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Review of the PSO – Long Term Future

Summary Report

Supported by Northpoint Aviation Services

Aviation, Travel and Tourism Consultants

Llywodraeth Cymru
Welsh Government

Title: **Review of the PSO – Long Term Future**

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EXECUTIVE SUMMARY

Introduction

Public Service Obligation air services are a permitted class of aviation state aid that addresses defined socio economic need. In the EU they are governed by Regulation (EC) No 1008/2008 and Council Regulation (EEC) 3577/92.

The PSO (Public Service Obligation) between Cardiff Airport and a specially created civil enclave at RAF Valley, referred to in civil aviation terminology as Anglesey Airport, was first operated in 2007 and in the subsequent ten years has become established as a way of conveniently travelling between North West and South Wales for a same day return business trip. The level of use of the service has fluctuated from between 8,500 to 14,700 a year dependent on the level of fares, the reliability of the service and media speculation about the extent of political commitment to its long-term future. However, usage figures over recent months have shown welcome evidence of growth again following the emergency procurement of Van Air in early 2016 after the former operator Links Air lost its AOC (Air Operators Certificate) after a lengthy dispute with the Civil Aviation Authority (CAA).

The function of the PSO route, and the justification for the Welsh Government's support for it, is the need to overcome the geographical barrier created by the long surface journey times by rail or road between the Capital region of Cardiff and the North West of Wales. The air service reduces these journey times by over half, and crucially allows businesses in North Wales access to businesses in Cardiff and the wider South Wales region in a return day trip, and vice versa. This would be impractical (i.e. require an overnight stay) or certainly require a very long day if the air service did not exist.

Other such publicly supported air links are a feature of the Highlands and Islands in Scotland and can be found across many other EU countries, especially in Scandinavia, France, Italy, Spain, Portugal and Croatia. Whilst in many of those cases there is a strong social dimension to the service, in the case of the Welsh PSO, the great majority of trips (varying between 68% and 78% between 2014 and 2015) are for business purposes - these are split evenly between trip by the employees of private businesses and public authorities of different sorts (e.g. Welsh and Local Governments, local authorities and the education sector).

The temporary contract under which the service is currently being run extends to May 2017, but consideration is being given to extending that timeframe to allow time for Welsh Ministers to decide on the long-term future of the PSO based on the recommendations set out in this report:

- the recommendations of this review to be digested and a clear way forward agreed by Welsh Ministers; and then
- for their decisions to be implemented and if so determined for the PSO service to be re-tendered later this year for commencement in 2018.

The issues discussed in this report have been considered in line with the Welsh Language Standards and we can confirm that the continuation of the Cardiff-Anglesey PSO will not affect persons using the Welsh language, and will not result in the Welsh language being treated less favourably than the English Language.

The Origins and Scope of this Review

In early 2016 the Welsh Government (WG) commissioned two studies to examine how air connectivity within Wales, and from Wales to other parts of the UK and near Europe, could be improved:

a) The first looked at possible 'enhancements to the PSO (Public Service Obligation) air service between Cardiff Airport (CWL) and Anglesey Airport (VLY)', with a focus on Anglesey and North West Wales (including how the PSO aircraft might be used more intensively and therefore efficiently).

b) The second took the form of a review of 'thin route PSO' opportunities from CWL.

In the second half of 2016, the Welsh Government commissioned RPS (who worked with Northpoint Aviation - the authors of the earlier reports), to undertake a much wider-ranging review to determine the long-term future of the Intra Wales Air Service PSO. This review included:

i. Options for reducing the costs/subsidy per head of the extant CWL to VLY service, including consideration into reducing frequency/ceasing service provision, and the economic value the PSO currently adds.

ii. Comparing that service routing against a possible alternative from Hawarden to Cardiff.

iii. Looking at the prospects for internal services from Haverfordwest and the other smaller airports in Wales and different combinations thereof.

iv. Examining the impact that recent certification of Single Engine Turbine aircraft (SETs) for commercial public transport services by the *European Aviation Safety Agency* (EASA) might make on the viability of the different routes under consideration.

v. Exploring the potential to increase the service offering, by increasing the aircraft size to circa 31 seats and linking the PSO to attractive domestic and European destinations, and as a result, also exploring the potential National Aviation Security Programme (NASP) requirements, where aircraft of greater than 19 seats are required on certain routes (e.g. out of Anglesey and Hawarden).

Together, this body of work is referred to as the Intra Wales Air Service PSO 2016 Review and comprises a series of component 'technical' study reports, which act as a series of addenda underpinning this top-level summary report.

The purpose of this Summary Report is therefore to; provide a synopsis of the key insights, analysis and conclusions from the technical reports; synthesise their findings; draw conclusions; and present recommendations for consideration by Welsh Ministers.

The content of its principal sections can therefore be précised as follows:

Section 1: Sets out the scope of the report and the background to the current PSO operation.

Section 2: Describes the sources, data and methodology adopted.

Section 3: Provides an overview of the PSO Enhancement Study, including the catchment for the PSO route, forecasts for the route itself including those associated with various potential route enhancements and others for additional services the PSO aircraft might be able to operate between its PSO commitments. These different enhancement/route options were then subjected to a commercial appraisal, an economic assessment and a Stage 1 WelTAG appraisal in order to highlight those that looked the most promising. The conclusions and recommendations of that study are recorded in paragraphs 3.26-3.31 of this summary report.

Section 4: Whereas the PSO work explored routes that it might be possible to serve with aircraft in the 19-34 seat category as an adjunct to the core PSO service, this Thin Route study focused on routes to and from Cardiff (CWL) of 50,000 passengers[1] a year or less, and therefore less likely to be commercially viable on a free-standing basis than those with a potential market larger than that. Using an equivalent appraisal process to the PSO enhancement options in Section 3, the options examined were not confined to those that could be operated by the PSO aircraft. Other aircraft and thicker routes over 50,000 passengers per annum that could survive on a basis other than through the support of a PSO (e.g. via commercial route development incentives and Route Development Funds) were also considered.

Section 5: Examined NASP (National Aviation Security Programme) Compliance at Anglesey and Hawarden airports in case it was determined that some or all of the services to be operated from one or both of these airports would require aircraft with more than 19 seats. This included identifying potential capital costs associated with any compliance measures.

Section 6: Considered the implications of using Single Engine Turboprop aircraft (SETs), on the PSO route and on other possible routes elsewhere in Wales. Comparative operating costs against a 19-seat aircraft benchmark and the pros and cons of two illustrative aircraft types are evaluated and some indicative conclusions drawn.

Section 7: Begins by examining the economic consequences of closing the PSO route before broadening out into a review of intra and extra Wales route options that could make up first a core network of services focused around the main PSO service and then a wider network encompassing airports such as Hawarden and Haverfordwest. These options are again appraised as previously.

Section 8: Required an analysis of the significant preceding route based evidence; the study constructed 12 strategic policy scenarios, that reflected the full range of options that had been considered, from reducing or shutting down the existing service, through various incremental enhancements, to using the existing PSO aircraft more effectively and developing either a core or more expansive network of intra-Wales routes and routes to London or other significant hub

[1] Occasionally the report uses the pax acronym for passengers in the narrative or tables

airports (e.g. Amsterdam, Paris or Frankfurt) by introducing additional PSOs. The scenarios are then subjected to WelTAG appraisal [2] and evaluation against a series of strategic policy objectives.

Section 9: Considers the case for the Welsh Government to purchase or lease the aircraft needed to service the PSO route(s), or enter into a joint venture with the private sector to do so. It also examines whether there may be a case for Cardiff International Airport Ltd to take over the running of Anglesey Airport from Ynys Mon Council and its current service provider Bilfinger Europa (presuming TUPE protection for frontline staff).

The summary analysis and the associated findings are then drawn together in a final chapter, setting out Findings, Conclusions and Recommendations under various policy related timelines – immediate, short-term, medium-term and long-term. Those findings, conclusions and recommendations are reiterated in full below.

