 We have run the appraisal over a 40-year period from 2023 – 2062 inclusive, albeit with no difference between the baseline and the assessed cases in 2023. In order to calculate a Net Present Value (NPV), we have assumed a discount rate of 3.5% per annum consistent with that we were advised to use in our previous analysis of the Alderney runway options. **Table 7.3** presents the results of the analysis. It should be noted that, in presenting the welfare and productivity benefits, these are consistent across all the growth scenarios as the passenger impacts are consistent. The differing NPV and Internal Rate of Return (IRR) calculations are the result of different inputs related to construction costs and the impact on EBITDA resulting from commercial revenue uplifts within the terminal.

Table 7.3: Welfare Appraisal Results (£millions)

Growth Scenario	Journey Time Savings Total	Total Air Fare Savings Total	Wait Time Cost Total	Total Welfare & Productivity Benefits	40-Year NPV	40-Year IRR
0% GDP, £11m Terminal Cost, No Commercial Uplift (Scenario 4)	£3.1	£23.4	-£6.3	£20.2	-£10.1	2.7%
0% GDP, £34m Terminal Cost, No Commercial uplift (Scenario 4)	£3.1	£23.4	-£6.3	£20.2	-£28.5	1.6%

7.76 As can be seen, the NPV is negative in both scenarios, indicating that, using this appraisal approach, the proposal to extend the runway and introduce low fares airlines would not be a good investment in economic welfare terms.

7.77 Furthermore, a substantial proportion of any benefits would be 89annibal by Guernsey residents enabled to travel more off-island at lower fares, resulting in increased expenditure off- rather than on-island. There are valid social reasons why this could be seen as a positive benefit if it created the circumstances where more people were willing to live and work on Guernsey. However, this is less of a benefit in circumstances where the population number is controlled and action is not taken to address the sluggish performance of the economy.

7.78 As noted in **Section 6**, the number of incremental visitors would be expected to be limited, potentially of the order of 15-20,000 a year. Our analysis would suggest that benefits to business users would be very small in terms of real business productivity effects and are unlikely to be of a magnitude as to attract new business to Guernsey and account would need to be taken of the net employment implications of any reduction in Aurigny activity less any marginal growth in employment at the Airport (e.g. security) in an economic development based appraisal, along the lines of the Frontier analysis.

Conclusion

- 7.79 Overall, we have set out that there would be substantial costs to the Airport, over and above the cost of the runway, if low fares services were to be enabled. Based on the performance seen on Jersey and the Isle of Man and taking into account the level of discounting of charges or support required to attract these airlines as well as operating cost impacts, the effect could worsen airport losses by £2-3 million a year, dependent on the extent to which there was underlying market growth in any event.
- 7.80 There would also be cost impacts on Aurigny as the evidence would suggest that much of the passenger traffic using low cost services would be 90annibalized from existing air services (and also potentially from the ferries to the detriment of the Ports more generally). The loss of revenue to Aurigny could reach £25 million a year over time as the low cost network develops. Assuming that it is considered strategically important to retain Aurigny to operate key routes and service frequencies, this would limit the scope to cut the airline's operating costs but for the purpose of our analysis, we have assumed cost reductions equivalent to half of the revenue loss.
- 7.81 There would be benefits to users largely from lower air fares, balanced by loss of some routes and frequencies of services increasing net journey times when waiting time is taken into account. It is important to note, however, that most of these benefits are expected to accrue to Guernsey residents and could lead to increases in expenditure off-island. To the extent that low fares services displaced other services, it is possible that air fares would rise again so these benefits may have been overstated.
- 7.82 In economic welfare terms, our analysis would suggest that overall there would be no positive return to the States of Guernsey from a runway extension enabling low fares airline services. Although improvements to the terminal could be lead to the improvement of commercial revenues and profitability at the Airport, and improve customer service, the current proposals would mean that these benefits would be eroded by low fare entry without further investment, which is not currently included within our appraisal.
- 7.83 We have not specifically assessed the costs and benefits in the same terms as previous analyses but it seems highly unlikely that the benefits from incremental visitor numbers, having full regard to diversion from sea, would justify the true costs of accommodating low fare airlines. We do not believe that the business benefits could be realised without other interventions to change the path of the Guernsey economy.
- 7.84 Overall, the decision as to the viability of the investment is dependent on the objectives set by the States against which the investment is to be judged. We have focussed our analysis on the effect of low fare services as we understand this to be the primary motivation in the proposal to extend the runway. On this basis, we would conclude:
- Low fare services have the potential to deliver air fare savings and deliver consumer benefits but most of these are likely to accrue to Island residents, many travelling for leisure purposes;
 - The effect is likely to worsen connectivity overall, with potential detriment to business connectivity in terms of frequency to key destinations and the breadth of the network;
 - Low fare services are likely to result in an increased shift from sea to air travel but the net increase in the number of visitors attracted is likely to be low;
 - There would be a material impact on the profitability of the Airport, making the attainability of break-even or profitable operations highly unlikely, with no ability to cover the cost of the

required investment to improve the existing facilities and expand them sufficient to handle larger aircraft operated by low fare airlines;

- There would be a major impact on Aurigny, resulting in substantial loss of revenue against which the scope for cost reductions would be more limited.

7.85 We recognise that having a longer runway could enable other 'mainline' air services to operate with larger aircraft as well but the scope for such services is limited by the small size of the Guernsey market, particularly without broader initiatives to improve economic performance. Overall, it seems highly unlikely that the scale of any mainline services would be sufficient to justify extending the runway, nor would they bring the anticipated air fare benefits.

Contact York Aviation at:

Atlas House
Old Hall Street
Macclesfield
SK10 2DT

Telephone No: 01625 614051
yal@yorkaviation.co.uk
www.yorkaviation.co.uk

Guernsey Airport Runway Extension Option - 98m EMAS Rough Order of Magnitude (ROM) Costs

Committee for Economic Development

16 June 2023

APPENDIX 5

Quality information

<u>Prepared by</u>	<u>Checked by</u>	<u>Verified by</u>	<u>Approved by</u>
Abigail Smith Assistant Engineer	Ross McKibbon Associate	Graham Connacher Technical Director	Ross McKibbon Associate

Revision History

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APPENDIX 5

Prepared for:

Guernsey Registry,
PO Box 451, Market Building,
St Peter Port, Guernsey,
GY1 3GX

Prepared by:

Abbie Smith EngTech MICE
Assistant Engineer, Aviation, UK&I
M +44 7990074809
abbie.smith@aecom.com

AECOM

Midpoint, Alencon Link
Basingstoke,
Basingstoke, RG217PP, UK
T +44 1256824754
aecom.com

T: +44(0)1256 310200
aecom.com

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1. Introduction

AECOM Limited has been commissioned by the States of Guernsey Committee for Economic Development to undertake a study and provide rough order of magnitude costs for an extension of runway length at Guernsey airport of 166m to give an overall of 1623m with a 98m EMAS system.

This report provides commentary on the engineering analysis that has been carried out to facilitate in the pricing of the extension.

For this report the runway length of 1623m has been instructed to AECOM by States of Guernsey; this distance has been calculated in previous studies by other parties and it is outside the scope of this study to validate and/or check this runway length in terms of aircraft performance.

1.1 Report Structure

The report is structured as follows:

- Section 2 – Provides a brief overview of the option considered as part of this study and a summary of the changes to the aerodromes declared distances
- Section 3 – Details the requirements for Runway 09 and 27 turning heads
- Section 4 – Provides details on the type of Engineered Materials Arrestor System (EMAS) solution adopted for pricing.
- Section 5 – Details the requirements surrounding the impact to external roads.
- Section 6 – Details the result of an initial assessment of the airports Obstacle Limitation Surfaces (OLS)
- Section 7 – Summarises the various pavement design thicknesses developed for the purpose of pricing
- Section 8 – Details the airfield geometric design and analysis carried out to establish the level of cut and fill associated with the earthworks
- Section 9 – Outlines the concept drainage strategy developed for the purpose of pricing
- Section 10 – Details the AGL and Navigational Aid requirement developed for the purpose of pricing.
- Section 11 – Provides a summary of the costs for a 98m extension
- Section 12 – Design Considerations/Concern

1.2 Limitations of this Study

This is a high-level desktop study which has been based on limited information/data. Where necessary, assumptions based on sound engineering judgement have been made and detailed within this report. It is recommended that should the extension be taken forward beyond this stage, a detailed feasibility study be carried out along with any survey works that would support such study. The costs presented within this report should therefore be treated as a Rough Order of Magnitude guide only. In particular, further work is required with the CAA to confirm the acceptability of the EMAS solution provided by Runway Safe.

It should also be noted that this study has been based on information obtained from a previous runway extension study undertaken by RPS in March 2020 and referred to throughout this report as the 'RPS report 2020'.

2. Overview of the 98m EMAS Option

This section provides a brief overview of the 98m EMAS option considered as part of this study and a summary of the changes to the aerodrome's declared distances that would result from the introduction of the EMAS.

According to the European Aviation Safety Agency (EASA) CS ADR-DSN.C215 the width of the RESA should be at least twice the runway width ($45\text{m} \times 2 = 90\text{m}$) and wherever practicable should be equal to the graded portion of the Runway Strip ($75\text{m} \times 2 = 150\text{m}$). For the purposes of this study the more onerous requirement to have a RESA width of 150m has been adopted where possible. In terms of length, it is recommended to achieve a 240m RESA, with 90m being the minimum allowed.

The EMAS design provided by Runway Safe allows for a 41m RESA and thus does not comply with ICAO (Annex 14, Volume 1, Ninth Edition July 2023 - chapter 3.5) and EASA (CS ADR-DSN.C.215) regulations and will need to be verified with the CAA – more details on the implications/concerns of the RESA length can be found in section 12 of this report.

2.1 98m EMAS

This layout option indicates a 166m extension to the Eastern end of the runway, such that it provides a new runway length of 1623m. This option encompasses a 98m Engineered Materials Arrestor System (EMAS) extending beyond Threshold 27. The overall dimensions of the EMAS are 98m(L) x 45m(W). It is proposed to be constructed through means of bulk earthworks and reprofiling of the existing ground and results in a retaining wall being required along the eastern boundary/roadside.

La Villiaze Road is retained but sits under the approach Obstacle Limitation Surface (OLS). These surfaces are discussed in section 6 of this report.

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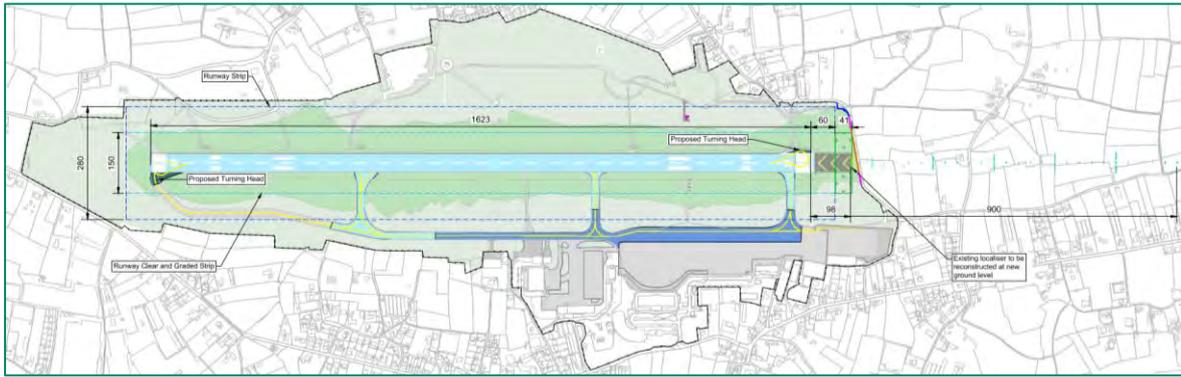


Figure 2.1 98m Extension Layout



Figure 2.2 Threshold 27 General Arrangement

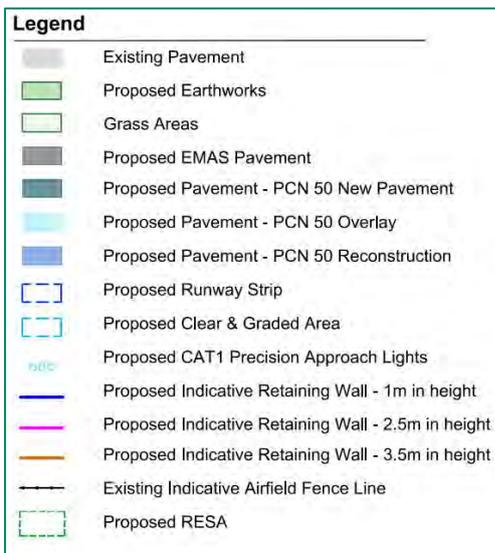


Figure 2.3 General Arrangement Legend

Note: EMAS Pavement displays yellow chevron paint markings in accordance with EASA CS ADR-DSN.R.865.

2.2 Declared Distances

Under the current EASA regulations (CS-ADR-DSN Issue 6), each operational aerodrome must specify “declared distances” which relate to the aerodrome’s runway. Under EASA, the declared distances are defined as follows:

- ‘Take-off run available (TORA)’ means the length of runway declared available and suitable for the ground run of an aeroplane taking off.
- ‘Take-off distance available (TODA)’ means the length of the take-off run available plus the length of the clearway if provided.
- ‘Accelerate-stop distance available (ASDA)’ means the length of the take-off run available plus the length of the stopway if provided.
- ‘Landing distance available (LDA)’ means the length of runway which is declared available and suitable for the ground run of an aeroplane landing.

The tables below provide a summary of the existing and proposed declared distances for Runway 09 & 27. The clearway dimensions are also shown since this has an impact on determination of the TODA.

Applicable Option	LDA	TORA	ASDA	TODA	Clearway Dimensions
Existing	1463m	1463m	1463m	1721m	258m x 180m
98m Ext.	1623m	1623m	1623m	1721m	98m x 180m

Table 2.1 Runway 09 Existing & Proposed Declared Distances

Applicable Option	LDA	TORA	ASDA	TODA	Clearway Dimensions
Existing	1463m	1583m	1583m	1799m	216m x 180m
98m Ext.	1623m	1623m	1623m	1839m	216m x 180m

Table 2.2 Runway 27 Existing & Proposed Declared Distances

3. Runway Turning Head Requirements

3.1 Runway 27 Turning Head

With the runway extension moving the 27 threshold east of the existing Taxiway Alpha, either this taxiway would need to be reconstructed and re-aligned or a turning head should be provided. Whilst the decision for this should be based on detailed runway occupancy requirements and the performance of specific aircraft, AECOM have assumed the provision of a turning head is an acceptable approach. This turning head would require aircraft that need the full runway length at take-off to back track along the runway, but it allows the increased length to be utilised at minimal cost.

The image below illustrates the aircraft tracking undertaken to size up the turning head. This arrangement represents the smallest amount of additional area required for undertaking a turn at the end of the runway. If this solution is selected for further development, the consultant should consider the use of a longer turn pad with more gentle turns as it can reduce the deterioration of the asphalt pavement and the feasibility of reconstructing Taxiway Alpha.

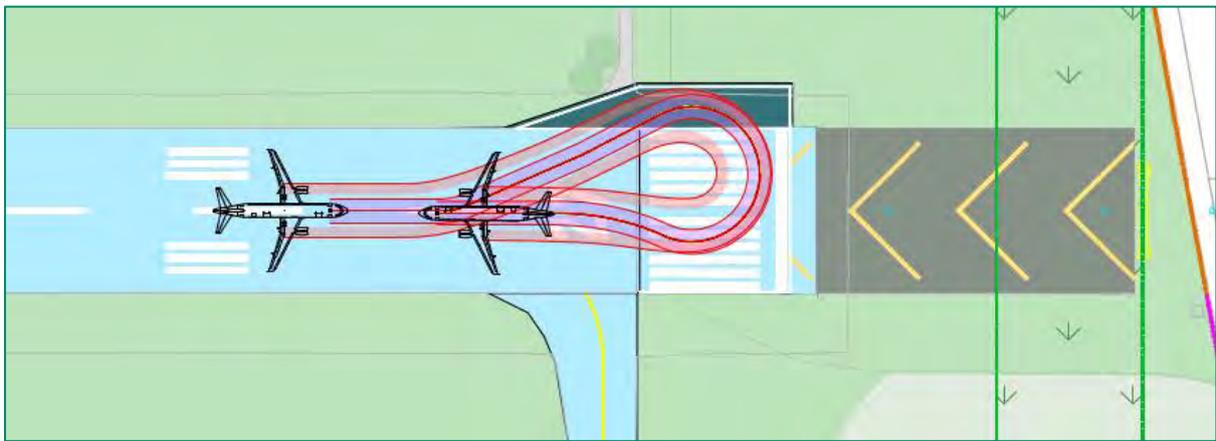


Figure 3.1 Runway 27 Turning Head Aircraft Tracking

3.2 Runway 09 Turning Head

An allowance has been made for the provision of a turning head at the 09 Threshold on the Western extremity of the runway. The turning head is intended to be used by larger/heavier aircraft arriving on Runway 27 to prevent them having to use Taxiway Delta by backtracking the runway and exiting via Taxiway Charlie. This procedure removes the need for any strengthening works to Taxiway Delta which otherwise would be unnecessary additional spend given that the taxiway is also currently non-compliant and requires reconfiguration to achieve the minimum runway centreline to taxiway centreline separation distance – Refer to Section 7 for pavement strengthening requirements.

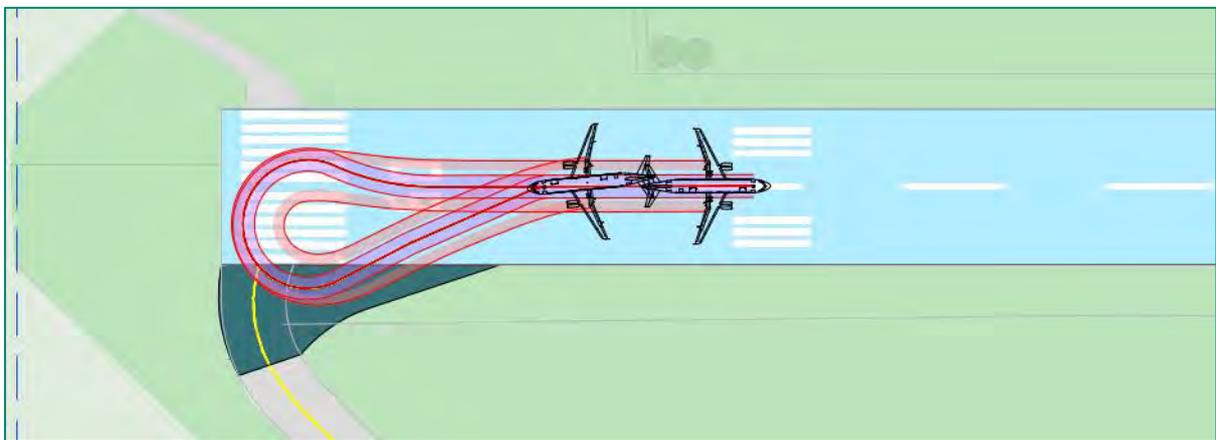


Figure 3.2 Runway 09 Turning Head Aircraft Tracking

4. Engineered Material Arrestor System (EMAS)

The EMAS is a passive safety system that quickly decelerates an aircraft and brings it to a safe stop in case of an overrun. Runway Safe is the sole manufacturer of EMAS products that meet the FAA standards of Advisory Circular 150-5220-22B, “*Engineered Materials Arresting Systems for Aircraft Overruns.*”

Runway Safe offer the following two EMAS solutions:

- EMASMAX® - is the latest, most durable version of Runway Safe’s block based EMAS, developed with and technically accepted by the FAA. EMASMAX® arrestor beds are composed of blocks of lightweight, crushable cellular cement material.
- greenEMAS® - is a foamed silica bed which is made from recycled glass and is contained within a high-strength plastic mesh system anchored to the pavement. The foamed silica is poured into lanes bounded by the mesh and covered with a poured cement layer and treated with a topcoat of sealant.

The design provided by Runway Safe to Guernsey Airport is based on the EMASMAX system. The components of the EMASMAX system are illustrated below:

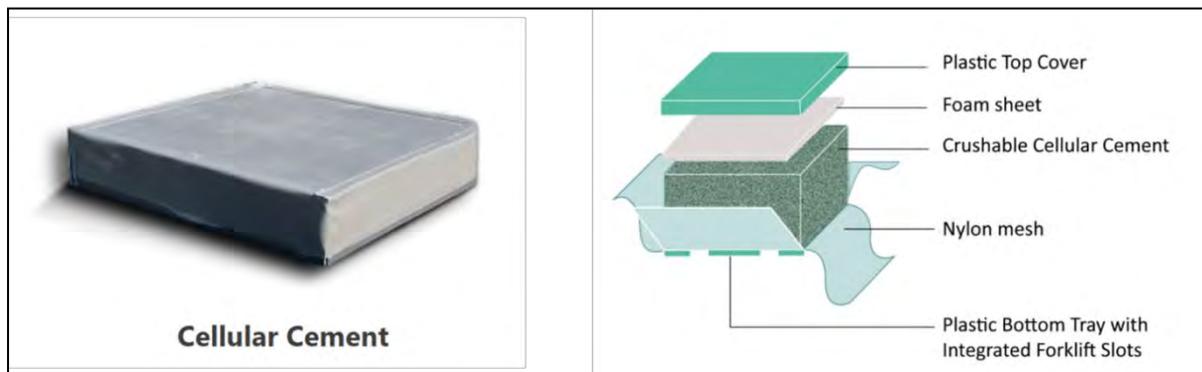


Figure 4.1 EMASMAX® Components

The following figure was taken from Runway Safe’s “*Inspection, Maintenance & Repair Manual*” and illustrates some key parameters for an EMAS system. However, it is noted that Runway Safe have prepared a bespoke solution for Guernsey Airport which is not included in this report:

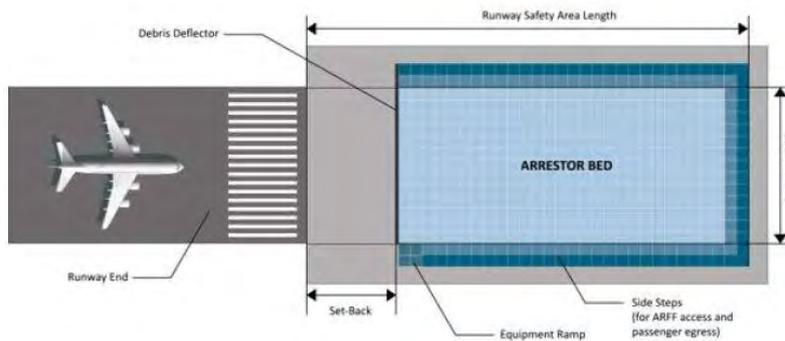


Figure 4.2 EMASMAX® Footprint Components

The EMAS will consist of a 10.67-meter-long setback and an 87.63 meter long arrestor bed. The EMAS bed starts with 6-inch nominal height blocks at the entry to the bed, then ramps up to 20-inch nominal height and holds this height till the end of the bed.

5. Highway Diversion Requirements

Three existing landside roads are in close proximity to the Eastern end of Guernsey Airport and are in the path of the extended Runway centreline. These roads are La Villiaze Road, Route des Blicqs and Les Blicqs Lane. According to the RPS report 2020, La Villiaze road consists of a 6m wide two-way road, Les Blicqs Lane is a 2m paved one-way track and Routes des Blicqs is a 2-way road of unspecified width. An image of the existing road configuration is provided below for reference.

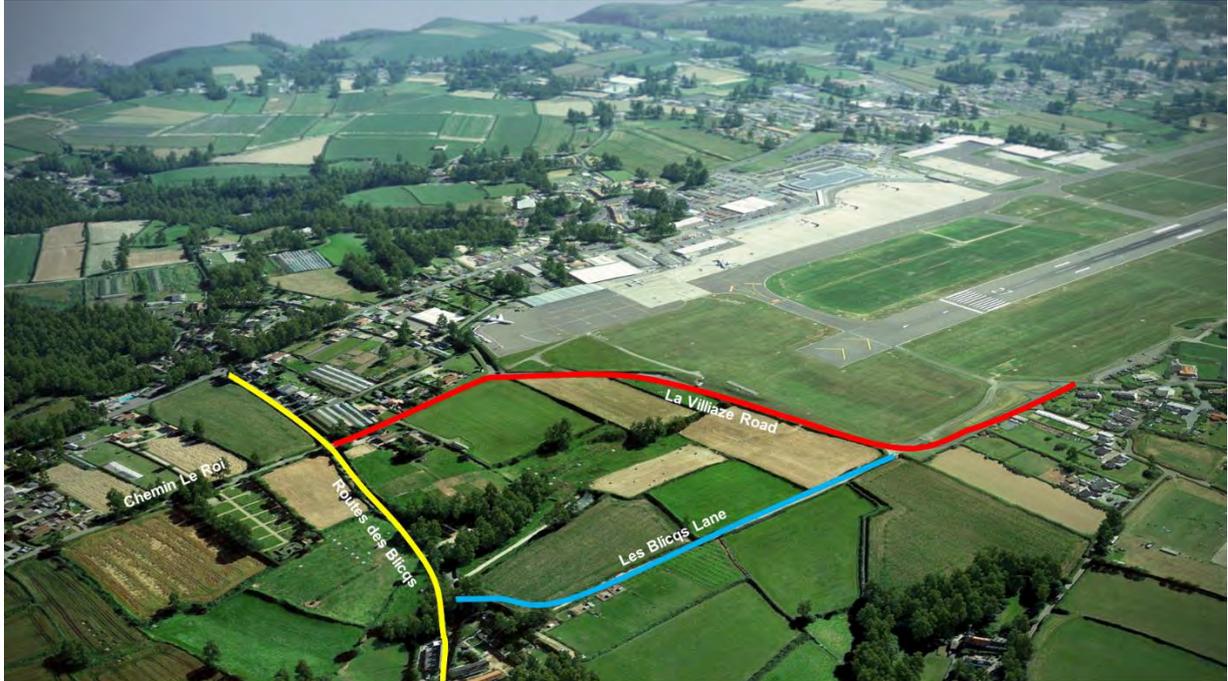


Figure 5.1 Existing Road Configuration

The 98m EMAS option incorporates a retaining wall at the eastern end of the EMAS installation and as such does not impact the public roads in the long term. However, La Villiaze Road will likely be impacted during the construction of the extension.

It should be noted that this is based on the Runway Safe scheme which does not provide for a compliant RESA and will need to be verified with the CAA. This is covered in more detail in Section 12.

6. Obstacle Limitation Surfaces (OLS)

6.1 Introduction

Obstacle limitation surfaces (OLS) are imaginary surfaces that restrict development in the airport environs with the intention of ensuring safe operations for aircraft. There are a number of different OLS associated with any given runway. In the case of the runway extension at Guernsey, the proposed changes to the threshold affect mainly the Approach and Transitional Surfaces for Runway 27 and potentially the Take-Off Climb Surface for Runway 09. The extension of Runway 09-27 moves the 27 Threshold eastwards and in turn the OLS surface origins move eastwards, effectively reducing the overall clearance between the surface and any existing obstacles underneath. AECOM have assessed the changes to the OLS as a result of the proposed threshold movement, calculating the resulting height limitations and comparing them to existing obstacles.

6.2 OLS Surface Parameters

6.2.1 Runway 27 Approach

The approach surface parameters are defined in EASA regulations (CS-ADR-DSN Issue 6 Chapter H). The surface starts 60m before the approach runway threshold with an origin level commensurate with the declared threshold level (102.5m AOD proposed). The width of the inner edge of the surface is 280m and rises at a gradient of 2% with a divergence of 15% at each side.

6.2.2 Runway 27 Transitional Surface

The lower edge of the transitional surface runs down the side of the approach surface to the level of the runway centreline and follows the length of the runway strip with the origin level commensurate with that of the adjacent runway centreline. It rises at a gradient of 1 in 7 (14.3%) from the edge of the strip until intersecting with the inner horizontal surface.

6.2.3 Runway 09 Take-off Climb Surface

The purpose of the Take-Off Climb Surface (TOCS) is to protect an aircraft on take-off and during climb-out. It is an inclined plane or other specified surface beyond the end of a runway or clearway. Since there is no proposed change in the Runway 09 TODA (as described in Section 2.2), the TOCS is no different than what the airport currently operates. As such the following sections will focus on the changes to the Approach & Transitional surfaces. Should the airport wish to consider increasing the TODA then a more detailed assessment of the OLS will be required to ascertain the impacts.

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6.3 Obstacles Considered

The Guernsey Airport AIP and ICAO Type A chart were referred to, to ascertain the obstacles and their parameters to the east of the 27 Threshold.

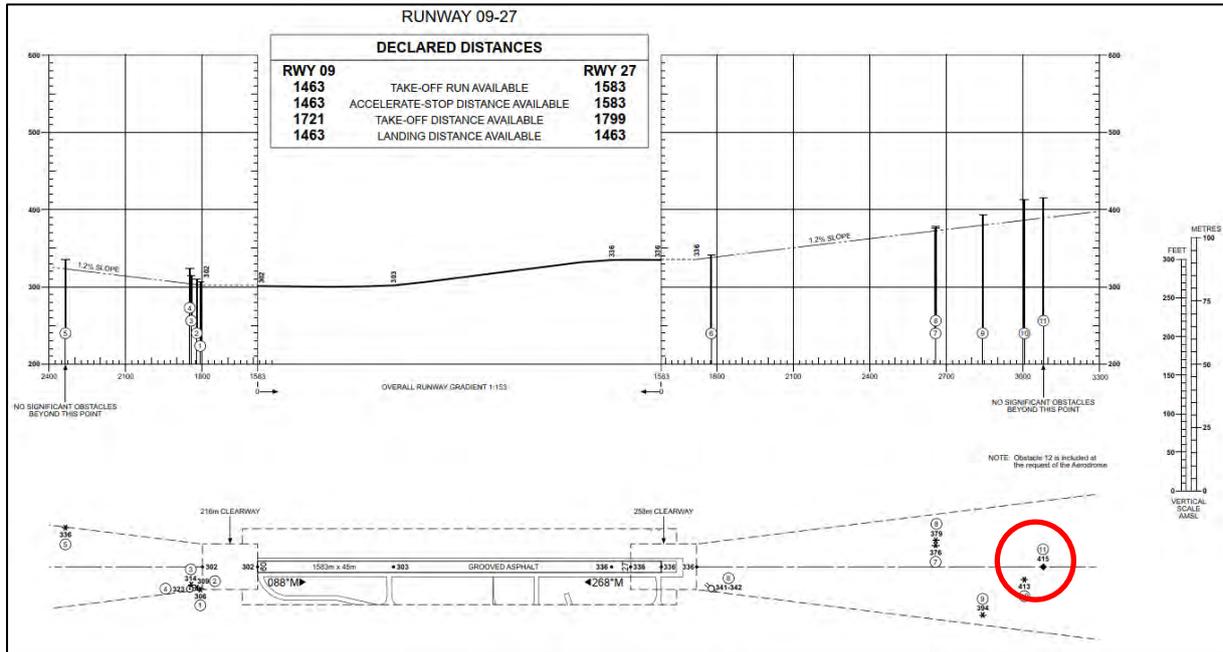


Figure 6.1 Extract from the Guernsey Airport Type A Chart – Water Tower and Tree Circled

The charts were cross referenced with drone imagery from the 27 end.

Two of the obstacles to be assessed are the Water Tower and the Tree, shown circled in the image below.



Figure 6.2 Drone imagery from the 27-end showing the Water Tower and Tree

The water tower was surveyed at 415ft (126.49m) above ordnance datum (AOD), while the tree was surveyed at 413ft (125.88m) AOD, however it is noted that the tree may have grown (or been reduced) in the time since the survey was carried out.

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In addition to those obstacles identified in the AIP, there were dwellings that were identified in the RPS Report 2020, shown in the images below.



Figure 6.3 Location of La Rue Des Agneaux properties (Google Earth)



Figure 6.4 Drone imagery showing La Rue Des Agneaux properties.

The height details of these buildings have been acquired from the RPS report 2020.

6.4 Results

The Approach and Transitional surfaces were modelled, and the resulting height above existing objects calculated.