Findings, Conclusions and Recommendations

Bringing Clarity to the Future of the PSO Service

There is a strong economic case for the retention of the PSO service between Cardiff and Anglesey airports based on the fact that journey time savings to business passengers generates Gross Value Added (GVA) [3] that broadly matches the amount of subsidy being invested. In addition, it also supports existing jobs and has the ability to create new ones, particularly in Anglesey, and provides connectivity with South Wales which neither rail nor road can match for the level of financial support offered. Strategically, it provides an important functional and symbolic link that connects North and South Wales, which facilitates easier access to internal markets for Welsh companies.

Extending the Current Contract

The PSO shows clear signs of having the potential to grow further than witnessed to date, but in the short term, it needs a period of consistent unbroken operation, scheduling and pricing optimisation and most importantly, better marketing for that growth to be realised. In addition to these essential steps, avoiding further political speculation about the route's future is important if passenger confidence in, and usage of, the route is to grow.

The findings of this study programme suggest that there are a number of short term steps such as reversing the basing of the aircraft, extending weekday operating hours, adding rotations, keeping

[2] Transport initiatives in Wales can be appraised using WelTAG guidance at the planning stage, to ensure that they consider the economy, environment and society.

[3] Gross value added is the measure of the value of goods and services produced in an area, industry or sector of an economy, in economics. In national accounts GVA is output minus intermediate consumption; it is a balancing item of the national accounts' production account.

fares competitive and increasing awareness of the service that could help to enhance the service's performance and improve the value for money that it already offers to Wales. These could all be tested, with the agreement of the operator, if the existing temporary contract were extended sufficiently to allow plenty of time for re-tendering the PSO.

Our economic impact assessment predicts that if a 19-seat aircraft operation were retained, but with extended operating hours and attractively priced fares, then by 2022, the number of passengers using the route could increase from what we considered to be a reasonable approximation of the normalised baseline in 2015 - circa 11,000 passengers per annum (ppa) - to just over 14,200 or 73% seat occupancy. Adding substantially improved marketing (including promotion through GDS [4] systems) and a third rotation would achieve 19,150 (at a seat occupancy of 66%), creating an estimated 20 jobs and additional GVA of approximately £290k per annum.

If we were to apply a similar suite of enhancements, but increase aircraft size to 31 seats and remain with only 2 rotations a day on the route, the return is estimated to be almost 18,000 passengers per annum (a seat occupancy rate of less than 60%), with up to 18 jobs created and GVA in the region of £250k per annum.

This suggests that there is a strong case for extending the existing temporary contract to 30 September 2018 - long enough for commercial and operational innovations to be trialled sufficiently to inform the requirements of the subsequent 4-year contract. The extension to September 2018 will also provide reasonable time to undertake the tender process – allowing requirements to be fully scoped, and a future operator to be competitively procured and appointed 6-8 months ahead of the commencement of services. This vital lead time will enable the operator to successfully mobilise and undertake preparatory work before taking over the operational delivery.

Any extension to the temporary contract will require detailed negotiations with the current provider, who may seek additional compensation for taking on additional operational or commercial risks associated with some of the innovations proposed (e.g. basing the aircraft at Anglesey during the summer may need weekend positioning for maintenance to alternatives such as the Isle of Man or possibly Caernarfon). But it also provides a unique opportunity for 'real world' trial of these ideas, and generates invaluable empirical evidence for the medium to long term. With this in mind, we support the extension of the current contract.

[4] A **global distribution system** (**GDS**) is a network operated by a company that enables automated transactions between travel service providers (mainly airlines, hotels and car rental companies) and travel agencies. Travel agencies traditionally relied on GDS for services, products & rates in order to provision travel-related services to the end consumers. A GDS can link services, rates and bookings consolidating products and services across all three travel sectors: i.e., airline reservations, hotel reservations, car rentals.

Immediate Recommendations:

I Retain the North-South PSO between Cardiff and Anglesey.

II Extend the temporary contract with Van Air to 30th September 2018 as soon as possible.

III In so doing, introduce a series of potential service enhancements and some targeted external support. These should include some or all of the following:

- Increase the frequency with which the PSO aircraft is used to 3 rotations per day, either by adding a midday service on the Cardiff-Anglesey route or by identifying with the operator, a commercial non-PSO destination for the aircraft to serve.
- Discuss a trial with the operator to test the demand for a reversed timetable by rescheduling the PSO and basing it at VLY for summer 2017.
- Extend the operating hours at VLY as soon as this can be agreed with the RAF, but only if the new schedule requires it.
- Negotiate any variation required to the current subsidy agreement arising from these changes, subject to an orderly handover being achieved to any new PSO dispensation, especially if it involves a new operator.
- Increase the provision of marketing support on a match funded basis – we consider this could mean a capped public contribution of up to £25,000 in the period to September 2017 and a further £50,000 between September 2017 and the end of the extended contract period.
- A 'micro-networking' marketing plan needs to be agreed between the airline, the airports and other key stakeholders (North Wales' tourism interests, Isle of Anglesey County Council (IACC) and Gwynedd County Council). The Welsh Government should lead preparation of the plan via a PSO stakeholder marketing group, but once it is complete, delegate responsibility for implementation to a suitable member of the collaboration.
- Resource commitments in cash or kind to be secured from the marketing collaboration members, and identify a way to manage, coordinate and monitor on-going efforts. These commitments can be advertised in the Invitation to Tender document for PSO bidders where they may be presented as match funded undertakings by the operator.

Maximising Use of the PSO Aircraft

Realistically, even if the aircraft contracted for the Cardiff - Anglesey PSO were to be based at RAF Valley, it would be difficult to achieve four rotations a day without extending the length of the RAF Valley's current operating hours. Initial approaches to the RAF indicated they might be willing to explore some modest variations on weekdays, providing they were appropriately compensated, but would not be willing to introduce weekend operations due to a high proportion of RAF personnel leaving the base at weekends to return home to family or visit friends.

Experience suggests coming to an agreement with the RAF will take some time, and is thus better assigned as a 'short term' rather than 'immediate' recommendation.

The study did, however, identify a number of exciting potential route opportunities for the next 4 year PSO contract (October 2018 – September 2022) that can be used to explore, especially if the size of the aircraft is increased from 19 to +30 seats. Conceptually, if the implementation of the 'immediate' recommendations has the positive impact on passenger numbers we expect, then the use of a larger aircraft twice a day on the PSO route may ultimately be justified by the end of the next PSO contract period (i.e. 2022) as load factors on a twice a day service would have reached 65%.

However, the big attraction of securing the use of a larger aircraft on the PSO is that it would open up the potential to serve other destinations like a London airport from Anglesey (initially Luton, and eventually when the third runway is open, Heathrow) and similarly other hub destinations like Amsterdam (for which there is evidence of significant demand for a one a day service from North West Wales) or Paris, using the aircraft to add a second rotation from Cardiff. Thirty seat aircraft have the attraction of being pressurised and in some cases substantially quicker than 19 seat equivalents and are therefore more attractive to passengers, are more likely to be accepted as meriting a slot at congested airports and have better route economics at equivalent load factors therefore offering scope for cheaper fares.

Although the prospects for some of these routes (particularly the overseas hubs[5]), may be made more speculative should bids for the next PSO remain based on a 19- seat aircraft, a London flight would remain a possibility, with Northolt a destination that should be explored with the MoD, and there are other domestic options like Belfast or the Isle of Man which may generate interest.

The 2018-22 PSO Tender process

The extension of the current temporary arrangements provides an important opportunity to better adapt the next four year PSO to secure preferred outcomes. These will include:

- seeking a strong operator,
- with a larger aircraft,
- offering credible additional use of the aircraft on non PSO task(s),
- based on a persuasive route development plan that includes increasing patronage and yield, and hence reducing requisite subsidy,
- access to extended marketing capability (which may include GDS visibility, interlining, franchising),

[5] Airline hubs or hub airports are used by airlines to concentrate passenger traffic and flight operations at a given airport. They serve as transfer or stop-over points to get passengers to their final destination. They are part of the so called hub-and-spoke system.