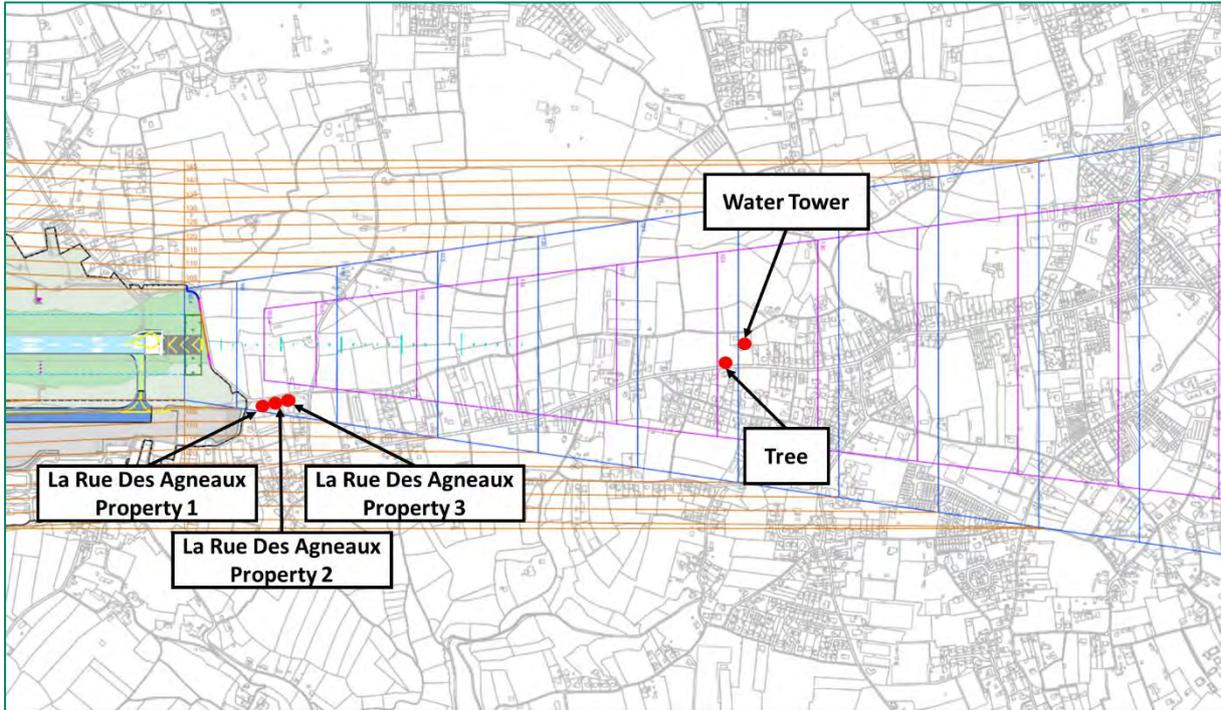


Figure 6.5 Approach (Blue), Take-off (Purple) and Transitional Surface (Orange) Contours

Obstacle	Obstacle Elevation (m AOD)	Distance from Inner Edge (m)	OLS Elevation Above Obstacle (m AOD)	Clearance from top of obstacle to surface (m)
La Rue Des Agneaux - Property 1	105.42	185	106.15	0.73
La Rue Des Agneaux - Property 2	105.47	230	107.05	1.58
La Rue Des Agneaux - Property 3	104.1	257	107.59	3.49
Tree	125.88	1322	128.89	3.01
Water Tower	126.49	1392	130.29	3.8

Table 6.1 Current OLS Calculations for Obstacles

As noted in the above table none of the identified obstacles infringe into the assessed OLS.

6.5 ICAO New Concept OLS

6.5.1 Introduction

The New Concept OLS is being developed by ICAO. The new concept OLS is being developed to bring the standards in line with current aircraft operational parameters and risk. The proposed parameters were presented by ICAO in December 2021 and are in a consultation phase and are therefore subject to change. The changes are proposed to be published in 2024 for implementation in 2026. A separate assessment has been carried out in order to show how these proposed changes, as currently presented, will affect the Approach and Transitional Surfaces at Guernsey.

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6.5.2 Updated parameters and comparison to existing parameters

The approach surface parameters for the New Concept OLS will be based on the size and approach speed of the largest aircraft the runway is designed to accommodate. In the case of the Guernsey Airport runway extension, this being a large Code C aircraft.

For an instrument runway, the comparison between the current and the New Concept approach surface parameters for the proposed runway extension are shown below:

Parameter	Current Approach Surface (ICAO Annex 14)	New Concept Approach Surface (proposed – Code C aircraft)
Distance from threshold	60m	60m
Length of Inner edge	280m	155m
Divergence	15%	10%
Slope	2%	3.33%

Table 6.2 Comparison between current and New Concept Approach OLS parameters

The transitional surface slope is proposed to increase from 14.3% to 20% under the New Concept OLS.

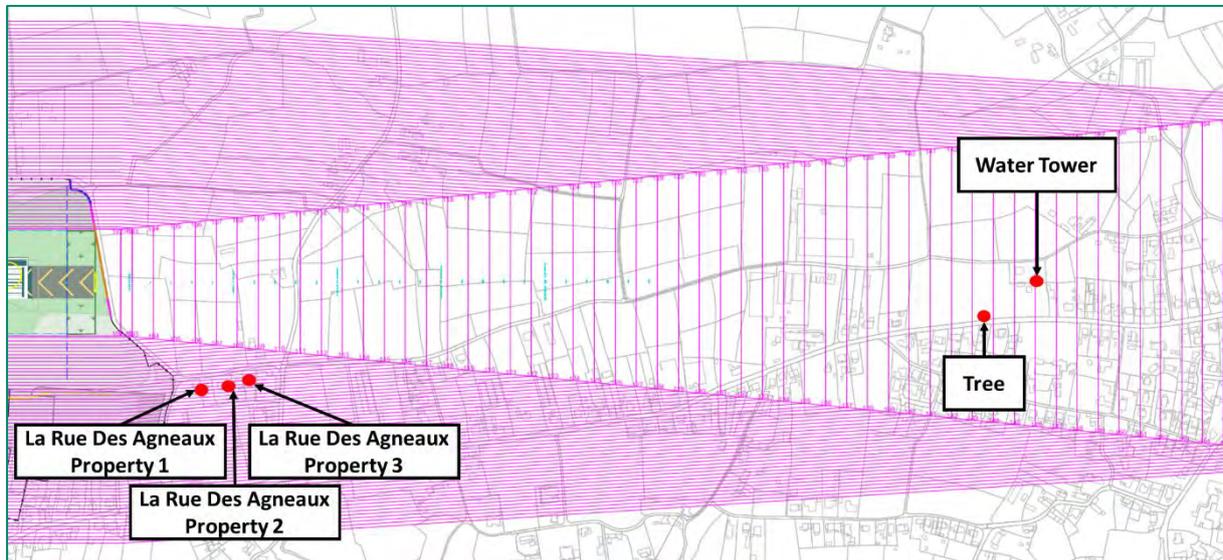


Figure 6.6 ICAO New Concept Approach and Transitional Surface Contours

Under the new concept OLS, there would be significantly greater clearance to the identified objects and assessed OLS. The resulting clearance distances are shown below:

Obstacle	Obstacle Elevation (m AOD)	Distance from Inner Edge (m)	OLS Elevation Above Obstacle (m AOD)	Clearance from top of obstacle to surface (m)
La Rue Des Agneaux - Property 1	105.42	N/A - Transitional	N/A - Transitional	10
La Rue Des Agneaux - Property 2	105.47	N/A - Transitional	N/A - Transitional	8.2
La Rue Des Agneaux - Property 3	104.1	N/A - Transitional	N/A - Transitional	8.4
Tree	125.88	1322	146.1	20.2
Water Tower	126.49	1392	148.4	21.9

Table 6.3 New Concept OLS Calculations for Obstacles

6.6 La Villiaze Road

In addition to the obstacles mentioned previously, La Villiaze Road was also assessed in regard to the Approach Surface.

Whilst not specifically mentioned within EASA, ICAO chapter 11.3, paragraph 11.3.2, states that a road should be counted as a 4.8m high obstacle. 5 points along the road were assessed. The location of points 1-5 can be seen in the image below:

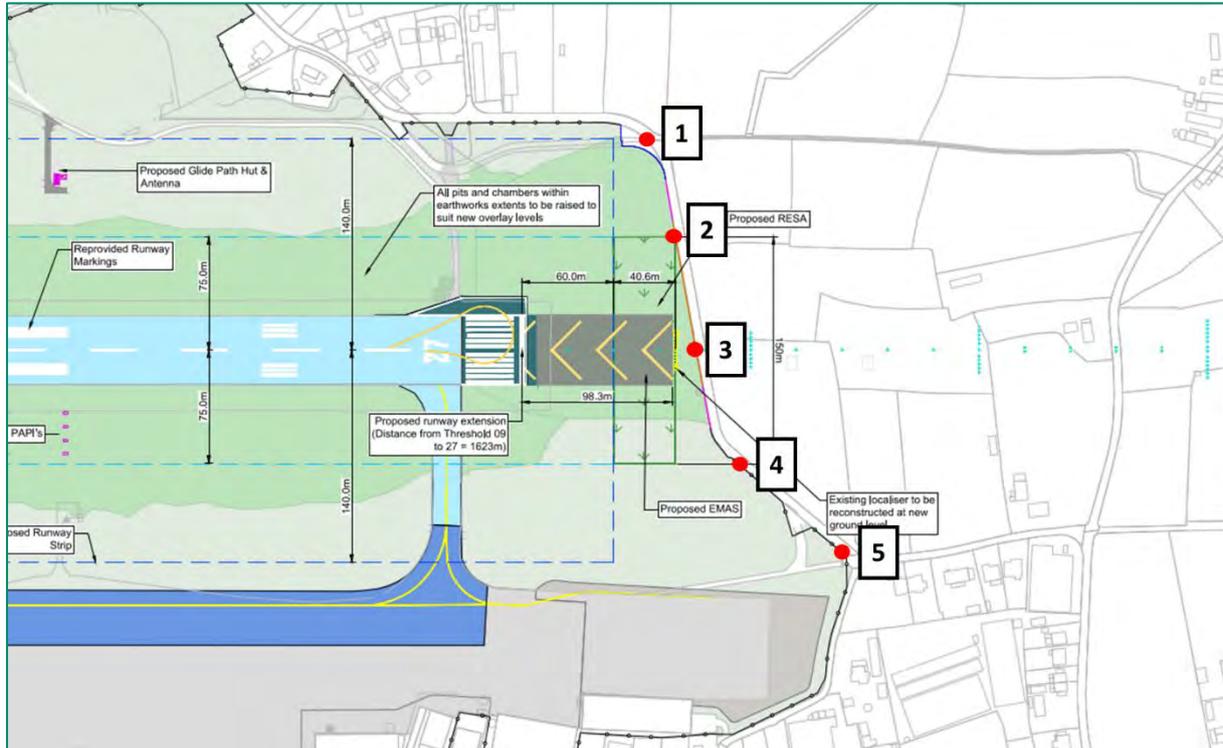


Figure 6.7 Road OLS Assessment

The Findings are as follows for the existing OLS:

Obstacle	Obstacle Elevation (m AOD)*	Distance from Inner Edge (m)	OLS Elevation Above Obstacle (m AOD)	Clearance from top of obstacle (i.e. 4.8m above road) to surface (m)
Point 1	100.8	23.5	102.92	2.12
Point 2	99.8	41	103.27	3.47
Point 3	101.8	54	103.53	1.73
Point 4	103.8	81	104.07	0.27
Point 5	103.8	157	105.59	1.79

*AOD taken from Google Earth Elevations and should be treated accordingly

Table 6.4 Current OLS Calculations for La Villiaze Road

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In Terms of the New Concept OLS, the resulting clearances are as follows:

Obstacle	Obstacle Elevation (m AOD)*	Distance from Inner Edge (m)	OLS Elevation Above Obstacle (m AOD)	Clearance from top of obstacle (i.e. 4.8m above road) to surface (m)
Point 1	100.8	23.5	N/A - Transitional	1.85
Point 2	99.8	41	103.8	4
Point 3	101.8	54	104.2	2.4
Point 4	103.8	81	105.1	1.3
Point 5	103.8	157	N/A - Transitional	9.05

*AOD taken from Google Earth Elevations and should be treated accordingly

Table 6.5 - OLS Calculations

6.7 Conclusions

The properties at La Rue Des Agneaux are shown to not infringe the Approach Surface OLS as a result of increasing the runway length to 1623m. These properties are therefore unaffected by the current or proposed new concept OLS.

Due to the new alignment of the 27 Threshold the public road, La Villiaze Road, is now very close to the existing approach surface, the proposed New Concept OLS Approach and Transitional Surfaces. Our assessment shows that a 4.8m clearance is maintained throughout the road. Due to the closeness of the surfaces to the road is it recommended that a more detailed risk assessment quantify the additional risk posed to traffic as a result of the OLS, i.e. if taller vehicles were to use this road it may be necessary to introduce a traffic management system. Similarly, these calculations are based on publicly available level data and should be verified with topographical surveys.

7. Airfield Pavements

7.1 General

This section details the key design criteria adopted to derive indicative pavement designs for pricing purposes. All pavement designs have been carried out in accordance with the DIO Design & Maintenance Guide 27 (DMG27) A Guide to Airfield Pavement Design and Evaluation, 3rd Edition 2011. This section is split into two parts, part 1 details the new pavements required for the runway extension whereas part 2 details the overlay/strengthening requirements for the existing pavements to ensure continued suitability for larger aircraft types, up to and including the A320 series aircraft derivatives.

7.2 Runway Extension

7.2.1 Pavement Types

The figure below illustrates the various types of pavement required for the runway extension. It shows the extent of new pavement required for the extension/turning heads (Dark Blue) and the additional pavement required for the EMAS base (Grey).

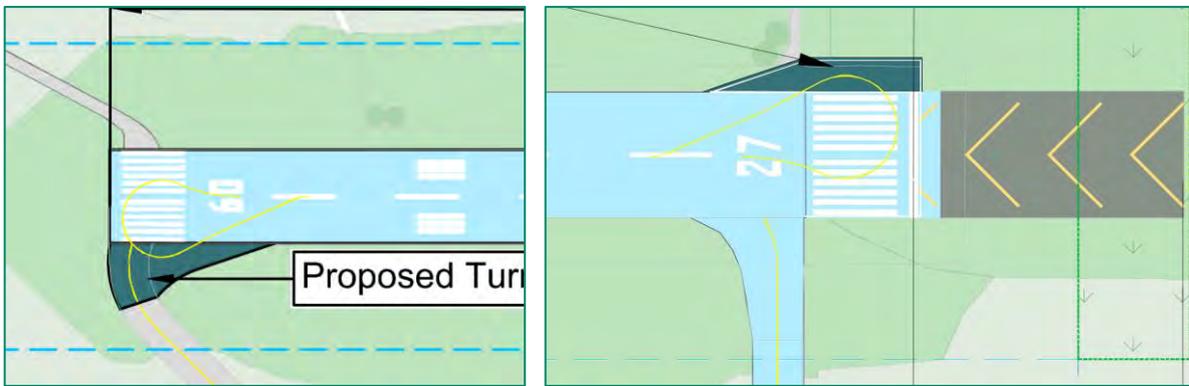


Figure 7.1 Threshold 09

Figure 7.2 Threshold 27

	Proposed EMAS Pavement
	Proposed Pavement - PCN 50 New Pavement
	Proposed Pavement - PCN 50 Overlay

Figure 7.3 Pavement Types Legend

7.2.2 Pavement Materials

The existing runway pavement at Guernsey Airport is constructed in flexible (asphalt) construction with no Pavement Quality Concrete provided at the runway thresholds or hold positions. On that basis this report will only consider flexible pavement designs for the runway extension, turning heads and EMAS Base to ensure commonality of construction and aid with future maintenance processes.

7.2.3 Design Criteria

7.2.3.1 Design Aircraft

The RPS report 2020 adopts an Aircraft Classification Number (ACN) of 50 on the basis that the design aircraft is likely to be the B737 and A320. While these aircraft have higher ACNs of 52-65 at Maximum Take-Off Weight (MTOW), operating at MTOW would require a longer runway than is available at Guernsey. At a take-off or landing weight applicable to limitations imposed by a 1623m runway, an ACN/PCN50 is considered acceptable and has therefore been adopted for the design of new pavements.

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7.2.3.2 Subgrade Strength

Initially a subgrade strength of 6% had been adopted based on the subgrade category stipulated in the published runway PCN classification of PCN 36/F/C/W/T in the airport's Aeronautical Information Publication (AIP). However, AECOM have since received as-built drawings from the runway rehabilitation project (undertaken in 2013), and this indicated a design subgrade CBR of 3% was adopted for that project. For consistency and for the purposes of this study a CBR of 6% has therefore been adopted although this assumption should be confirmed with a ground investigation.

7.2.3.3 Design Life

A design life of 20 years for flexible pavements has been adopted in accordance with the published guidance in DMG 27.

7.2.3.4 Traffic

There is little to no data in the form of a future aircraft traffic forecast at Guernsey Airport. The RPS report assumes an average of up to 19 departures of the Boeing 737/Airbus 320 type per day. While this may seem excessive, this would still fall within the medium frequency of trafficking criteria as stipulated in DMG 27.

The EMAS Base area follows the design requirements for shoulder pavement design. This considers a reduced strength pavement with very limited aircraft trafficking on the basis that it is not part of the main runway area. Under the design guidance in DMG27, shoulder pavement design is carried out to a design strength equivalent to 1/3 PCN of the adjacent main runway pavement, in this case PCN17. This pavement will be laid as a base construction to support the proprietary EMAS construction.

7.2.4 Pavement Thicknesses

The table below summarises the pavement design thicknesses determined from the DMG 27 analysis and adopted within this report for the purposes of pricing. In comparison with the RPS design thicknesses these are considerably less however, based on the information provided in the RPS report 2020 it was not possible to validate the designs developed. Nevertheless, the designs tabled below offer savings in materials, costs and possibly, overall programme.

Option	New Build Areas		Shoulder Strength Pavement for EMAS	
	AECOM DESIGN	RPS DESIGN	AECOM DESIGN	RPS DESIGN
98m EMAS Opt.	100mm Marshall Asphalt Surface Course 300mm Marshall Asphalt Base Course 150mm DLC Type FH 150mm Type 1 Granular Material	100mm Marshall Asphalt Surface Course 120mm Marshall Asphalt Base Course 395mm DLC Type FH 300mm Type 1 Granular Material	100mm Marshall Asphalt Surface Course 100mm Type 1 Granular Base 500mm Type 1 Granular Material	100mm Marshall Asphalt Surface Course 120mm Marshall Asphalt Base Course 280mm DLC Type FH 300mm Type 1 Granular Base + Geogrid
TOTAL	700mm	915mm	700mm	800mm

Table 7.1 Indicative pavement designs for costing

It is unclear from the RPS design why a 300mm type 1 base course + geogrid has been specified – it cannot be confirmed from the information provided whether this was adopted as a subgrade improvement measure or to provide a thick working course layer to protect the subgrade during construction.

7.3 Overlay Works – Strengthening Requirements

The image below illustrates the strengthening works required to the existing pavements. This is applicable to all options. It shows the extent of overlay required to the runway and taxiways (cyan) and the full reconstruction of the existing taxiway adjacent to the apron (blue). These works are required to bring the existing Pavement Classification Number (PCN) up from 36 to 50 thus ensuring suitable load bearing capacity for B737/A320 aircraft derivatives.

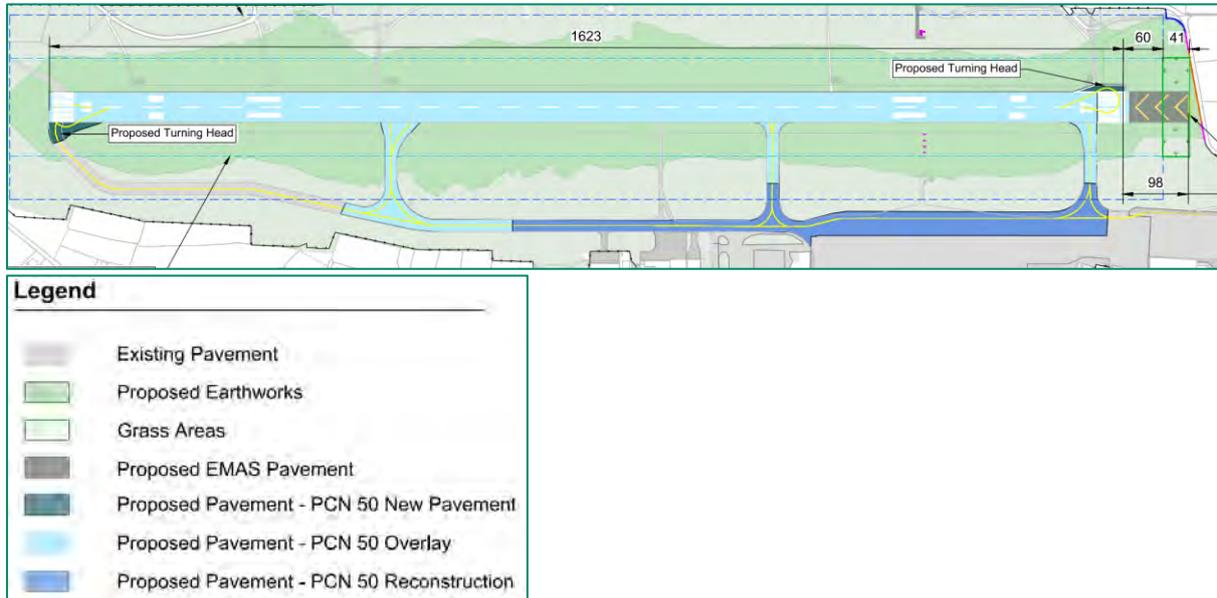


Figure 7.4 Proposed Runway/Taxiway Strengthening

Full reconstruction is the most practical solution to strengthen the existing taxiway adjacent to the apron; this is because an overlay solution would not be possible within geometrical compliance due to the constraints imposed on the tie-in level to the retained concrete apron. For the purposes of pricing, the thickness of reconstruction will be based on the same construction as the new turning head pavement described in 7.2.4.

Based on the information made available at the time it was not possible to design the required runway overlay thickness nor was it possible to validate the overlay thickness defined in the RPS report 2020. It was agreed with Guernsey Airport to proceed based on the RPS design thickness for pricing purposes. This comprised of planing off 20mm from the existing asphalt surface and replacing with a 260mm total thickness asphalt overlay thus providing a renewed PCN of 50. It is possible that in future design stages this overlay thickness could be improved upon. As a result of raising the runway levels, regrading of the earthworks either side of the runway within what is referred to as the 'clear and graded strip' will be required to comply with EASA standards – the approximate extent of this is shown in Figure 7.4.

8. Airfield Geometric Design

8.1 General

This section details the key design criteria adopted to derive the geometrical design used to extract the cut and fill volumes. The design has been carried out in accordance with EASA CS-ADR-DSN Issue 6.

The topographical survey 'GSY3D_2016' by Digimap was used to create the existing ground surface. The survey consists of LiDAR data that was surveyed at 4 points per square metre. It is noted that the edge of the runway pavement was not captured as a breakline on the survey, this can result in inaccurate tie-in information at the runway end. Given the scale of the works, this is not likely to have a significant impact on the analysis. Furthermore, the survey suggests significant non-compliances on the graded strip in the form of isolated high points and flat areas, this could be due to the small number of points measured per square metre and it may be found that these non-compliances are resolved in denser surveys.

8.2 Standards

Geometrical requirements are determined by the runway code number. The existing Runways 09 and 27 (1463m), and the proposed extension both fall within code number 3 in accordance with EASA (1200m to 1800m). The geometrical requirements for a code number 3 runway for EASA are shown in the table below (note that a 0.5% reduction has been applied to account for settlement in unpaved areas).

Location	Maximum Permissible Slope	
	Longitudinal	Transverse
Paved Runway	+/- 0.8% along first or last quarter	+/- 1.5% but not less than +/- 1.0%
Graded Strip	+/- 1.25%	+/- 2.0%
Ungraded Strip	None	+/- 4.5%
RESA	+/- 4.5%	+/- 4.5%

Table 8.1 EASA Airfield Geometric Standards

8.3 Runway Extension - Geometry

8.3.1 Longitudinal profile

The existing profile of 27 Threshold is flat, remaining this way until reaching the proposed 27 Threshold position, therefore the overlaid pavement between the existing and proposed threshold is a continuation of the profile on 27 Threshold.

The 98m EMAS has been modelled to slope down longitudinally at -1.25%.

This option does not allow for a compliant RESA due to the public road, as shown in the long section below.

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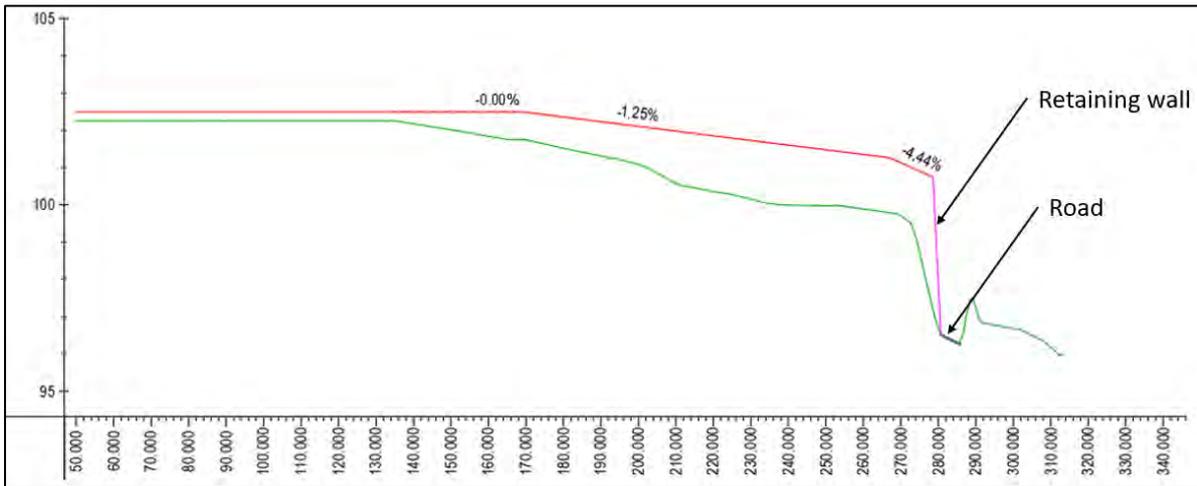


Figure 8.1 Proposed Longitudinal Profile

The existing ground east of the localiser, west of La Villiaze Road has quite a dramatic level difference as shown in the figure below:



Figure 8.2 Existing Ground Between Localiser and La Villiaze Road

The new ground formation will require a retaining wall along the earthwork extents bordering La Villiaze Road and the foundation for the localiser will need to be reconstructed so that it is at the same level as the EMAS system

8.3.2 Transverse Profile

The end of the existing runway is cambered; therefore, the proposed threshold was also modelled with a 1.5% camber. The EMAS extends out and will also be cambered along the extended runway centreline in order to minimise the volume of fill required. A camber will also simplify the geometry as a crossfall would require a transition over the EMAS.

The existing ground in the location of the EMAS system generally slopes downwards from south to north as shown in Figure 8.3. As such the grading required to tie back into existing levels using slopes that are compliant for RESA and Strip is greater to the north of the runway. AECOM have modelled a

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2.0% transverse slope where this falls within the graded area of the runway strip and 4.5% in the non-graded section.

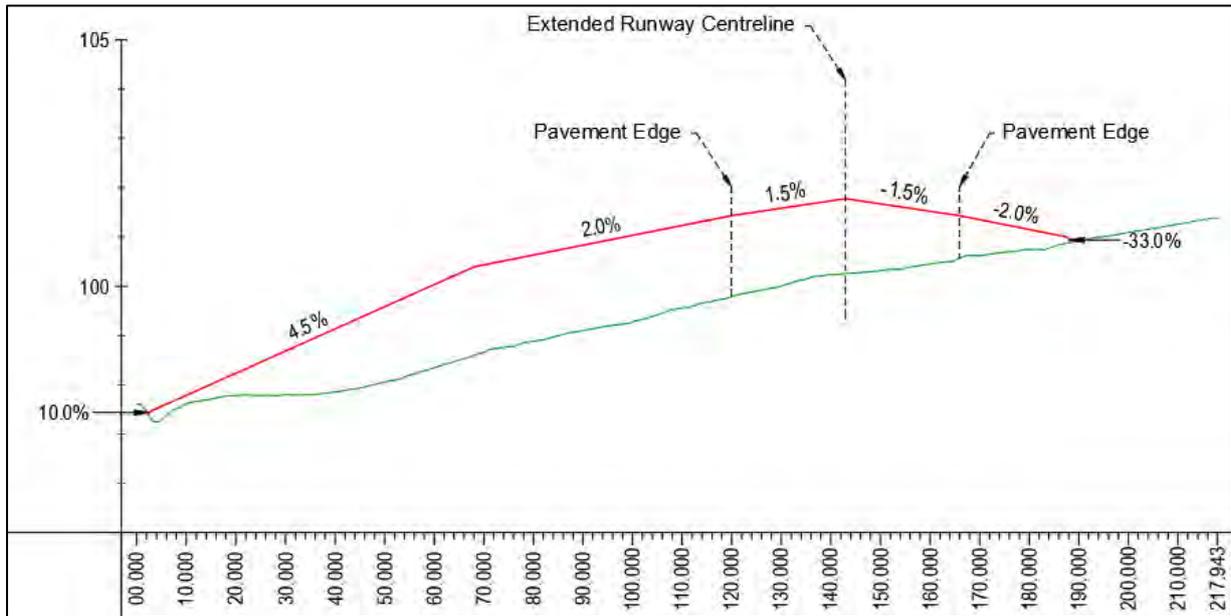


Figure 8.3 Typical EMAS Cross-Section

8.3.3 Earthwork Volumes

The following earthwork volumes were extracted from the design surfaces.

Table 2. Summary of Earthwork Volumes

Cut (m3)	Fill (m3)	Net Earthworks (m3)
-	35,000	35,000 (Fill)

It should be noted that introducing a further 50m extension of grass area to the east to obtain a 90m RESA will result in a significant increase in total earth works. As it stands the scheme does not provide for a compliant 90m RESA and this solution must be verified with the CAA. This is covered in more detail in Section 12.

8.4 Runway Overlay - Geometry

Detailed analysis of the runway is outside of the scope in part due to a lack of reliable survey data. Nonetheless volumes have been extracted using the available data.

The runway overlay surface was created by raising the existing surface by 240mm, the geometry of the runway was kept the same. To provide a fully compliant strip, the same approach as the runway extension was adopted where the graded strip was modelled with a transverse slope of -2.0% up to the outer edge of the ungraded strip and then tied-in to the existing ground at the maximum +/-4.5% permissible on the ungraded strip.

It should be noted that there is an added cost associated with the lifting of chambers within the graded strip and in isolated locations on the ungraded strip due to the approach described above, however the correction of existing non-compliances on the runway strip geometry at the same time as the overlay works has been considered beneficial. The additional cost of lifting chambers can be removed by accepting existing non-compliances on the strip, which are mainly associated with isolated bumps and flat areas although this should be verified with a traditional topographical survey.

9. Airfield Drainage

This section details the key design criteria adopted to derive a high-level drainage solution for pricing purposes. The section is split into two parts, part 1 details the drainage requirements for the runway extension whereas part 2 details the drainage modification required as a result of the runway overlay.

9.1 Runway Extension – Drainage Concept

A concept level hydraulic drainage network has been designed for the proposed pavement and airfield extension. Any paved surface with impermeable boundary layers be it pavement or EMAS, results in rapid surface water runoff which consequently maximises the attenuation and storage volumes required. In this case the additional runoff cannot be discharged to networks at anything in excess of estimated greenfield flow rates.

In topography terms the current land is relatively steep and falls to a low point in the adjoining ground profile near the eastern site boundary. This location and arrangement result in the need to lift any current and attenuated surface water run-off from the tank up to the point where gravity discharge can occur. Therefore, the gravity drains fall to the lowest practicable point before being pumped via a rising main to an appropriate location from which the water would combine by gravity with other offsite airport flows.

Stepped runway edge drains using conventional pipes and manholes could be used to provide a positive system with an estimated 600m³ of volumetric storage required in a "closed" and avian free tank feature. Like the current runway pavement, no pollution control measures have been priced for the low-risk surface.

The permitted off-site discharge allowance impacts the attenuation volume required. A discharge to the north has been identified in conjunction with the Airport and is shown in the figure, however, an alternative discharge point falling to the south near the apron was used in the RPS report. At present its location or permitted flow rate has not been identified or confirmed as possible.

In addition to paved surface water interception a comprehensive network of land drainage features such as filter or French land drains would be required to intercept and drain the new earthwork surfaces.