- a persuasive and well thought out marketing plan for extending the commercial reach of the PSO service (geographically and in terms of market segments (e.g. attracting inbound leisure passengers to North West Wales), developing new routes, and working with both Cardiff and Anglesey airports and local stakeholders to optimise the value for money of on-going marketing support.

It also provides a longer lead time before launch to permit optimal preparations and marketing. This includes putting in place new arrangements with the RAF (see below) and marketing the route(s) for several months in advance using micro networking techniques to maximise value for money.

The recommendation around enhanced and sustained marketing provision is based upon the early experience of Highland Airways on the route, where they enjoyed patronage at least 2,000 p.a. more than their successor operators. Highland Airways also enjoyed significant stakeholder support from a range of agencies including IACC, CWL, the Welsh Language Board and deft community micro marketing that was summarised in an appendix to the PSO Enhancement Study. Such techniques (e.g. social media campaigns, competitions with local radio stations, PR stories, cross marketing with attractions and key accommodation suppliers), rather than simply relying on expensive newspaper or poster advertising, are in common use at smaller airports and are recognised as being effective.

Scottish evidence also suggests an uplift in patronage on a PSO, when a higher profile franchise operator took over the route from a standalone airline. There was also evidence from the route when a 'bolder' yield management strategy, where deeper ticket discounts were offered, had a positive impact on carryings both during Highland Airways' and Links Air's tenures.

Implications of Basing the Aircraft at Anglesey

If, as a result of the 2018-22 PSO tender process, it looks like the operator will be willing to base their aircraft at Anglesey, then a dedicated hangar would likely be a requirement for permanent overnighting. A Rubb-style hangar can be erected within 3-4 months and at modest cost (c£750,000 for a 19 to 31-seat aircraft plus any required groundworks) and has the advantage of being demountable and therefore the capability of being moved elsewhere if needed.

Introducing a 31-seat aircraft would also require the airport at Anglesey to become NASP (National Aviation Security Programme) compliant. This would require level three screening equipment to be introduced and a range of other measures airside to prevent intrusions into the restricted area. Costs are again estimated at c£750,000.

Engagement with the RAF

The RAF is a key partner in the PSO operation providing the airside infrastructure and operations support without which the civil enclave could not operate. Variations to, or expansion of, the current PSO service will require their continued collaboration and in some cases material changes to their existing operating hours.

Of the recommendations above, the marketing scheme and probably a single additional midday rotation can be implemented without varying the existing agreement with the RAF/DIO[6]. Initial indications are that they may be willing to show some flexibility, but new arrangements will take time to negotiate and the aim must be to secure temporary dispensations with a new agreement coming into place at the commencement of the new PSO.

The new arrangements are likely to result in additional costs both in terms of additional charges from the RAF for the use of their airfield and capital costs to enhance the capability and capacity of facilities within the existing or expanded civil enclave. The RAF will be justified in passing on these costs in full if they are solely for the purpose of PSO related air transport movements and outside their current core operating hours; moreover, if not cost reflective, this could give rise to issues relating to illegal state aid. The scale of these costs need to be firmed up as quickly as possible and if accepted, turned into appropriate budgetary provision moving forward.

The position concerning state aid also needs to be confirmed. Although it is possible that a formal notification may not be needed to cover any additional revenue support costs or capital expenditure on enhanced facilities on de-minimis threshold or Services of General Economic Interest (SGEI) grounds for future accounting officer and audit purposes, it would be prudent to secure DfT and EU confirmation of this. SGEI are economic activities that public authorities identify as being of particular importance to citizens and that would not be supplied (or would be supplied under different conditions) if there were no public intervention. Examples are transport networks, postal services and social services.

Airport Governance

For a variety of reasons, preparation for the new PSO may provide the opportunity to review the ownership and operation of the civil enclave at Anglesey. These are set out in more detail in Section 9 of the report, but are associated with operating efficiencies, the availability of marketing resources, expertise in security and a seamless approach to Welsh Government policy and implementation.

For this reason, we believe serious consideration should be given to asking Cardiff International Airport Ltd to take over the running of the Anglesey Airport operation on the Welsh Government's behalf, at a date to be agreed with Isle of Anglesey County Council (IACC) and their contractor Bilfinger. TUPE rules would mean existing staff would move with any transfer of the operating contract. The Transfer of Undertakings (Protection of Employment) Regulations 2006 known colloquially as TUPE, are the United Kingdom's implementation of the European Union Business Transfers Directive. It is an important part of UK labour law, protecting employees whose business is being transferred to another business.

We are aware that IACC is currently the legal owners of Anglesey Airport facilities built with the benefit of a long lease from the RAF. However, the costs of the operational management are fully underwritten by the Welsh Government and IACC are under-resourced to take on the expanded client role for a major expansion of the civil enclave envisaged in our other recommendations.

[6] Defence Infrastructure Organisation

Therefore, it would almost certainly be simpler all round if ownership was transferred to the Welsh Government and they took responsibility for finding an operator.

Services from Hawarden

The possibility of developing service offerings out of Hawarden are, in our view, limited until 2022 and beyond, however, there would be merit in discussing the possibility further with APG and Airbus during the extended contract period so that a clear understanding can be presented to tenderers about the facilities and charges that would be offered to a possible PSO operator if access were to be permitted at all.

Our indicative view, prior to these formal discussions, is that securing access to Hawarden is likely to be too expensive, would require significant capital investment, may attract state aid complaints from the nearby Liverpool and Manchester Airports and makes the continued serving of the North-West Wales region by air, which all the evidence from the supporting technical studies indicates is strategically important, more complicated and therefore potentially also more expensive. Furthermore, on a very strict reading of the PSO Regulations we have doubts about whether the services between Hawarden and Anglesey/Cardiff Airports would qualify as a PSO.

In the longer term (i.e. for the PSO period 2022-26) it may be possible to develop a package of key stakeholder support (especially amongst companies based in the relevant enterprise zones at either end of the route), to secure 9-seat direct service linking Hawarden with Cardiff, but that can be for a future review.

More significantly, in a drop-in or triangulated format (e.g. VLY-CEG (Hawarden)-LHR-CEG-VLY) is the most likely way North Wales will secure direct access to Heathrow when its new runway opens, due to the likely limitations that will be imposed on the number of slots that will be released for domestic services. Such a service would generate very substantial positive benefits in terms of connectivity for the wider economy of North Wales and, in our view, should be aggressively pursued by Welsh Government over the next 2 years for commitments from the UK Government and Heathrow during its DCO (Development Consent Order) process.

Access to Heathrow

Both demand and economic impact investigations indicated that access to LHR would score highly from South Wales as well as North Wales. A shuttle service 3-4 times a day would primarily serve the onward connecting market from South Wales, most of which currently drives and parks at Heathrow. Its impact on the point-to-point market heading for central London from South Wales, which will be well-served by improved rail journey times, is expected to be small. But with an overall market we estimate at over 200,000 passengers, securing slots for such a shuttle service from Cardiff to Heathrow would be of great significance economically and ought to be a high priority for the Welsh Government in the short term, with the objective obtaining a commitment, both political and contractual, between the Welsh Government and the UK Government (and arguably also Heathrow) before the Development Consent Order (DCO) application for the third runway is submitted in 2019.

Cardiff Thin Route Support

Our studies identified potential for route development out of CWL both with the PSO aircraft (particularly if it was 29+ seat) as well as for routes defined in the study as 'thin' (less than 50,000 passengers per annum). State aid measures above and beyond more normal airport route development mechanisms were examined. In addition to the Heathrow Shuttle above, other hub destinations in mainland Europe like Frankfurt were identified as potentially high performing; especially if a double daily weekday frequency could be reached. A number of domestic routes from Cardiff also look promising and merit further investigation, either because the links currently don't exist or because they would benefit from enhanced daily frequency. These include Manchester, Belfast, Leeds, Newcastle, Aberdeen and Norwich.