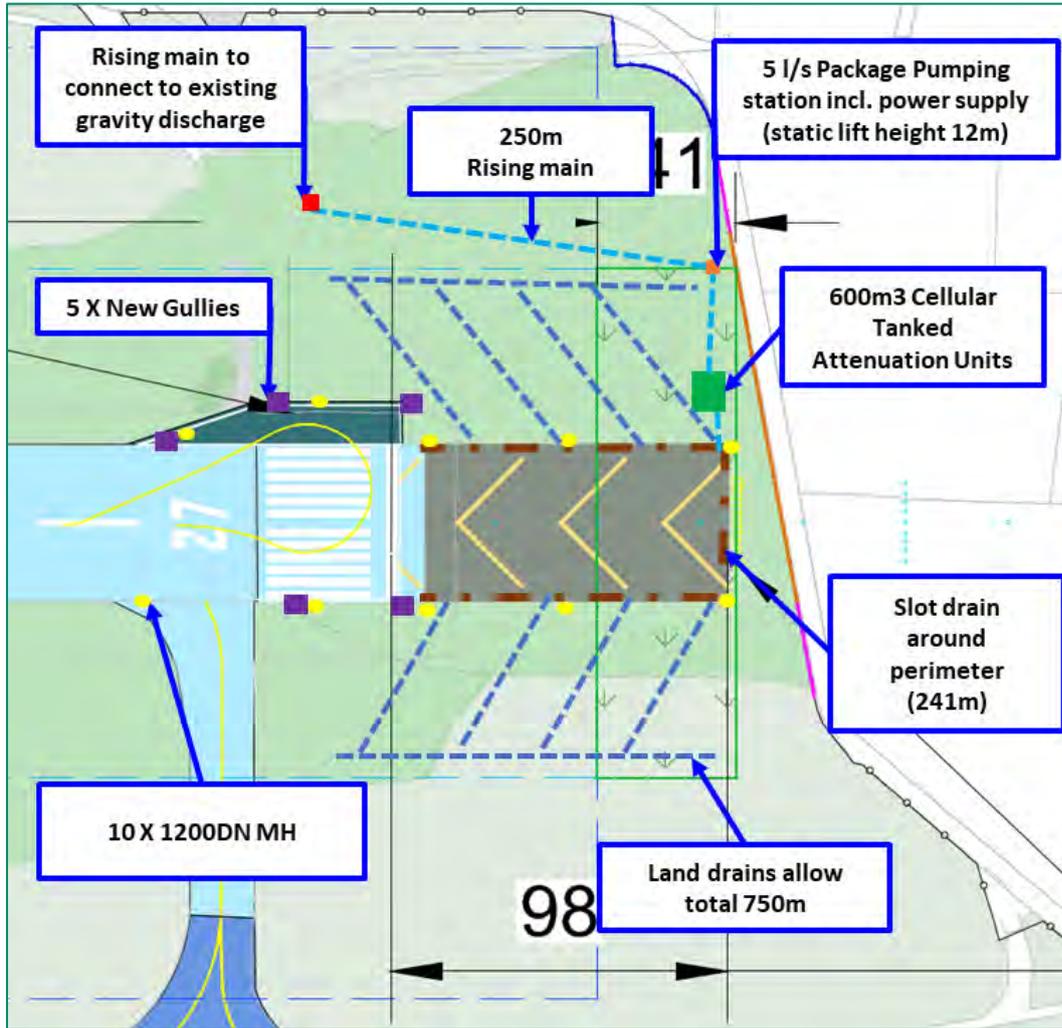


Figure 9.1 Drainage Plan

9.2 Overlay Works – Drainage Requirements

The current drainage provision on the runway and taxiways is in the form of a filter drain which runs parallel to the edge of the runway and taxiways. If the runway is going to be raised approximately 240mm as a result of the overlay works, then the filter drains and any manholes or gullies within the clear and graded area will require raising. An allowance has therefore been made in the costs for the raising of manholes and excavation and reinstatement of the filter drains and any other land drains within the regraded strip.

10. Airfield Ground Lighting (AGL) & Navigational Aids

10.1 Runway Extension

10.1.1 Lighting Requirements

An allowance has been made for the following new lighting fixtures and supporting pit and duct infrastructure:

- New Inset Runway Centreline Lighting
- New Inset Runway Threshold & Wingbar Lighting
- New Taxiway Centreline Lighting (for new turning heads)
- New Runway & Taxiway Edge Lighting
- Control system changes to interlock Turning head lights with Approach lights

A new CAT I approach lighting system will be required for the extension to replace the existing approach lighting. The cross section below illustrates the spacing of the approach lights and their anticipated height based on a runway length of 1623m. Assuming a horizontal plane relative to the threshold elevation, the highest mast will be in the region of 19m-20m yet there could be room to reduce this in latter design stages by introducing downward slopes.

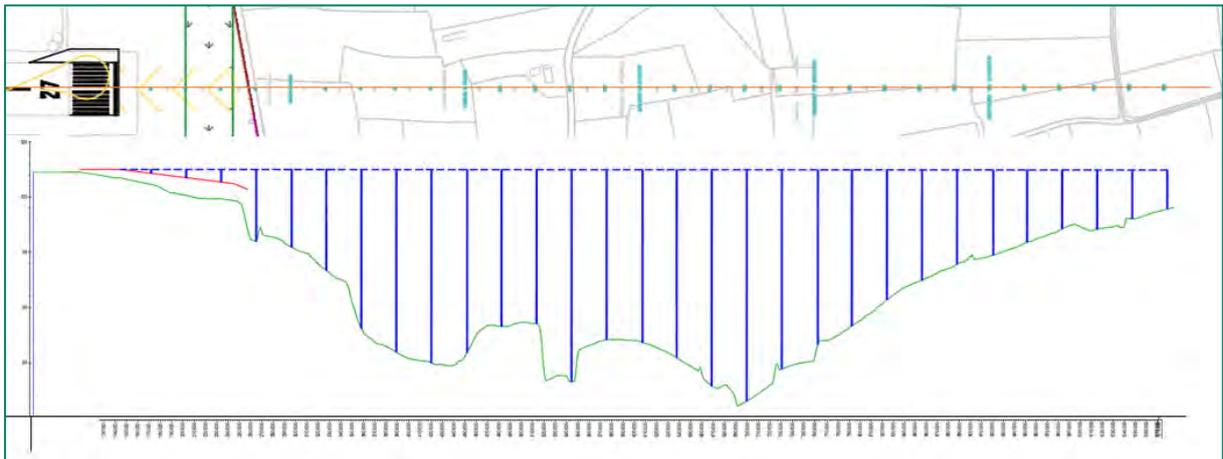


Figure 10.1 Approach Lighting Long-section

The Approach Lighting will be frangible, and the support structures consist of poles for single lights and lattice masts for multiple lights as shown in the image below.



Figure 10.2 Approach Lighting Infrastructure

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10.1.2 Navaid Requirements

Due to the relocation of the threshold the following new navigational aids will be required:

- Runway 27 Glide Path
- Runway 09 CAT 1 Instrument Landing System (ILS) Localiser
- Runway 27 Precision Approach Path Indicator (PAPI)

It was considered if the existing nav aids could be relocated but since this may cause significant down time during operational periods it has been assumed for pricing purposes that new equipment will be installed.

10.1.2.1 Runway 09 ILS Localiser

The position of the new ILS localiser varies depending on the position of the threshold. Ideally the localiser should be positioned outside of the RESA and at least 300m from aircraft movement areas. This poses a challenge given the topography beyond the RESA and the antenna will need to be raised sufficiently so it is at least level with Runway 27 threshold. It is estimated that the antenna will need to be raised between 10-15m on a gantry such that there is no interference with the signal. A new ILS and gantry have therefore been allowed for in the costs. It may be required to provide an offset localiser which is not positioned along the extended runway centreline.

10.1.2.2 Runway 27 Glide Path

Similarly, to the ILS, the glide path position varies depending on the threshold. Every effort has been made to protect the signal of the glide path by ensuring a flat ground profile within its critical area. The critical area is an area where vehicles, including aircraft are excluded during operations and extends approximately 250m from the glide path antenna. The earthworks have been graded such that it protects the equipment signal, but specialist manufacturers would need to be consulted to verify any impact on the system.

10.1.2.3 Precision Approach Path Indicator

An allowance has been made for a new Runway 27 PAPI; this is to replace the existing PAPI which is currently located on the South side of the runway adjacent to Runway 27 aiming point markings.

10.2 Overlay Works – Lighting Requirements

It is understood that the existing AGL was replaced during the runway rehabilitation project and is therefore approximately halfway through its design life. For the purposes of pricing, it is assumed that the existing AGL fixtures could be retained and raised to suit the new overlay levels. Existing lighting fixtures to be impacted by the overlay works and subsequent regrading of the clear and graded area include the following:

- Runway Centreline Lights
- Runway Elevated Edge Lights
- Runway 09 Threshold Lights
- Taxiway Centreline Lights
- Taxiway Elevated Edge Lights
- AGL Signage

An allowance has also been made for raising any electrical pits that fall within the clear and graded area. It is likely that all secondary cables will require replacing given that they are currently saw cut into the existing runway surface and could be prone to damage during milling out of the existing surface course.

11. Summary of Cost

11.1 Cost of Project

The costs have been itemised such that they show the following:

- Base Build – Includes all common costs associated to previous options (namely the runway/taxiway strengthening works.)
- 98m Option – Includes costs associated with the runway extension option i.e., all works East of Taxiway Alpha

The overall estimated construction cost is summarised below (see Appendix B for full breakdown).

Construction Costs		Base Build	98m Option	TOTAL
0. Facilitating works estimate		Excluded	Excluded	Excluded
8. External Works		£ 26,441,504	£ 11,467,121	£ 37,908,625
Main contractors preliminaries estimate	27.5%	£ 7,271,414	£ 3,153,458	£ 10,424,872
Sub-total		£ 33,712,917	£ 14,620,580	£ 48,333,497
Main Contractor's overheads and profit estimate	7%	£ 2,359,904	£ 1,023,441	£ 3,383,345
Works cost estimate		£ 36,072,821	£ 15,644,020	£ 51,716,842
Project/design team fees estimate	12%	£ 4,328,739	£ 1,877,282	£ 6,206,021
Sub-total		£ 40,401,560	£ 17,521,303	£ 57,922,863
Other development/project costs estimate		Excluded	Excluded	Excluded
Base cost estimate		£ 40,401,560	£ 17,521,303	£ 57,922,863
Risk allowances estimate	15.0%	£ 6,060,234	£ 2,628,195	£ 8,688,429
Cost limit (excluding inflation)		£ 46,461,794	£ 20,149,498	£ 66,611,292
Tender inflation estimate	6.99%	£ 3,248,437	£ 1,408,778	£ 4,657,215
Cost limit (excluding construction inflation)		£ 49,710,231	£ 21,558,276	£ 71,268,507
Construction inflation estimate	0.97%	£ 480,403	£ 208,340	£ 688,743
Cost limit (including inflation)		£ 50,190,633	£ 21,766,617	£ 71,957,250
VAT assessment		Excluded	Excluded	Excluded
The Estimated inflation allowances are as follows:		98m Option 18 month duration		
BCIS Civil Eng April 23	Key Stage	Date		Uplift
Cost Index	Current	May-23	203.1	
	Tender Return	Aug-25	217.3	6.99%
Cost Index	Close	Aug-25	217.3	
	Mid-Point	May-26	219.4	0.97%
				7.96%

Figure 11.1 Construction Costs

11.2 Cost Opportunities

The above costs are based on numerous high-level assumptions and/or estimates detailed in Appendix B. The following list outlines elements of the cost estimate which could be improved and refined upon in subsequent design stages:

- A more detailed analysis of contractor's preliminaries estimate.
- A more detailed assessment of the programme leading to Improvements in overall works duration
- A more detailed assessment of the design team fee estimate
- The allowance for risk will reduce as the design progresses
- The type of fill material selected and where it is sourced could offer savings
- Undertake pavement and ground investigation works to confirm existing pavement strength and soil properties.

11.3 Potential for Phasing the Project

Considering the large scale of the project, this section of the report has been provided to identify the potential for undertaking the works in multiple phases. This is likely an effective way to spread the cost of the works and as such it is important to highlight what aspects that have been proposed are independent of each other.

In general, any works to extend the runway and install the EMAS system and subsequent changes to the drainage network should be done alongside strengthening works to the runway. If the runway was extended to accommodate larger aircraft and strengthening overlay works are undertaken later than the main length of the runway this could result in significant adjustments to recently constructed infrastructure, including the EMAS system.

This is based on the assumed overlay thickness of 240mm and the fact that runway pavement (and the areas around it) have very strict geometrical requirements. As such increasing the runway level by such a value would likely require a similar increase in level for the EMAS system as it is located very close to the runway threshold.

It is worth noting that the 240mm figure is not based on intrusive surveys such as pavement coring to understand the existing strength of the runway. Undertaking this exercise may reveal that a smaller overlay is required and as such it may be more feasible to undertake the strengthening works separate from extending the runway and providing the RESA.

Alternatively, a more complex construction for runway strengthening could be considered which incorporates reconstruction work towards the 27 threshold instead of overlaying. Such a scheme is likely more expensive and more disruptive to operations but may allow the two streams of work to be undertaken separately. A much more detailed evaluation of the topography and pavement strength would be required to determine how much reconstruction work would be required to enable this.

As such at this early stage of the project and with the limited survey information available, it would be prudent to assume that all runway works would need to be undertaken at the same time.

Consideration could be given to undertaking the wider taxiway network upgrade as a later project although this would result in overlading the pavement when the existing taxiways are trafficked by the larger aircraft. This poses an operational and safety risk since it may lead to accelerated break up of the pavement, resulting in disruptions caused by unexpected repair work and FOD generation.

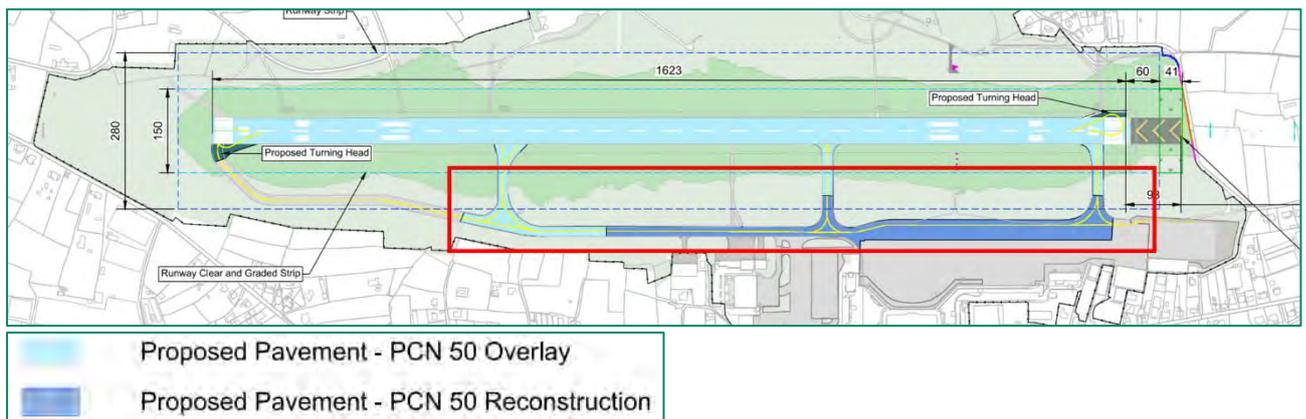


Figure 11.2 Works Separate to the Runway Extension

12. Design Consideration/Concern

As mentioned previously in the report this design results in a RESA that does not comply with ICAO (Annex 14, Volume 1, Ninth Edition July 2023 - chapter 3.5) and EASA regulations (CS ADR-DSN.C.215), introducing a safety concern, particularly in regard to arriving aircraft on Runway 27 undershooting.

According to Runway Safe's ROM Costing report for the Guernsey Airport EMAS "the EMAS bed was optimized to achieve 65 knots minimum performance of the design fleet mix. The arresting performance of EMAS bed is equivalent to 258 meters long space (60 meters stop way and 198 meters RESA)". This scheme has been proposed by Runway Safe but has not been verified by the CAA although it is understood that a similar scheme will be installed at London City Airport (IATA: LCY). This scheme is similar in the sense that it would also have a substandard RESA for undershooting aircraft although a specific safety case will be required for Guernsey Airport considering there are different topographical constraints.

There are some design considerations that could alleviate the issue of the RESA, namely:

- Displacing the threshold to the West by 52m to allow for a 90m RESA
- Closing La Villiaze Road and extending the airport boundary and earthworks to the east to obtain a 90m RESA.

12.1 Displaced Threshold Option

The declared distances stated previously in this report do not allow for the minimum RESA requirements set by ICAO and EASA.

Displacing the 27 threshold by circa 52m will allow for a 90m RESA that ends in the same location as the EMAS end. This option removes the need for additional grading and thus eliminates the related cost when compared with the option in section 2. This will however reduce the LDA and potentially have implications on the operations of the intended design aircraft.

The table below provides a summary to the existing and proposed declared distances for Runway 09 & 27.

Applicable Option	LDA	TORA	ASDA	TODA	Clearway Dimensions
Existing	1463m	1463m	1463m	1721m	258m x 180m
98m Ext.	1623m	1623m	1623m	1721m	98m x 180m
Displaced 27 Threshold	1623m	1623m	1623m	1721m	98m x 180m

Table 12.1 Runway 09 Existing & Proposed Declared Distances

Applicable Option	LDA	TORA	ASDA	TODA	Clearway Dimensions
Existing	1463m	1583m	1583m	1799m	216m x 180m
98m Ext.	1623m	1623m	1623m	1839m	216m x 180m
Displaced 27 Threshold	1571m	1623m	1623m	1839m	216m x 180m

Table 12.2 Runway 27 Existing & Proposed Declared Distances

12.2 Closure of La Villiaze Road Option

To maintain the runway length of the 98m EMAS option a RESA could be provided by means of extending the airport boundary and bulk earthworks with reprofiling that extend beyond La Villiaze Road. This will therefore require its closure and would likely require widening and improvement works to the existing Les Blicqs Lane to provide an alternative route around the airport boundary.

This option can be seen in the figure below:

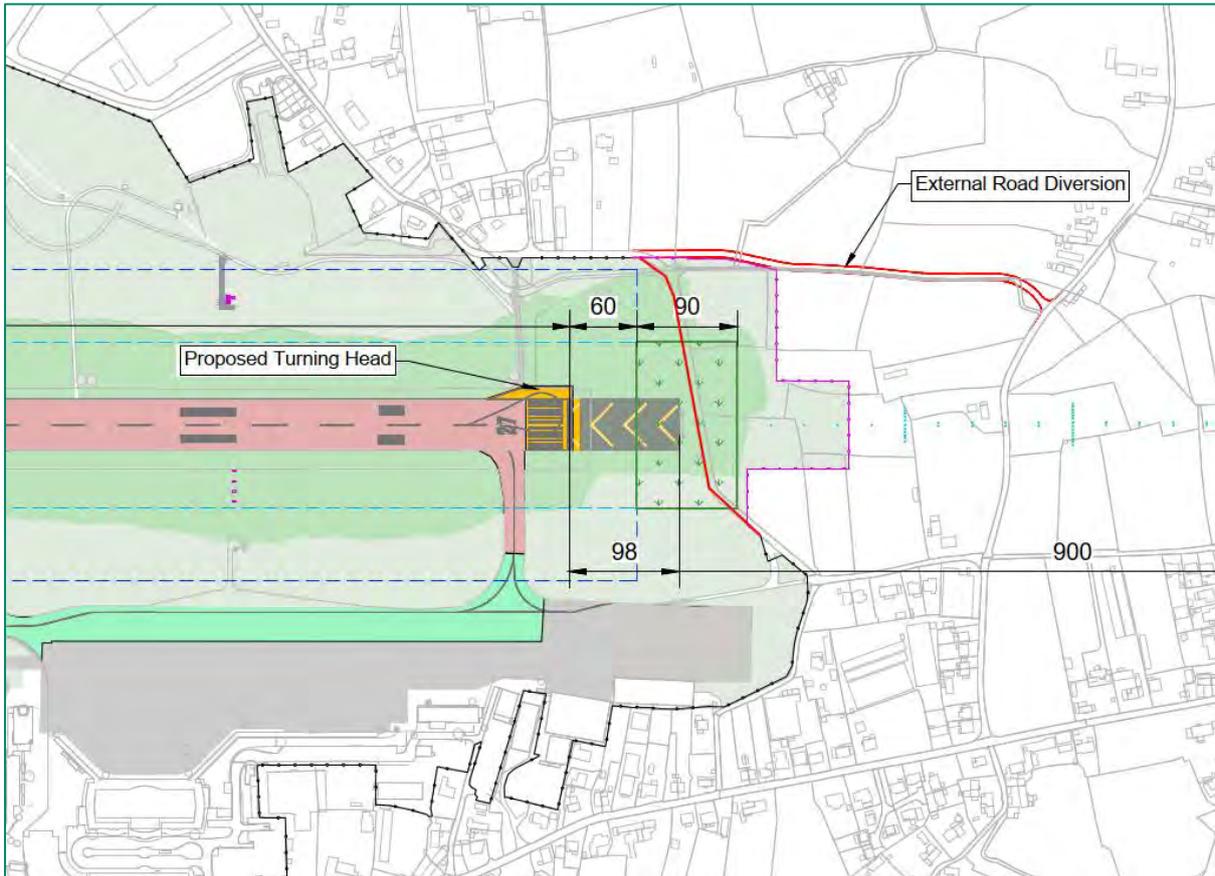


Figure 12.1 Closure of La Villiaze Road Option – Threshold 27

Appendix A Drawings



Project

**Guernsey Airport
Master Planning**

Client

States of Guernsey

States Trading Supervisory Board
Brickfield House
St Andrews
Guernsey
GY1 3AS

Consultant

AECOM
Midpoint
Alencon Link
Basingstoke
RG21 7PP
United Kingdom
Fax +(44)1256 310201
Tel +(44)1256 310200
www.aecom.com

Notes

1. All dimensions are in metres unless stated otherwise.
2. Topographic information is yet to be validated and is therefore shown for information purposes only.

Legend

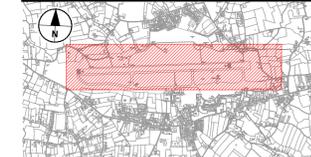
- Existing Pavement
- Proposed Earthworks
- Grass Areas
- Proposed EMAS Pavement
- Proposed Pavement - PCN 50 New Pavement
- Proposed Pavement - PCN 50 Overlay
- Proposed Pavement - PCN 50 Reconstruction
- Proposed Runway Strip
- Proposed Clear & Graded Area
- Proposed CAT1 Precision Approach Lights
- Proposed Indicative Retaining Wall - 1m in height
- Proposed Indicative Retaining Wall - 2.5m in height
- Proposed Indicative Retaining Wall - 3.5m in height
- Existing Indicative Airfield Fence Line
- Proposed RESA

FOR
INFORMATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P01	14.04.2023	FOR INFORMATION

KEY PLAN



Suitability Status

S2 - Suitable For Information

PROJECT NUMBER

60705444

SHEET TITLE

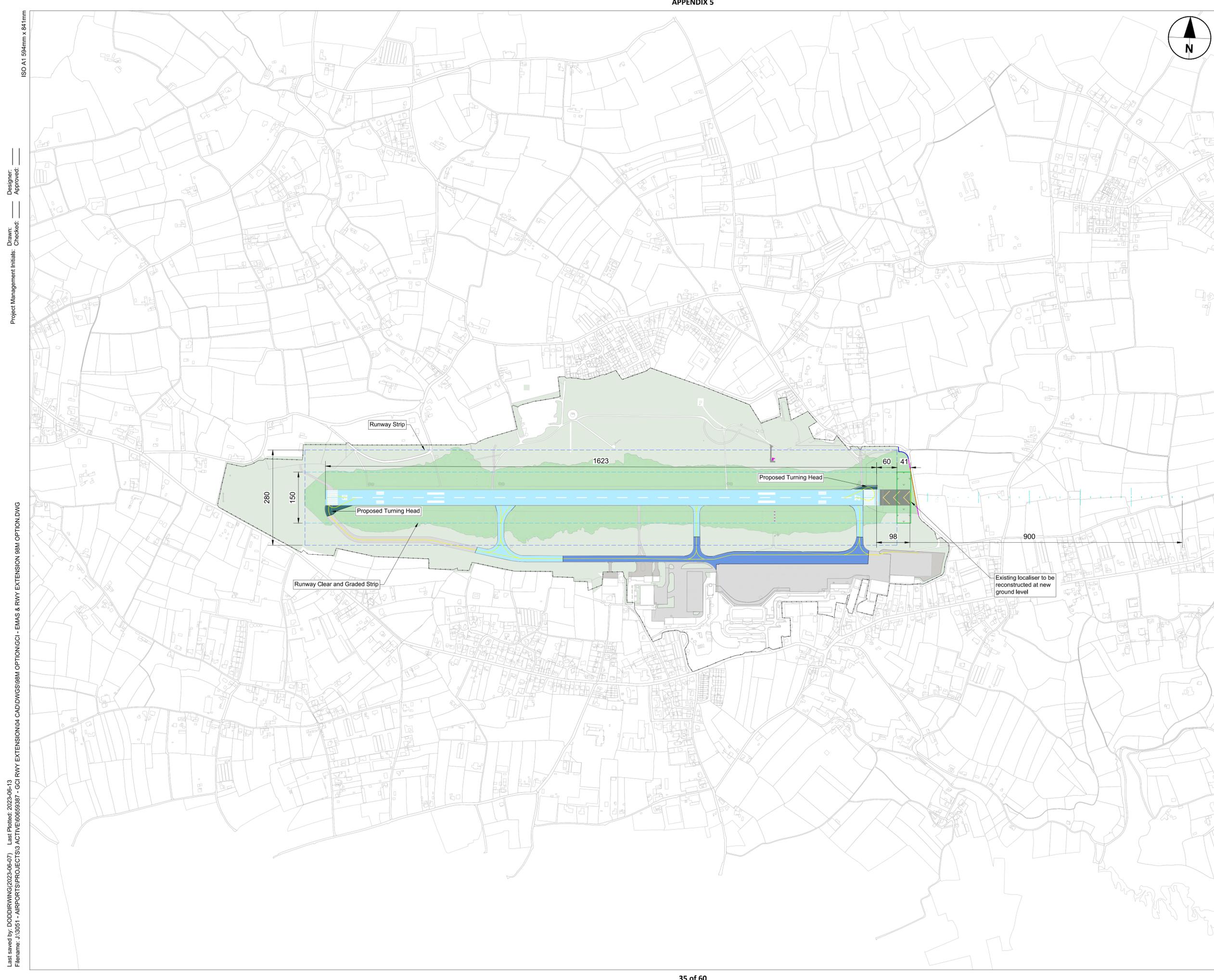
98m Option - Sheet 1
1623m Runway Extension
+98m EMAS RESA

Sheet Number

60705444-ACM-ARF-XX-DR-CE-000001

Scale: 1:2000

Rev: P01



ISO A1 594mm x 841mm
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Project
Guernsey Airport Master Planning

Client
States of Guernsey

States Trading Supervisory Board
 Brickfield House
 St Andrews
 Guernsey
 GY1 3AS

Consultant

AECOM
 Midpoint
 Alencon Link
 Basingstoke
 RG21 7PP
 United Kingdom
 Fax +(44)1256 310201
 Tel +(44)1256 310200
 www.aecom.com

Notes

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2. Topographic information is yet to be validated and is therefore shown for information purposes only.

Legend

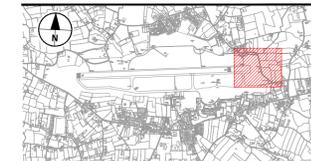
- Existing Pavement
- Proposed Earthworks
- Grass Areas
- Proposed EMAS Pavement
- Proposed Pavement - PCN 50 New Pavement
- Proposed Pavement - PCN 50 Overlay
- Proposed Pavement - PCN 50 Reconstruction
- Proposed Runway Strip
- Proposed Clear & Graded Area
- Proposed CAT1 Precision Approach Lights
- Proposed Indicative Retaining Wall - 1m in height
- Proposed Indicative Retaining Wall - 2.5m in height
- Proposed Indicative Retaining Wall - 3.5m in height
- Existing Indicative Airfield Fence Line
- Proposed RESA

FOR
INFORMATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P01	14.04.2023	FOR INFORMATION

KEY PLAN



Suitability Status

S2 - Suitable For Information

PROJECT NUMBER

60705444

SHEET TITLE

98m Option - Sheet 3
 1623m Runway Extension
 27 End

Sheet Number

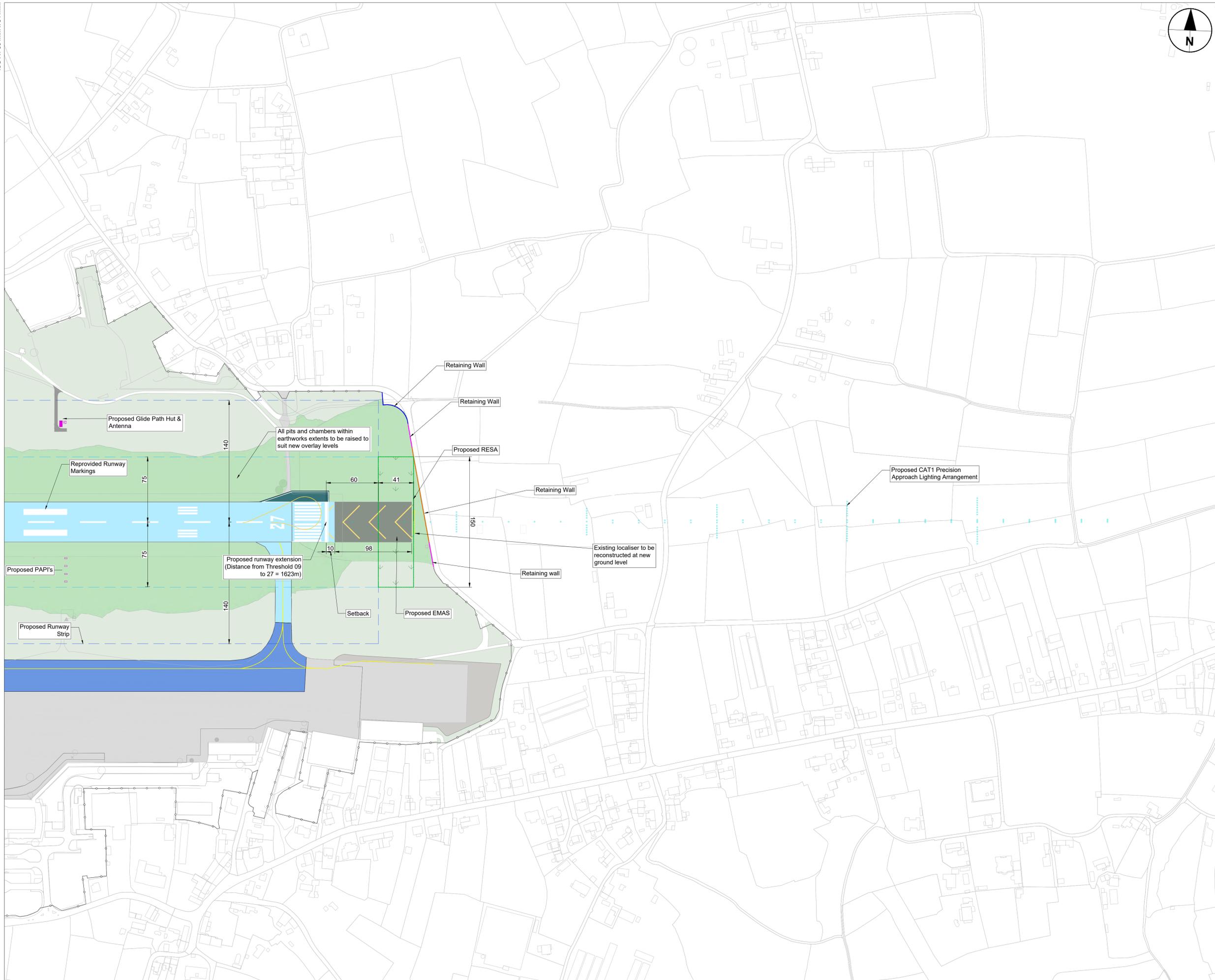
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Scale: 1:2000

Rev: P01

Project Management Initials: Designer: _____ Checked: _____ Approved: _____

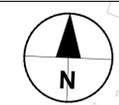
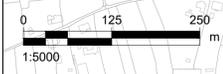
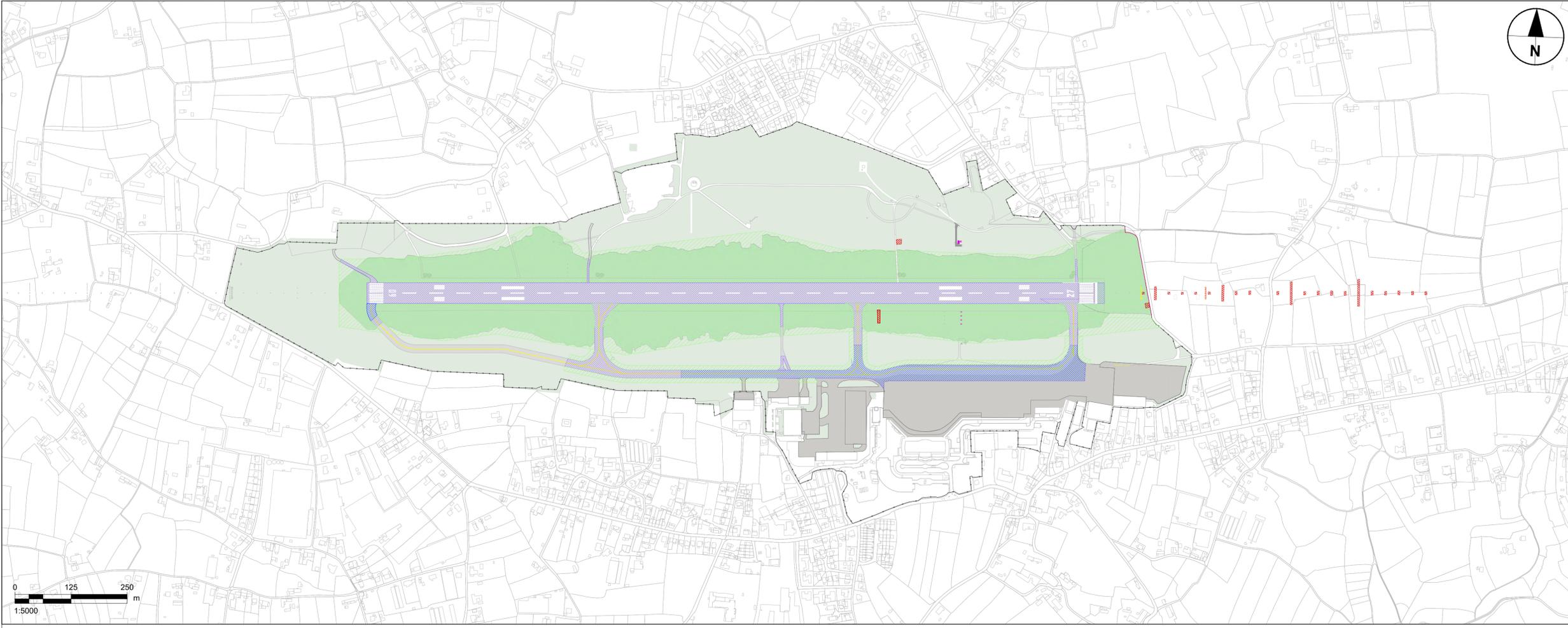
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ISO A1 594mm x 841mm