Options for securing these objectives include additional PSO's, support from UK Government RACF[7] funding or a time limited route development scheme established and funded by the Welsh Government itself but in line with established UK-EU protocols.

Short Term Recommendations:

I. Include the option of supporting a 30-seat aircraft in the 2018-22 tender process and ask bidders to highlight any other destinations they might seek to serve if the PSO were to be awarded on that basis.

II. Issue the Sept. 2018 PSO Tender in Autumn 2017 with aim to award in January 2018.

- Ensure Tender Options explore both current 19 seat solution and larger aircraft solutions (ideally with additional midday PSO or credible non-PSO route development initiatives encouraged).
- Ensure Tender Selection Criteria properly weights preferred outcomes and this will include superior patronage development and marketing plans; basing of aircraft; additional use of aircraft; GDS[8], interlining, franchising or other benefits. Properly weight quality versus cost in evaluation – we suggest 70% to 30% respectively.
- Pre-canvas a sample of operators to better inform the options being tendered.

III. If, as a result of a summer trial in 2017, basing the aircraft in Anglesey and adapting the timetable accordingly looks promising, a site for a hangar will need to be agreed with RAF Valley and a value for money hangarage solution identified and implemented.

IV. If 29+ seater is successful in tender competition then invoke NASP compliance preparations in parallel with lead in time for a new PSO launch. Refine NASP preparations further as a contingency in the interim.

[7] The Regional Air Connectivity Fund is a DfT initiative to support route development in conformity with permitted State Aid Route Development Funds

[8] Global Distribution System results essentially in more visible ticketing

V. Negotiate a new agreement concerning the operation of the civil enclave, covering opening hours, additional charges associated therewith, approval to introduce NASP measures should these be needed in the future and permission to expand car parking and other supporting infrastructure (e.g. an aircraft hangar) if required.

VI. Appoint a project manager for the capital works:

- Draw-up a timetable for designing, securing approval and having budgetary authorisation to complete the works;
- Generate architectural and engineering drawings for the planned physical enhancements (inside and out);
- Specifications for any new equipment associated therewith;
- Secure planning and building consent for the designs.

VII. Develop appropriate budget provision– capital and running cost – to cover these items.

VIII. Assess whether state aid approval is needed and either:

- Secure DfT and the European Commission confirmation that formal state aid notification is not required; or

- Submit a notification for the full potential expansion under these recommendations and all those that follow within the next 3 calendar months in order that state aid approval is in place before the operator of the new PSO is chosen and the capital works begin.

IX. Tender and undertake any facilities enhancement work associated with the new operational schedule prior to the new PSO contract commencing.

X. Explore with IACC and CWL the practicality of CWLtaking over responsibility of running Anglesey Airport and managing the NASP upgrade.

XI. Conclude outline discussions with APG and Airbus about using Hawarden for civilian scheduled services:

- Gain clarity on the need to build a new passenger terminal or re-task the restaurant (which would be less expensive) if NASP was required.
- Explore APG's appetite for investment in any such civilian air service initiatives.
- Ensure Airbus is informed and content with how things are 'left'.
- Seek 'North Wales' slots at LHR3 for a triangulated air service.
- If Single Engine Turbine (SET) aircraft are obtained for HAW-CWL (see below) consider other permutations for the aircraft (e.g. HAW-CEG).

XII. Pursue the case for slot access from CWL and VLY to LHR strongly with DfT and the wider UK Government.

XIII.	Active support should be offered to CIAL for 'thin route' development, independent of, but complementary to, the existing PSO, using either further PSO designations or a formally authorised Route Development Fund (RDF) to bolster standard airport commercial efforts in this area, but also to act as an alternative to discounted APD (Air Passenger Duty) if this power is not ultimately devolved to the Welsh Government. ▪ Explore further national and international PSO designations. ▪ Develop a formally authorised Route Development Fund (RDF); most probably based on similar methodology to the already approved DfT Regional Air Connectivity Fund. ▪ Anticipate and counter competition and state aid complaints from Bristol Airport and establish definitively that Bristol and Cardiff do not share the same catchment area. This is crucial to all potential initiatives in this area. Commission a Catchment Study that demonstrates the case for this assertion.

Expanding the Network from North West Wales

As outlined above, the new PSO (i.e. 2018-22) is likely to be the opportunity to consolidate any trial undertaken in basing an aircraft in North West Wales. This maximises the opportunities for developing additional routes from there. The subsequent PSO (2022-26) might then be used as the chance to expand the network of routes from Anglesey by adding additional services and possibly introducing a further PSO and aircraft.

Single Engine Turbines

It is arguable that this is also the time for a decision to discount the use of 9-seat Single Engine Turbines (SETs) at higher frequencies on the main PSO route. Of the SETs considered the Pilatus PC12 is the most attractive option but costly to run; the Cessna Caravan offers lower costs but does not provide an attractive passenger environment and only achieves minimal cost savings compared to a 19-seat aircraft if there is sufficient demand to justify three rotations a day. The SETs would also introduce significant constraints on seat capacity and could affect future levels of demand as there is evidence that some passengers will avoid flying on very small aircraft (as happened during Links Air's use of a King Air on the PSO in December 2015).

The use of SETs should only be contemplated if demand drops precipitously to less than 7,500 passengers on an annual basis and it is considered desirable to maintain the PSO service. With this exception, it is our view that the use of SETs could be restricted to long-term options such as a (HAW) Haverfordwest – CWL to offer connecting flights to a Heathrow shuttle from Cardiff, and to any cross-country options (e.g. HAW - CEG (Hawarden) or Llanbedr to Cardiff as and when these are considered necessary or expedient.

Aircraft ownership Option

In addition to keeping the progress of the PSO under close scrutiny and ensuring its cost-effective delivery, the issue of potential ownership of the aircraft being used should be explored further as option, perhaps with an eye on the 2022-2026 PSO period.

Medium – Long Term Recommendations:

I.	Review future route prospects, when the performance of services provided under the 2018-22 contract becomes clear.
II.	Do not pursue SET for current PSO. Revisit SET if CWL gains access to LHR. This aircraft could then provide a useful feeder flight from HAW to CWL, for its shuttle to LHR and also offer the potential to provide a CEG-CWL link.
III.	Explore the possibility of a Joint Venture with an operator to be developed to help share risk and allow the Welsh Government to benefit from any acquisition of Heathrow slots.

1 INTRODUCTION

1.1 Five in-depth technical studies have been undertaken as part of a thorough review of the PSO model supporting the current air service between Cardiff and Anglesey. Their aim has been to inform decisions about the route's long term future and the possible extension of the PSO mechanism to other routes within Wales and to destinations elsewhere in the UK. By exploring a wide range of possible scenarios and route options, the technical reports have provided a wealth of information and analysis, which this summary document has condensed to produce an accessible synopsis of the work including key findings, conclusions and recommendations.

1.2 Building upon two earlier studies – the first to examine possible enhancements to the PSO (Public Service Obligation) air service between Cardiff and Anglesey (including how the PSO aircraft might be used more intensively and therefore efficiently), the second to review a range of thin route[9] PSO opportunities to operate out of Cardiff Airport - the Welsh Government commissioned RPS who worked with Northpoint Aviation (the authors of the earlier reports) to extend the programme of work into a much wider, more detailed review.

1.3 The scope of this extended work included:

I. Options for reducing the costs/subsidy per head of the extant CWL to VLY service, including consideration into reducing frequency/ceasing service provision, and the economic value the PSO currently adds.

II. Comparing that service routing against a possible alternative from Hawarden to Cardiff.

III. Looking at the prospects for internal services from Haverfordwest and the other smaller airports in Wales and different combinations thereof.