Project Management Initials: _____
 Designer: _____
 Checked: _____
 Approved: _____



Project
Guernsey Airport Master Planning

Client
 States of Guernsey
 States Trading Supervisory Board
 Brickfield House
 St Andrews
 Guernsey
 GY1 3AS

Consultant
AECOM
 Midpoint
 Alencon Link
 Basingstoke
 RG21 7PP
 United Kingdom
 Fax +(44)1256 310201
 Tel +(44)1256 310200
 www.aecom.com

- Notes**
1. All dimensions are in metres unless stated otherwise.
 2. Topographic information is yet to be validated and is therefore shown for information purposes only.
 3. This drawing is for costing purposes only

- Legend**
- Existing Pavement
 - Proposed Earthworks
 - Grass Areas
 - Ground clearance, low level vegetation and topsoil strip. Manholes & Pits to be Raised
 - Pavement to be Plained Off (20mm)
 - Pavement to be Broken Out (Full Depth)
 - Existing NAVAIDS to be Removed
 - Existing Indicative Airfield Fence Line
 - Existing Airfield Fence to be Removed
 - Existing localiser to be reconstructed at new ground level

FOR INFORMATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P01	04.04.2023	FOR INFORMATION



Suitability Status
 S2 - Suitable For Information

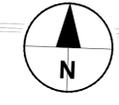
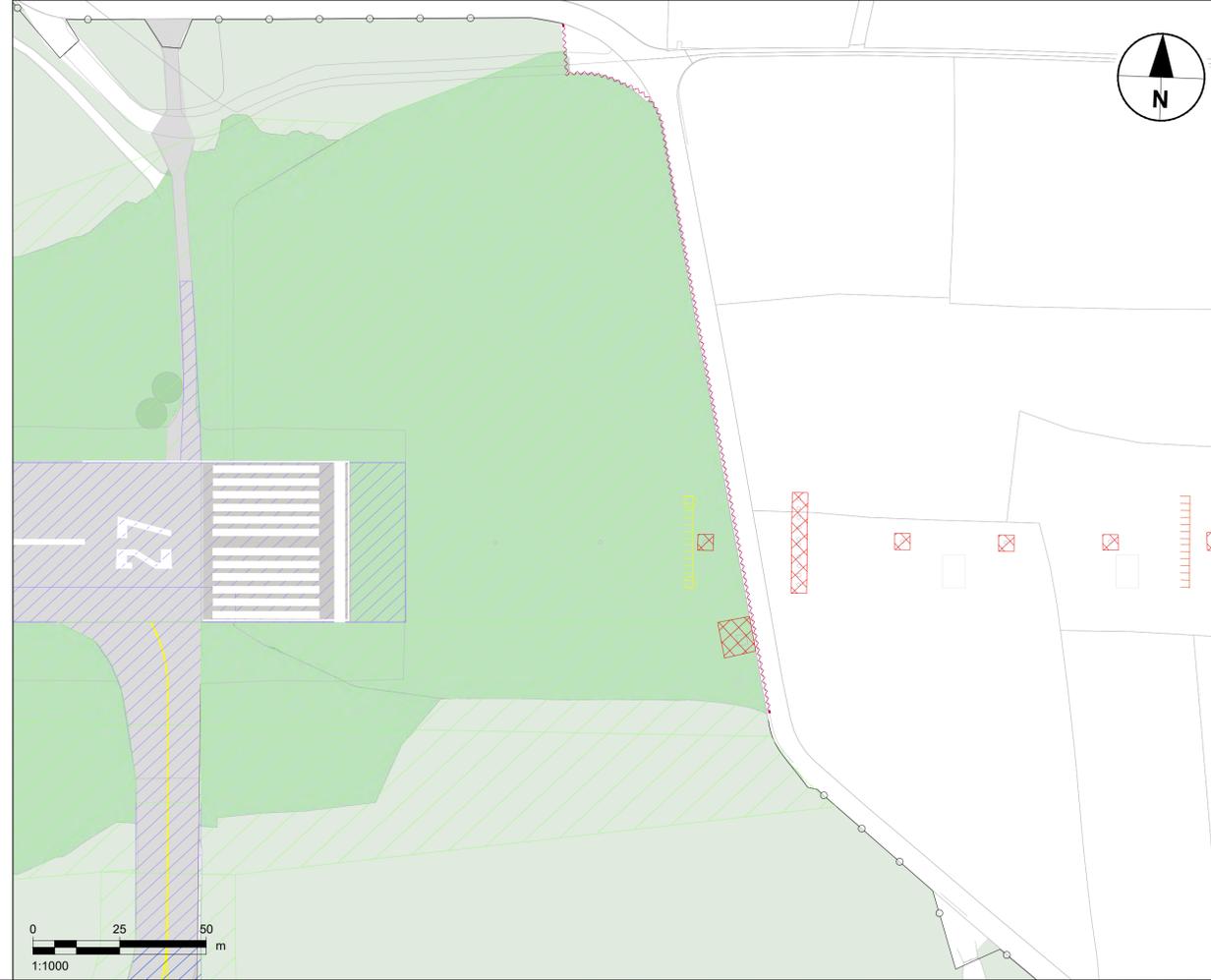
PROJECT NUMBER
 60705444

SHEET TITLE
 98m Option - Sheet 4
 1623m Runway Extension
 Site Clearance

Sheet Number
 60705444-ACM-ARF-XX-DR-CE-000005

Scale: 1:2000 **Rev:** P01

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Appendix B Cost Breakdown

Guernsey Airport
States of Guernsey
Stage 1 Order of Cost Estimate - Runway Project 98m
Option

May 2023

Contents

- 1.0 Executive Summary
- 2.0 Assumptions
- 3.0 Exclusions & Risk
- 4.0 Cost Plan Summary

Title	Revision	Issue Date	Parties Issued to	Prepared By	Checked By	Authorised By
Cost Plan	R1	26/05/2023	AECOM	Richard Phillips	Rowan Morrison	Jamie Macdonald

1.0 Executive Summary

- 1.1 This rough order of cost estimate has been prepared by AECOM for review/discussion with States of Guernsey for the proposed Runway Project at Guernsey Airport.
- 1.2 An order of cost estimate was issued in January 2022, which considered costs for strengthening the runway and taxiway to ensure its continued suitability for larger aircraft types up to and including the A320 series aircraft derivatives, and other common costs throughout the options. These costs were represented in the 'base build' figures and the additional options considered were as follows:
- Option 1 – Extension of the paved surface to provide a TORA & LDA of 1,700m with 240m traditional RESA
 - Option 2 (a) - Extension of the paved surface to provide a TORA & LDA of 1,700m with 120m EMAS RESA with land reclamation and reprofiling
 - Options 2 (b) – Extension of the paved surface to provide a TORA & LDA of 1,700m with 120m EMAS RESA using a stilted structure out to the east
 - Option 3 (a) - Extension of the paved surface to provide a TORA & LDA of 1,740m with 120m EMAS RESA with land reclamation and reprofiling
 - Option 3 (b) - Extension of the paved surface to provide a TORA & LDA of 1,740m with 120m EMAS RESA using a stilted structure out to the east
 - Option 4- Reconfiguration of the current paved surface to provide a TORA & LDA of 1,583m within the current aerodrome boundary with mandatory minimum 90m traditional RESA
- 1.3 We have since been requested to provide a rough order of cost estimate for an extension of the paved surface to provide a TORA & LDA of 1,623m with a 98m EMAS RESA, which is set out within this report.
- 1.4 The design is based on a scheme developed by Runway Safe, utilising their EMAS system and does not achieve the minimum RESA lengths required in the aerodrome design standards. At the time of this report, this arrangement has not been confirmed as acceptable with the CAA.
- 1.5 The overall Estimated Construction Cost is summarised below:-

Construction Costs		Base Build	98m Option	TOTAL
0. Facilitating works estimate		Excluded	Excluded	Excluded
8. External Works		£ 26,441,504	£ 11,467,121	£ 37,908,625
Main contractors preliminaries estimate	27.5%	£ 7,271,414	£ 3,153,458	£ 10,424,872
Sub-total		£ 33,712,917	£ 14,620,580	£ 48,333,497
Main Contractor's overheads and profit estimate	7%	£ 2,359,904	£ 1,023,441	£ 3,383,345
Works cost estimate		£ 36,072,821	£ 15,644,020	£ 51,716,842
Project/design team fees estimate	12%	£ 4,328,739	£ 1,877,282	£ 6,206,021
Sub-total		£ 40,401,560	£ 17,521,303	£ 57,922,863
Other development/project costs estimate		Excluded	Excluded	Excluded
Base cost estimate		£ 40,401,560	£ 17,521,303	£ 57,922,863
Risk allowances estimate	15.0%	£ 6,060,234	£ 2,628,195	£ 8,688,429
Cost limit (excluding inflation)		£ 46,461,794	£ 20,149,498	£ 66,611,292
Tender inflation estimate	6.99%	£ 3,248,437	£ 1,408,778	£ 4,657,215
Cost limit (excluding construction inflation)		£ 49,710,231	£ 21,558,276	£ 71,268,507
Construction inflation estimate	0.97%	£ 480,403	£ 208,340	£ 688,743
Cost limit (including inflation)		£ 50,190,633	£ 21,766,617	£ 71,957,250
VAT assessment		Excluded	Excluded	Excluded

- 1.6 The Estimated inflation allowances are as follows:

		98m Option 18 month duration		
BCIS Civil Eng April 23	Key Stage	Date		Uplift
Cost Index	Current	May-23	203.1	
	Tender Return	Aug-25	217.3	6.99%
Cost Index	Close	Aug-25	217.3	
	Mid-Point	May-26	219.4	0.97%
				7.96%

- 1.7 A build up to the cost plan is included in Section 4.0.
- 1.8 Assumptions & Exclusions to the Estimates are listed in Sections 2.0 and 3.0.
- 1.9 The cost plan is based on current day pricing at 2Q 2023.
- 1.10 All costs assume the works will be competitively tendered.
- 1.11 The Cost Estimate has been prepared solely for the use of States of Guernsey and should not be relied upon by any third party.

2.0 Assumptions

- 1) While it is possible to re-use some materials that will be won on-site, this estimate does not make any allowance for this with the exception of earthworks (sub/topsoil). Assumption is that all materials are new/imported.
- 2) Assumes all works to be carried out consecutively under one project.
- 3) Preliminaries of 27.5% are based on 1 continuous phase, mobilisation, site compound, batching plant, demobilisation.
- 4) Risk/contingency is set at 15% due to stage of design.
- 5) An allowance has been made for working around utilities/services but it is assumed that most services will be avoided due to shallow depth of excavations other than to bury new drainage.
- 6) No works required to existing AGL station/system
- 7) No works required in connection with electrical substations; location of attenuation/pumping station to be determined to minimise impact on existing road
- 8) Existing pits are assumed to be structurally sound and capable of being raised to match new ground levels
- 9) Fill material assumed at PC rate £57.10/m³, material selection to be confirmed
- 10) Tender return assumed at 3Q2025 with a Contract award at August 2025 with 18 month construction duration.
- 11) Project/design fees at 12% based on majority mainland provision.
- 12) EMASEME AB ROM price indication for EMASMAX at Guernsey Airport Runway 09 Departure end, March 9, 2023. (shipping EUR 1m at exchange rate of EUR 1 to GBP £0.88) plus allowance for installation, insurance and risk.
- 13) Based on BCIS data, rates have been uplifted by 30% based on upper limit of 90% confidence interval, see below:

Location (using 2000 boundaries data)						
Downloaded:	03-Apr-2023 11:21					
Base:	UK mean = 100					
Updated:	10-Mar-2023					
Effective date:	Latest					
Location	Index	90% confidence interval	Standard deviation	Range	Sample	
Islands	110	109 - 112	14	82 - 161	150	
<i>Isle of Man</i>	106	104 - 108	11	82 - 134	70	
<i>Channel Islands</i>	114	112 - 117	15	88 - 161	80	
Guernsey	125	120 - 130	16	103 - 161	29	
Jersey	109	106 - 111	11	88 - 127	51	

3.0 Exclusions & Risks

Exclusions

- 1) Any works outwith the boundary of the site
- 2) Client costs such as legal and planning fees and any land acquisition costs are excluded
- 3) Client Project Management/Engineering Fees and attendance costs
- 4) Weekend working
- 5) Large scale traffic management
- 6) Permanent service diversions and working near or adjacent to existing services
- 7) Demolition of existing structures within IDP land area
- 8) Eradication of Japanese knotweed, giant hogweed or other invasive plant
- 9) Temporary support to adjacent structures; removal diversion of existing road
- 10) External planting and irrigation systems
- 11) IRVR System including connections, electrical work inside existing substation
- 12) Facilitating works- toxic/hazardous contaminated material, major demolitions, temporary supports, archaeological works, specialist ground works, temporary diversions and extraordinary site investigations
- 13) Any works in connection with existing AGL station
- 14) Works in connection with any unidentified underground structures or storage tanks
- 15) Crack repairs and regulating layers
- 16) Costs relating to import of goods and customs clearance
- 17) Refer to Section 4.0 for specific exclusions
- 18) VAT

Risks

- 1) If there are a substantial number of services this will have an increased cost but this risk is currently considered low
- 2) Limited information on existing drainage and services
- 3) Ground contamination and asbestos containing materials
- 4) Design Development
- 5) Labour, material shortages and logistical challenges associated with the project location
- 6) COVID/other global pandemic related construction delays
- 7) UXO, archaeology, high water table and unexpected poor ground or pavement stability/conditions
- 8) Whilst not factored into the risk percentage for this cost estimate. It must be noted that without the non-compliant RESA arrangement confirmed with the CAA it is possible that the scheme that this cost is based on may not be possible. Providing a compliant RESA whilst maintaining the desired LDA would likely incur notable additional costs and disruptions to the airport and externally.