IV. Examining the impact that recent certification of Single Engine Turbine aircraft (SETs) for commercial public transport services by the European Aviation Safety Agency (EASA) might make on the viability of the different routes under consideration.

1.4 Exploring the potential to increase the service offering, by increasing the aircraft size to circa 31 seats and linking the PSO to attractive domestic and European destinations, and as a result, also exploring the potential National Aviation Security Programme (NASP) requirements, where aircraft of greater than 19 seats are required on certain routes (e.g. out of Anglesey and Hawarden).

[9] Thin Route study focused on routes to and from Cardiff (CWL) of 50,000 passengers a year or less, and therefore less likely to be commercially viable on a free-standing basis than those with a potential market larger than that.

1.5 Together this body of work is referred to as the Welsh PSO 2016 Review and comprises a series of component 'technical' study reports (listed below), which act as a series of addenda underpinning this top-level summary report:

I. The Welsh PSO Anglesey Route Enhancement Study including options for complementing the PSO with middle of the day flights.

II. Thin Route Development Options from Cardiff Airport, which examined options beyond those pertaining to the additional use of the PSO aircraft.

III. Evaluation of NASP Compliance at Anglesey and Hawarden Airports.

IV. Long Term Future Options for Aviation PSOs in Wales.

V. Aircraft-related Considerations Associated with Welsh PSO Procurement.

1.6 The purpose of this Summary Report is therefore to; provide a synopsis of the key insights, analysis and conclusions from the technical reports; synthesise their findings; draw conclusions and present recommendations for consideration by Welsh Ministers.

Background to the Current PSO Operation

1.7 The Welsh Government introduced a business focussed north-south PSO air link in 2007 which aimed to improve connectivity between North and South Wales for the benefit of the Welsh Economy. The PSO route was operated first by Highland Airways from May 2007 until March 2010, at which point the airline went into receivership. The PSO was immediately retendered on an emergency interim basis and Manx2, with its partner airline FLM, recommenced the service on 10th May 2010. However critically, it is to be noted, the PSO suffered a 3 month break in service. A full retendering process took place shortly thereafter, with a four-year contract awarded to Manx2 and FLM in December 2010.

1.8 However, at the start of November 2012 FLM lost its Air Operator's Certificate (AOC) and was replaced as the route's carrier by Links Air. Although the Welsh Government agreed the novation of Manx2's rights and liabilities under the contract to a new company Citywing on 1 January 2013, in March 2013 the Welsh Government decided to assign Links Air to run the air service contract for the remaining period of the contract (i.e. from 17 June 2013 to November 2014).

1.9 In a subsequent tender competition, the Welsh Government awarded Links Air a new PSO contract for the route commencing in December 2014 and running until December 2018. However, in October 2015, Links Air had its AOC suspended by the Civil Aviation Authority (CAA). Thereafter they sub-contracted aircraft from a number of companies to fulfil the service. Links Air withdrew from the route in January 2016, and following competitive tender was replaced by Van Air on an interim basis, which was subsequently extended to May 2017.

1.10 The service currently consists of a 19 seat LET410 (See Figure 1) that is based in Cardiff undertaking two rotations each day – early morning and late afternoon - Monday to Friday (none at weekends), with an earlier finish on Fridays because of shorter RAF opening hours at RAF Valley, of which Anglesey Airport Terminal is a 'civilian enclave'.

Monthly carryings since the route started are shown in the graphic below. (please note this section was completed before VanAir withdrew)

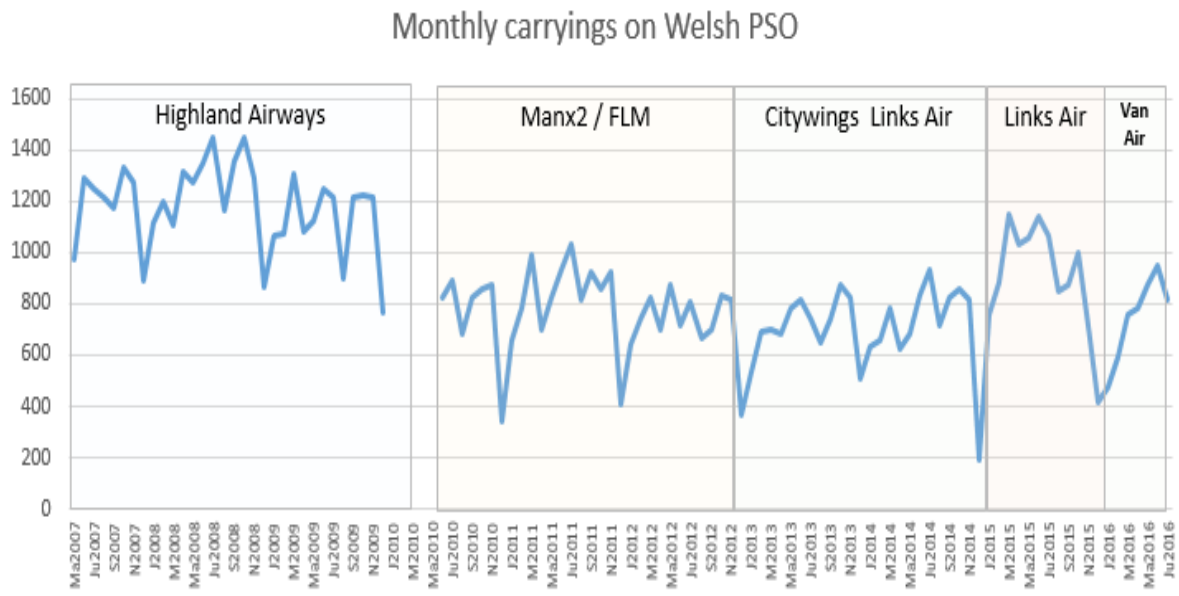


FIGURE 1: LET410 UNPRESSURISED AIRCRAFT CURRENTLY (SIC) ON PSO ROUTE - OPERATED BY VANAIR AND MARKETED BY CITYWING

1.11 The service's chequered history has ensured that the performance of the PSO route, as measured in passenger volumes, has been characterised by significant volatility. Its recent under performance is likely to reflect, at least in part, the many challenges the service has faced, not least:

- The 2008/9 recession;
- Interruption of service resulting from an airline failure in 2010;

- Changes to the operator and aircraft type used;
- Suspension of AOCs (for both FLM and Links Air);
- The 2016 unexpected withdrawal of service and emergency / temporary contracts to keep the service going;
- Some of this translated into bad news stories and speculation in press;
- Inconsistencies in pricing policies;
- Under-resourced marketing of the route.

Opportunities Looking Forward

1.12 The Review has identified some significant opportunities that could help to improve the existing route's fortunes and increase its performance, namely (in no particular order):

- Major new power and commercial developments are planned on Anglesey requiring contractors and their advisors to access the area efficiently; for instance, the Swansea Tidal Lagoon Project is an important potential energy project that could have interaction with Anglesey's Energy island;
- The potential to attract more inbound tourists, not just from the rest of the UK, but also international with a particular focus on the short break market built around the outdoor tourism assets and experiences North West Wales has to offer;
- The potential to encourage dynamic packaging through collaborations between the airline, airports and local accommodation and attractions providers;
- The potential scope for air services to operate to other destinations so that the aircraft is not standing idle when it is not needed for PSO related activity;
- That potentially different aircraft type used could be more compatible with stimulating new markets (e.g. a route to London and ad hoc charter operations), as well as the requirements of the core PSO service;
- The potential scope for changes to operating hours/days to maximise market utility and exploring with key stakeholders and businesses the value of a service that will enable key sectors and Enterprise Zone's in different parts of Wales to be linked quickly and efficiently.

2 COLLATING THE EVIDENCE

Context

2.1 It is useful to keep in mind that the suite of technical reports supporting this summary document have taken over a year to prepare, and that during that time there have been a number of important developments that have directly, or indirectly, influenced the PSO, and the scope of the work required for this review, including:

- the loss of AOC and subsequent withdrawal of services by Links Air;
- the emergency contract position currently imposed on the route;
- the selection of Heathrow for South East runway expansion;
- the Brexit vote and the Prime Minister's recent clarification of the implications thereof;
- a change of Welsh Ministers bringing the desire for a fresh look at the PSO; and
- a number of successful route developments and growing passenger numbers at Cardiff Airport.

The technical reports are shown in Table 1.

TABLE 1: STUDY TOPICS, TIMING AND SEQUENCING

Welsh Aviation Review Technical Reports Summary	Dates
Enhancement options to the PSO (Public Service Obligation) air service between Cardiff Airport (CWL) and Anglesey Airport (VLY) or the report was more formally entitled ***Demand Forecasting, Economic Analysis and Exploring Extending the Aircraft Size and Operating Hours at Anglesey Airport*** *with a supporting Appendices Section.*	January – April 2016
Thin route development opportunities from CWL with the report more formally entitled ***Thin Route Development Possibilities out of Cardiff Airport and appropriate State Aid Mechanisms to help deliver****.*	April – July 2016
Exploring the potential National Aviation Security Programme (NASP) requirements, where aircraft of greater than 19 seats are required on certain routes (e.g. out of Anglesey and Hawarden). The report more formally entitled Welsh Aviation Review - ***National Aviation Security Programme Implications***	November – December 2016
Options for reducing the costs/subsidy per head of the extant CWL to VLY service, including consideration into reducing frequency/ceasing service provision, and the economic value the PSO currently adds and Comparing that service routing against a possible alternative from Hawarden to Cardiff. The report more formally entitled ***Technical Report into Long Term Future Options for Aviation PSOs in Wales*** *with a supporting Addendum Section.*	September – December 2016
Examining the impact that recent certification of Single Engine Turbine aircraft (SETs) for commercial public transport services by the *European Aviation Safety Agency* (EASA) might make on the viability of the different routes under consideration. It also included a consideration of Aircraft Considerations Associated with Welsh PSO Procurement The report was more formally entitled Welsh Aviation Review - ***Aircraft Related Considerations***	November – December 2016
The Intra Wales Air Service PSO 2016 Review - *Summary Report*	January – February 2017

2.2 The underlying technical documentation reflects these changes in real time, depending on commissioning and completion dates. Consequently, one of the aims of this summary document is to draw upon each of them as required and provide a comprehensive over-arching view of all the policy alternatives evaluated as at January 2017.

Sources and Data

2.3 The current review has been fortunate in having a wealth of historic studies into the Wales PSO service to draw upon, in addition to several route specific passenger surveys, up to date usage data from IACC, and most recently the 2015 CAA Passenger Survey. Northpoint also secured access to some old Highland Airways data and spreadsheets that help to underpin important

assumptions and permitted a marketing case study to be undertaken during the initial phases of the work.

2.4 This core material was supported by a broader literature review, which is detailed in the extensive Bibliography (see Appendix A), historic CAA data, a range of stakeholder consultations and a series of site visits and stakeholder meetings in January and November 2016 (see Appendix B).

2.5 The study made use of RDC Aviation's APEX[10] software, which models the commercial economics of air services based on a wide range of changeable variables, with the key output being a four-year profit and loss projection or an estimate of the average fare (excluding taxes) needed to breakeven. RDC was asked to adapted APEX for this work, by adding new aircraft types and airports that to the database. RDC was also asked to update an intra-Wales gravity model used in the original 2003 feasibility studies, to generate point to point demand forecasts for sectors where there are no existing services. The 2003 version of the model produced a range of estimates for the Cardiff - Anglesey route, which the route later demonstrated, were essentially sound and within acceptable margins of error.

2.6 In addition, benchmarking was undertaken on similar approaches elsewhere across Europe that are comparable to the Welsh PSO, with particular reference to internal domestic PSO routes and networks, and to other thin route services (e.g. to the rest of the UK and Europe). This provided useful comparative material across a range of scenarios.

2.7 Finally, the technical studies supporting this summary report have also benefited collectively from the contributions of a number of in-house and external experts engaged by Northpoint and listed in Appendix C.

2.8 It is likely that this is the most exhaustive study of the PSO, and options for its future that has been commissioned to date.

[10] APEX is an airline performance analysis platform developed by RDC Aviation

Methodology

Route Options

2.9 We have applied the same methodology and approach used in the original PSO Enhancement (Anglesey) and Thin Route Development (Cardiff) studies to the evaluation of different route options in the largest and most recent of the technical reports, the PSO Review Study. The latter takes in new airports, aircraft types and operating concepts, but in order to optimise the level of read-across that is possible at a route level, we have sought to be consistent in the techniques used for demand forecasting, commercial evaluation and route appraisal (including the use of Stage1 WelTAG[11] analysis). There were some differences, because the demand forecasts we have generated have needed to draw on a number of different techniques depending on circumstances and data availability; but in most regards, there is a good deal of commonality across the appraisal processes.

2.10 In so doing we have been able to create recognisable key stages in each of the route focused technical report's evidence base - a market analysis, usage forecasts, financial appraisal, economic impact assessment and then broad strategy and policy criteria via the WelTAG process drawing on a variety of metrics:

- Accessibility - distance, mode competition, travel times/costs;
- Commercial viability- load factors, subsidy needed;
- Economic impact – employment, user benefits and GVA;
- Environmental effects - CO^2 emissions.

2.11 It is worth highlighting that the reason a single environmental metric was used is because others, such as noise, air quality, ecology and surface access, were considered less prominent as the traffic volumes/movements involved are too small to result in any material effects, especially as at an airport level the services envisaged will predominantly use existing infrastructure.

Policy Scenarios

2.12 The brief in the Longer Term PSO Review, required completion of:

- The Aircraft Considerations (or SET - Single Engine Turbine) Report;
- Site visits to all the airports in Wales potentially capable of handling scheduled passenger transport air services; and

[11] WelTAG is a methodology used to appraise transport projects in Wales. A Stage 1 refers to an initial less detailed high level appraisal.

- The NASP Evaluation of Anglesey and Hawarden; and the need to take into account the range of other relevant issues such as:
- airfield infrastructure requirements, associated operational and capital costs, and ownership and governance structures;
- the application of how PSO regulations might be applied; and
- the need to look at multi-route (or network) options.

2.13 We sought to sketch out a range of broader strategic scenarios that took account, and in some cases combined, the most promising looking route pairings, stopovers and triangulations, as the basis for drawing together and navigating through the wide range of policy options that all the preceding work had thrown-up.

2.14 To do this we developed twelve 'scenarios' for evaluation using WelTAG and then weighted the appraisals based on five strategic objectives, in order to help tease out those that looked particularly ineffective and conversely also the most promising. This work is set out transparently in the main addendum report, and is a central plank of this summary report, because alongside the financial implications of each scenario it underpins and has helped to shape the recommendations that then follow.