Ref:	Description:	BASE BUILD		Notes:
		Total		
0	<u>Facilitating Works</u>			
0.1	Toxic/hazardous/contaminated material treatment		Excluded	
0.2	Major demolition work		Excluded	
0.3	Temporary support for adjacent structures		Excluded	
0.4	Specialist groundworks		Excluded	
0.5	Temporary diversion works		Excluded	
0.6	Extraordinary site investigation works		Excluded	
8	<u>External Works</u>			
8.1	Site Preparation Works			
8.1.1	Site clearance			
8.1.1.1	Clearing vegetation; disposing of arisings	£	68,325	assumed over existing soft landscaped areas
8.1.1.5	Minor demolition works;			
	Removal of existing concrete units	£	34,500	approx. area on plan, assumed 500 depth
	Removal of glide path hut and antenna	£	12,000	assumed (nb- bases measured above)
	Removal of ILS hut and equipment	£	12,000	assumed (nb- bases measured above)
8.1.2	Preparatory groundworks			
8.1.2.1	Forming new site contours and adjusting existing site levels			
	Existing subgrade excavated to formation level; stock piled	£	246,305	cubic area
	Existing topsoil to be removed and stock piled	£	446,388	assumed 200 deep
	Filling to make up levels	£	111,495	excavated material
	Earthworks - General grading	£	728,797	allowance from on stock piles
	Allowance for semi permanent spoil heaps	£	50,000	
	Removal excavated material off site	£	184,240	Provisional rate/allowance
	Page Total	£	1,894,049	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	1,894,049	
8.1.2	Preparatory groundworks Cont'd			
8.1.2.2	Breaking out existing substructures; concrete base 500 deep	£	5,000	allowance
8.1.2.3	Breaking out existing hard paving's;			
	surface to be excavated to drainage formation level	£	-	excluded, part of drainage channel item
	taxiway surface to be fully broken out - 700mm depth	£	2,776,210	assume as taxiway delta core C15 (200 asphalt/bit + 350 lean concrete +150 granular)
	surfaces to be planed by 20mm	£	1,524,348	disposal on site for reuse
	surfaces to be planed by 20mm	£	181,940	existing access tracks disposal off site
	extra over for NPO and night shifts	£	150,000	allowance
	working around and adjacent to existing services	£	25,000	allowance
8.1.2.5	Grubbing up old manholes and the like; chambers	£	-	Excluded
8.2	Roads, paths, paving's and surfacing's			
8.2.1	Roads, paths and paving's			
8.2.1.1	Roads;			
	100 Marshall mastic asphalt surface course and 160 Marshall mastic asphalt base course	£	7,508,016	Runway Overlay
	100 Marshall mastic asphalt surface course and 160 Marshall mastic asphalt base course	£	1,312,740	Taxiway Overlay
	100 Marshall mastic asphalt surface course and 160 Marshall mastic asphalt base course	£	421,770	Access tracks
	100 Marshall mastic asphalt surface course; 300 Marshall mastic asphalt base course; 150 DLC; 150 granular material	£	4,863,753	Taxiway new build/reconstruction
	Road to glide path hut	£	136,500	allowance 6 wide
	Page Total	£	20,799,327	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	20,799,327	
8.2.1.1	Roads; Cont'd			
	Intersection overlay pavement runway construction	£	12,000	allowance
	Intersection overlay pavement access track construction	£	15,000	allowance
	Allowance for sacrificial layer ; 50mm deep	£	483,531	
	Cut back surface and binder to form clean vertical edge	£	95,872	allowance
	Ramping to pits	£	60,000	allowance
8.2.1.12	Pavement markings	£	100,000	allowance for temporary and permanent
8.2.1.13	Repairs to existing roads, paths and paving's; allowance for repairs to existing subbase	£	10,000	allowance
8.3	Soft landscaping, planting and irrigation systems			
8.3.1	Seeding and turfing			
8.3.1.4	Work to grassed areas	£	318,849	re-profiling - topsoil/re-seeding
8.3.1.5	Maintenance of grassed areas	£	455,498	allowance 12 months
8.4	Fencing, railings and walls	n/a		
8.5	External fixtures			
8.5.1	Site/street furniture and equipment	n/a		
	Page Total	£	22,350,076	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	22,350,076	
8.6	External drainage			
8.6.1	Surface water and foul water drainage		n/a	
8.6.1.1	Connections to statutory undertaker's sewers		n/a	
8.6.1.2	Drainage runs below ground		n/a	
8.6.1.3	Drainage runs above ground		n/a	
8.6.1.4	Prefabricated channels		n/a	
8.6.1.5	Manholes and the like		n/a	
8.6.1.6	Alterations to existing external drainage			
	Excavate and remove top 100 existing pervious macadam	£	83,200	assume 1m width
	Reinstate 240 type 1 granular material topped with 100 pervious macadam	£	192,400	assume 1m width
	Raise existing drainage manholes to new overlay levels	£	62,000	re-use of covers
	Raise existing drainage gully's to new overlay levels	£	77,700	re-use of gratings
8.6.1.7	Works to existing manholes	£	-	Excluded
8.6.1.8	Clearing existing drains	£	-	Excluded
8.6.1.9	Sealing redundant drains; grouting 150 diameter pipework	£	-	Excluded
8.6.1.10	Filling disused manholes and the like; 1200 diameter, n.e 1500 deep	£	-	Excluded
8.6.1.11	Testing of installations	£	10,383	
8.6.1.12	Commissioning of installations	£	6,230	
	Page Total	£	22,781,988	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	22,781,988	
8.6.2	Ancillary drainage systems	n/a		
8.6.4	Land drainage	n/a		
8.7	External services			
8.7.1	Water mains supply	n/a		
8.7.2	Electrical mains supply			
8.7.2.1	Connections to statutory undertaker's electricity main	n/a		
8.7.2.3	Transformer substations	n/a		
8.7.4	Electricity distribution to external plant and equipment			
8.7.4.1	Connections to external plant or equipment	n/a		
8.7.4.3	Service runs; LV cabling from substations	n/a		
	Service runs; LV cabling from DB's to CCRS	n/a		
8.7.5	Gas mains supply	n/a		
8.7.6	Telecommunications and other communication system connections			
8.7.6.1	Telecommunication connections	£	25,680	
8.7.6.4	Service runs; Primary cable; 5kV	n/a		
	Service runs; Secondary cable; single core	£	22,200	
	Page Total	£	22,829,868	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	22,829,868	
8.7.9	External street lighting systems			
8.7.9.3	External lighting to roads; AGL- existing lights			
	Runway and Taxiway Centreline Lights	£	94,000	re-use of existing lights
	Runway and Taxiway Edge Lights	£	62,100	new base included in BWICS
	Threshold Lights	£	11,280	re-use of existing lights
	Signage	£	4,680	new base included in BWICS
	Re-install existing lights	£	29,110	in area of taxiway reconstruction
	Re-install existing edge lights	£	27,880	in area of taxiway reconstruction
	External lighting to roads; AGL- new lights			
	Taxiway Centre line Lights	£	17,600	in area of taxiway reconstruction
	Taxiway Edge Lights	£	21,170	in area of taxiway reconstruction
	PAPI's	£	9,390	ADB Signage
	Shallow cans	£	7,140	ADB Safeguard
	Mounting plates	£	5,100	ADB Safeguard
	Approach lighting	£	440,000	CEL aviation QQ6417-109 (Dec.21) + allowance for installation + inflation allowance
	CAT 1 Glidepath	£	130,000	
	CAT 1 ILS and gantry	£	2,000,000	allowance
	Series circuit transformers; 30/45W	£	4,335	
	Page Total	£	25,693,653	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	25,693,653	
8.7.11	Builder's work in connection with external services			
8.7.11.1	Ducts and the like;			
	20 diameter; 1nr	£	140,000	in taxiway reconstruction
	Extra over for concrete surround	£	3,500	allow for 10%
	Manholes; raising existing	£	110,500	
	Extra over allowance for new covers	£	48,750	50% of chambers raised
8.7.11.2	Supports to external storage tanks, vessels and the like	n/a		Excluded
8.7.11.3	Fuel bunds and the like	n/a		Excluded
8.7.11.4	Protective compounds, fencing, storage racks	n/a		Excluded
8.7.11.5	Protective compounds connected with transformer sub-stations and the like	n/a		Excluded
8.7.11.6	Bases for service equipment			
	Mast foundations; 800 x 800 x 400	£	22,000	
	PAPI base, 900 x 900 x 500	£	2,000	
	Edge lighting base, 600 x 600 x 200	£	34,500	
	Existing sign base, 2500 x 1200 x 200	£	5,400	
	GRP hut; concrete base 5000 x 5000 x 500 deep	£	10,000	
	ILS gantry; concrete base 20000 x 5000 x 500 deep	£	15,000	
	Miscellaneous bases and the like	£	18,750	allowance
	Page Total	£	26,104,053	

Ref:	Description:	BASE BUILD		Notes:
		Total		
	Total Carried forward	£	26,104,053	
8.7.11.7	Other builder's work in connection with external services			
	Removal of services and ducts; assumed redundant services, two way ducts; less than 1.50m depth, backfilling	£	50,525	in taxiway reconstruction and existing ILS and Glidepath
	Removal of lighting pits	£	3,900	in taxiway reconstruction
	Removal of existing lighting cables	£	30,525	in taxiway reconstruction
	Removal of existing lights	£	11,875	in taxiway reconstruction
	Removal of existing edge lights	£	13,500	in taxiway reconstruction
	Removal of existing PAPI's	£	2,000	in taxiway reconstruction (group of 4)
	Removal of existing approach lights	£	45,900	
8.7.11.8	Testing of installations	£	85,860	
8.7.11.9	Commissioning of installations	£	51,516	
8.8	Minor building works and ancillary buildings			
	GRP huts	£	36,000	(ILS and Glidepath)
	Fit out of cabins	£	5,850	Db's, lighting etc
TOTAL CARRIED FORWARD TO SUMMARY		£	26,441,504	

Ref:	Description:	98m Option		Notes:
		Total		
0	<u>Facilitating Works</u>			
0.1	Toxic/hazardous/contaminated material treatment		Excluded	
0.2	Major demolition work		Excluded	
0.3	Temporary support for adjacent structures		Excluded	
0.4	Specialist groundworks		Excluded	
0.5	Temporary diversion works		Excluded	
0.6	Extraordinary site investigation works		Excluded	
8	<u>External Works</u>			
8.1	Site Preparation Works			
8.1.1	Site clearance			
8.1.1.1	Clearing vegetation; disposing of arisings	£	7,562	assumed over existing soft landscaped areas
8.1.1.5	Minor demolition works;			
	Removal of existing fencing	£	52,800	assumed 2400 high with BTC
	Extra over for removal of gate	£	2,500	
8.1.2	Preparatory groundworks			
8.1.2.1	Forming new site contours and adjusting existing site levels			
	Existing subgrade excavated to formation level; stock piled	£	31,679	cubic area- allow area of RESA built on soft
	Existing topsoil to be removed and stock piled	£	9,267	assumed 200 deep
	Filling to make up levels	£	20,095	excavated material
	Filling to make up levels	£	1,863,510	imported material specification to be clarified
	Extra over filling to make up levels	£	-	n/a
	Earthworks - General grading	£	3,026	allowance from on stock piles
	Allowance for semi permanent spoil heaps	£	25,000	
	Page Total	£	2,015,439	

Ref:	Description:	98m Option		Notes:
		Total		
	Total Carried forward	£	2,015,439	
8.1.2	Preparatory groundworks Cont'd			
8.1.2.2	Breaking out existing substructures; concrete base 500 deep		n/a	
8.1.2.3	Breaking out existing hard paving's;			
	extra over for NPO and night shifts	£	75,000	allowance
	working around and adjacent to existing services	£	25,000	allowance
	break out existing road			Excluded
8.1.2.5	Grubbing up old manholes and the like; chambers			Excluded
8.2	Roads, paths, paving's and surfacing's			
8.2.1	Roads, paths and paving's			
8.2.1.1	Roads;			
	100 Marshall mastic asphalt surface course and 160 Marshall mastic asphalt base course	£	229,500	Runway Overlay
	100 Marshall mastic asphalt surface course; 300 Marshall mastic asphalt base course; 150 DLC; 150 granular material	£	133,380	Taxiway new build/reconstruction
	New public carriageway diversion			Excluded
	Allowance for crossings			Excluded
	100 Marshall mastic asphalt surface course; 100 Type 1 base course; 500 granular material	£	426,544	shoulder strength pavement
	EMAS, 98m length; EMASMAX	£	6,400,000	as per runway safe budget cost March 2023 + delivery + equipment+ install
	Intersection overlay pavement runway construction	£	10,000	allowance
	Allowance for sacrificial layer ; 50mm deep	£	81,668	
	Cut back surface and binder to form clean vertical edge	£	5,188	allowance
	Ramping to pits	£	10,000	allowance
	Page Total	£	9,411,720	

Ref:	Description:	98m Option		Notes:
		Total		
	Total Carried forward	£	9,411,720	
8.2.1	Roads, paths and paving's Cont'd			
8.2.1.12	Pavement markings	£	25,000	allowance for temporary and permanent
8.2.1.13	Repairs to existing roads, paths and paving's; allowance for repairs to existing subbase	£	5,000	allowance
8.3	Soft landscaping, planting and irrigation systems			
8.3.1	Seeding and turfing			
8.3.1.4	Work to grassed areas	£	35,290	re-profiling - topsoil/re-seeding
8.3.1.5	Maintenance of grassed areas	£	50,414	allowance 12 months
8.4	Fencing, railings and walls			
8.4.1	Fencing	£	132,000	allowance above retaining wall
8.4.3	Retaining walls			
	1.0m high	£	54,000	0.94m, 1.50m wide x 0.5m basket at base, 1.0m x 1.0m basket on top.
	2.5m high	£	112,500	prorata
	3.5m high	£	346,500	prorata
8.5	External fixtures		n/a	
	Page Total	£	10,172,423	

Ref:	Description:	98m Option		Notes:
		Total		
	Total Carried forward	£	10,172,423	
8.6	External drainage			
8.6.1	Surface water and foul water drainage			
8.6.1.1	Connections to statutory undertaker's sewers	£	2,500	allowance
8.6.1.2	Drainage runs below ground rising main; depth n.e. 1.5m	£	75,000	
8.6.1.3	Drainage runs above ground	n/a		allowance
8.6.1.4	Prefabricated channels Gatic ultraslot channel; 300 diameter	£	108,450	assumed specification
8.6.1.5	Manholes and the like 1200 diameter; 1.50m to 3m deep 1500 diameter; 1.50m to 3m deep New gulley's	£	38,000 7,000	 n/a
8.6.1.6	Alterations to existing external drainage Locating and breaking into existing drainage line Allowance for protection of existing drainage	£	5,000 10,000	allowance
8.6.1.7	Works to existing manholes	£	-	Excluded
8.6.1.8	Clearing existing drains	£	-	Excluded
8.6.1.9	Sealing redundant drains; grouting 150 diameter pipework	£	-	Excluded
8.6.1.10	Filling disused manholes and the like; 1200 diameter, n.e 1500 deep	£	-	Excluded
8.6.1.11	Testing of installations	£	6,149	
8.6.1.12	Commissioning of installations	£	3,689	
	Page Total	£	10,428,211	

Ref:	Description:	98m Option	Notes:
		Total	
	Total Carried forward	£ 10,428,211	
8.6.2	Ancillary drainage systems		
8.6.2.1	Pumping stations	£ 85,000	allowance incl power
8.6.2.6	Attenuation Tank	£ 619,000	600m3 at a depth of 3m
8.6.2.7	Testing of installations	£ 17,600	
8.6.2.8	Commissioning of installations	£ 10,560	
8.6.4	Land drainage	£ 90,000	allowance
8.7	External services		
8.7.1	Water mains supply	n/a	
8.7.2	Electrical mains supply		
8.7.2.1	Connections to statutory undertaker's electricity main	n/a	
8.7.2.3	Transformer substations		excluded
8.7.4	Electricity distribution to external plant and equipment		
8.7.4.1	Connections to external plant or equipment	n/a	
8.7.4.3	Service runs; LV cabling from substations	n/a	
	Service runs; LV cabling from DB's to CCRS	n/a	
	Page Total	£ 11,250,371	

		98m Option	
Ref:	Description:	Total	Notes:
	Total Carried forward	£ 11,250,371	
8.7.5	Gas mains supply	n/a	
8.7.6	Telecommunications and other communication system connections		
8.7.6.1	Telecommunication connections	£ 5,050	
8.7.6.4	Service runs; Primary cable; 5kV	£ 1,200	6mm unscreened
	Service runs; Secondary cable; single core	£ 6,000	
8.7.9	External street lighting systems		
8.7.9.3	External lighting to roads; AGL- new lights		
	Runway End Lights	£ 11,550	
	Runway Centreline Lights	£ 3,500	
	Threshold Lights	£ 20,020	ADB Safeguard
	Turning Circle Lights	£ 33,000	ADB Safeguard
	Shallow cans	£ 14,140	ADB Safeguard
	Mounting plates	£ 10,100	ADB Safeguard
	IRVR System	Excluded	
	Series circuit transformers; 30/45W	£ 8,585	
	Page Total	£ 11,363,516	

Ref:	Description:	98m Option		Notes:
		Total		
	Total Carried forward	£	11,363,516	
8.7.11	Builder's work in connection with external services			
8.7.11.1	Ducts and the like; 150 diameter; 4nr	£	31,200	
	Extra over for concrete surround			Excluded
	Manholes; 1320 x 1320, average 1.2m deep, CUBIS	£	15,730	
	Allowance for BWICS to stilted structure	£	-	allowance
8.7.11.2	Supports to external storage tanks, vessels and the like	n/a		Excluded
8.7.11.3	Fuel bunds and the like	n/a		Excluded
8.7.11.4	Protective compounds, fencing, storage racks	n/a		Excluded
8.7.11.5	Protective compounds connected with transformer sub-stations and the like	n/a		Excluded
8.7.11.6	Bases for service equipment			
	Edge lighting base, 600 x 600 x 200	£	4,500	
	Miscellaneous bases and the like	£	7,500	allowance
8.7.11.7	Other builder's work in connection with external services			
	LV/Comms diversion; two way ducts; less than 1.50m depth, backfilling	£	8,550	
8.7.11.8	Testing of installations	£	18,063	
8.7.11.9	Commissioning of installations	£	18,063	
8.8	Minor building works and ancillary buildings			Excluded
TOTAL CARRIED FORWARD TO SUMMARY		£	11,467,121	

APPENDIX 5

Submitted by:-

AECOM
1 Tanfield
Edinburgh
EH3 5DA

APPENDIX 5

aecom.com