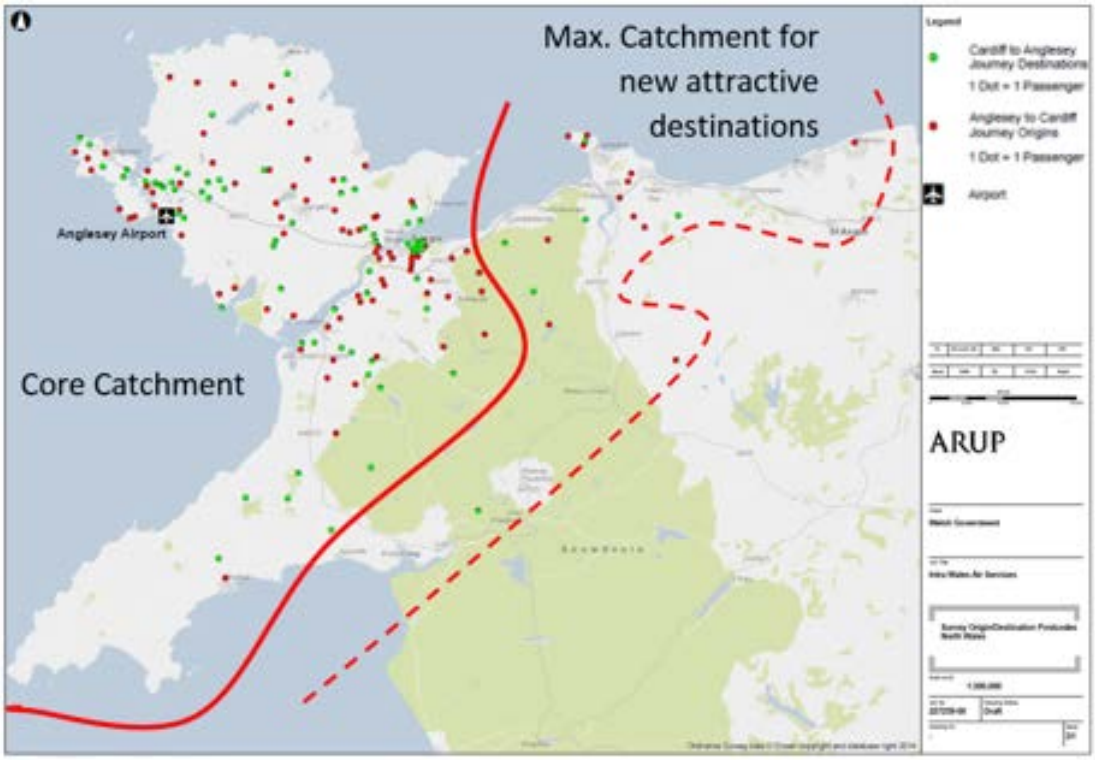
3 THE ANGLESEY (OR WELSH PSO) ROUTE ENHANCEMENT STUDY

Catchment and Assumptions

3.1 This study focused on how the aircraft allocated to provide the PSO service between Cardiff and Anglesey could be used to offer other 'commercial' (i.e. unsubsidised) operations alongside its PSO commitments, whilst also growing the patronage of the existing PSO service. The alternative idea of basing the aircraft in Anglesey and exploring a range of derivative route development opportunities was explored in some detail, as were possible alternative route enhancements out of the current Cardiff base.

3.2 The current PSO operation carried 9,000 passengers (pax) in 2015. This was considered shy of the route's real potential if operated consistently, without threats of closure, with proper marketing and competitive fares. For this reason, a figure of 11,000 pax was used as the baseline assumption in subsequent forecast iterations. The growth in numbers over the then previous three months of 2016 suggests this was probably an appropriate assumption.

FIGURE 2: CATCHMENTS SUPERIMPOSED ON ARUP (2015) SAMPLING MAP



3.3 The catchment area for the service in North West Wales is based upon Arup's 2015 study (see Figure 2). We have presumed to overlay a solid red line to indicate the core catchment and the dotted red line to indicate a larger catchment presumed for new attractive destinations, particularly capital cities in the UK or routes to international hubs, to reflect anticipated improvements marketing and the inclusion of important inbound tourism hotspots (e.g. Mt Snowdon, Conwy Castle, Llandudno and the Blaenau Ffestiniog railway).

3.4 This then allowed us to use CAA survey data, based upon the boundaries of Gwynedd and Anglesey, as the basis for calculating existing trips with an origin or destination within the catchment, which is represented graphically by the dotted line in Figure 2. Essentially, this marks the estimated boundary which Anglesey based services would offer greater benefits to passengers than making a 2 to 3-hour journey to Manchester Airport to get flights to the same destination.

Forecast Methodologies Used

3.5 In order to differentiate between forecasts of future demand for the core PSO route and those for potential route network enhancements out of both Cardiff and Anglesey this study adopted different forecasting methodologies.

TABLE 2: USAGE FORECASTING SCENARIOUS MODELLED FOR THE PSO ROUTE

1A	Do Nothing-Higher Base Fares
1B	Do Nothing-Lower Base Fares
Potential Service Enhancements	
2A	Longer Day-Higher Base Fares
2B	Longer Day-Lower Base Fares
3A	Third rotation-Higher Base Fares
3B	Third rotation-Lower Base Fares
4A	Larger aircraft-Higher Base Fares
4B	Larger aircraft-Lower Base Fares
5A	Larger aircraft +third rotation-Higher Base Fares
5B	Larger aircraft +third rotation-Lower Base Fares
6A	Do Nothing + Sunday pm rotation-Higher Base Fares
6B	Do Nothing + Sunday pm rotation-Lower Base Fares

Other Potential Sources of Traffic Generation	
7A	Improved and Better Resourced Marketing Non-Franchisee Operator-Higher Base Fares
7B	Improved and Better Resourced Marketing Non-Franchisee Operator-Lower Base Fares
8A	Franchise Operator, including GDS and Code Share at Cardiff Airport-Higher Base Fares
8B	Franchise Operator, including GDS and Code Share at Cardiff Airport-Lower Base Fares

3.6 In the former case, where substantial data on historic performance is available, we have relied on making incremental forward projections based on historic performance and several carefully defined assumptions about service enhancements (Outlined in Table 2), to generate a series of transparent variant forecasts for the PSO. A detailed range of forecasts was generated in this way, using patterns in the extensive historical data set for the route, but also experience from other thin routes and PSOs. This resulted in forecasts for variants such as timetable changes and weekend usage, employment of larger aircraft, GDS visibility, different yield management approaches, the operator be a franchisee of a bigger airline and other variables such as increased frequency. The results are reported in the next section of this chapter.

3.7 In the latter case (i.e. the new route options), where PSO data coverage does not exist because there are currently no services, we reverted to traditional industry standard 'bottom-up' route forecasting, using CAA survey data and fairly conservative assumptions about market penetration and stimulation rates.

3.8 Operational constraints and possible enhancements at RAF Valley were reviewed (e.g. opening hours, lack of an overnight hangarage, weekend closure and NASP compliance), as were likely aircraft types on the route. Rough order of magnitude costs of various options were then estimated, relevant European air operators explored and documented, having regard to current airline fleet plans. In combination with the forecasts already generated, this information allowed us to use RDC's Aviation's APEX model to review the commercial viability of different PSO specifications and route options.

3.9 Each short-listed enhancement option thus considered then subjected to an indicative economic impact assessment, highlighting potential job creation or losses, user benefits and annual GVA in order to permit Value for Money (VFM) considerations to be brought into play when evaluating projected levels of subsidy required.

3.10 Finally, the PSO and new route options were subjected to a qualitative review of their relative merits using a Stage 1 WelTAG appraisal methodology. Cost estimates regarding changing the length of the operational day and potentially constructing a hangar in Anglesey were also prepared.

3.11 The key results from all this analysis are summarised in the tables in the results section that follows.

Summary of Key Results

Forecasts Associated with PSO Route Service Enhancements

3.12 The forecast period for the PSO service enhancement options was the period 2017-2022, and made the core assumption that Cardiff retained the based aircraft. The detailed results are shown in an Appendix to the PSO Extension Report but a synopsis of the most realistic combinations (i.e a longer day and larger aircraft; access to GDS and enhanced marketing; and a third rotation) are summarised in Tables 3 and 4 below.

TABLE 3: PAX FORECASTS UNDER VARIOUS PSO SERVICE ENHANCEMENTS

Option Assumptions	Fares*	2015 Pax	2018 Pax	2022 Pax
Baseline Forecasts	High Fare Low Fare	11,000	10,631 11,701	11,173 13,464
2x Daily, Weekdays				
With Longer Day & 31 Seat Aircraft	High Fare Low Fare	11,000	12,281 12,742	12,945 14,593
As above, with GDS and Marketing	High Fare Low Fare	11,000	14,938 15,667	15,738 17,958
3x Daily, Weekdays				
With Longer Day but 19 Seat Aircraft	High Fare Low Fare	11,000	13,183 13,899	13,854 15,819
As above, with GDS and Marketing	High Fare Low Fare	11,000	15,841 16,824	16,648 19,185

Source: Consultants analysis

TABLE 4: PAX FORECASTS UNDER VARIOUS PSO SERVICE SCENARIOS

Option Assumptions	Fares	2018 Pax	Load Factor %	2022 Pax	Load Factor (%)
Baseline Forecasts	High Fare	10,631	54.9	11,173	57.7
19 Seat Aircraft*	Low Fare	11,701	60.4	13,464	69.5
2x Daily, Weekdays					
With Longer Day &	High Fare	12,281	38.8	12,945	40.9
31 Seat Aircraft**	Low Fare	12,742	40.3	14,593	46.1
As above, with GDS	High Fare	14,938	47.2	15,738	49.8
and Marketing	Low Fare	15,667	49.5	17,958	56.8
3x Daily, Weekdays					
With Longer Day but	High Fare	13,183	45.3	13,854	47.7
19 Seat Aircraft***	Low Fare	13,899	47.8	15,819	54.4
As above, with GDS	High Fare	15,841	54.5	16,648	57.3
and Marketing	Low Fare	16,824	57.9	19,185	66.0

Source: Consultants Analysis

Notes: * Capacity/Per annum = 19,380 seats

** Capacity/Per annum = 31,620 seats

*** Capacity/Per annum = 29,070 seats

3.13 To give these results some context, it is worth noting that:

a. The relatively modest growth rates of 1.25% and 1.75% that have been used reflect the fact that that route has been in operation for the best part of nine years and should be seen in the context of Airports Commission 2015 Forecasts which used an average growth of 1.8% per annum between 2010 and 2020 on domestic UK air routes.

b. Reduced fares have already been tested on the Anglesey route. In 2015 the average fare paid fell from around £45 to £33, which means leisure-oriented fares are likely to have fallen from under £40 to, potentially below £30. Thus, if these lower fares are re-instated (as is assumed in the upper estimates under Do Nothing), the scope for generating additional passengers from further price reductions, while also ensuring that the higher average fare paid by business passengers is protected, is low. Arguably, the main way to grow traffic would be from a longer day, Sunday flights etc.-providing a service at times when people want to travel.

c. A franchise arrangement would increase visibility of the route on the internet e.g. on Flybe's website. However, the range of connecting flights at Cardiff is not extensive and many are at times/days that do not fit well with the PSO schedule.

d. Increased visibility on GDS (Global Distribution System of the travel trade e.g. Amadeus, Sabre) is unlikely to transform the commercial prospects for the route, because many of the biggest business users are probably already aware of it. But its enhanced presence in this specialist enhanced area would certainly help bring the route to the attention of the travel agency and tourism markets, and might help to stimulate some premium leisure demand.

3.14 In their March 2015 study, Arup forecasted 13,000 passengers would use the route in 2018 based on a 19-seater aircraft operation; their principal variation was use of a larger aircraft which they predicted would result in 18,000 users in the same year. Whilst the tables show these figures to be within the range of our own forecasts, we are sceptical that their assumption that a single variant (aircraft size) could result in such a substantial differentiation in outcomes unless supported other variations designed to help stimulate demand (e.g. heavy discounting) in response to available capacity.

3.15 Some combinations of variations in these forecasts (e.g. reduced fares, longer operating day, Sunday rotation and having a franchisee on the route) result in passenger volumes greater than Arup's forecast for a 19-seat plane and some of the variations lead to more than 16,000 passengers per year towards the end of the forecast period. This equates to average load factors well in excess of 80% - compared to the current 60% - indicating that a larger plane would ultimately be required.

Forecasts for Possible Network Extensions (Combined with PSO)

3.16 These are set out in Table 5 and 6 below, which conclude with a column providing an overall route evaluation based on the market analysis undertaken and the demand and load factors projected. The table includes a number of route options that look attractive from both Anglesey and Cardiff, with links to London and major European hubs looking particularly promising.

TABLE 5: THREE ROTATION OPTIONS

Service Routing	Assumptions	Catchment Leakage	Frequency	Competition	Attractiveness over Alternatives	Assumed Market Penetration	Existing Market Captured	Potential Stimulation	Estimated Total Demand	Seat Capacity	Projected Load Factor	Route Evaluation	Comments
Anglesey Base - 3 Rotations													
VLY - ABZ	19 Seat Aircraft (Potentially via Intermediate Point)	5,889	1	Limited: Long by road/rail; or via MAN	High	60%	3,533	20%	4,240	9,690	43.8%	Poor	Better combined with INV
VLY - INV	19 Seat Aircraft (Potentially via Intermediate Point)	9,460	1	Limited: Long by road/rail; or via MAN	High	60%	5,676	20%	6,811	9,690	70.3%	Promising	Better combined with ABZ
VLY - BHD	19 Seat Aircraft (Potentially via Intermediate Point e.g. IOM)	10,715	1	Surface by Ferry via Dublin; or via LIV + MAN	Modest	50%	5,358	20%	6,429	9,690	66.3%	Possible	Drop-in to IoM merits investigation
VLY - London	19 Seat Aircraft (Direct to LUT or NHT)	18,000	1	Surface by road/rail +4hr; or via MAN to LHR - others not served	Modest	40%	7,200	10%	7,920	9,690	81.7%	Good	Depend on Airport + price
VLY - London	31 Seat Aircraft (Direct to LUT or NHT)	18,000	1	Surface by road/rail +4hr; or via MAN to LHR - others not served	Modest	45%	8,100	15%	9,315	15,810	58.9%	Modest	19 seater better until day rtn can be offered
Cardiff Base - 3 Rotations													
Extra Paris	31 Seat Aircraft (Direct to CDG)	24,000	1	Long surface journey; or via BRS/London. Adds second rotation.	Modest	50%	12,000	30%	15,600	22,135	70.5%	Promising	Need code share to work
Frankfurt	31 Seat Aircraft (Direct to FKT)	36,405	1	Long surface journey; or via London.	High	60%	21,843	20%	26,212	22,135	118.4%	Very Good	Strong option even for bigger aircraft
ABZ and INV	31 Seat Aircraft (Direct); ABZ 3/pw, INV 4/pw	16,937	1	Long surface journey; or via BRS/London.	Modest	50%	8,469	25%	10,586	22,135	47.8%	Poor	Market too small for +29 seats
ORK and SNN	31 Seat Aircraft (Direct); ORK 4/pw, SNN 3/pw	15,600	1	Long journey by ferry or via BRS/London. Restores established market; access US	Modest	50%	7,800	50%	11,700	22,135	52.9%	Modest	Might be better seasonal only

Coding: ABZ – Aberdeen; INV – Inverness; BHD – Belfast City Airport; ORK – Cork; SNN – Shannon; VLY - Anglesey

TABLE 6: FOUR ROTATION OPTIONS

Service Routing	Assumptions	Catchment Leakage	Frequency	Competition	Attractiveness over Alternatives	Assumed Market Penetration	Existing Market Captured	Potential Stimulation	Estimated Total Demand	Seat Capacity	Projected Load Factor	Route Evaluation	Comments
Anglesey Base - 4 Rotations (Assumes longer opening hours at VLY can be secured)													
VLY - NHT for London	31 Seat Aircraft (Direct to NHT for LHR)	36,310	2	Surface by road/rail +4hr; or via MAN to LHR - others not served	High	60%	21,786	40%	30,500	31,620	96.5%	Very Strong	Offering day return and NHT crucial
VLY: x1 London + x1 EDI	31 Seat Aircraft (Direct for both services 5 days per week)	23,625	2	Surface by road/rail 3hr to LHR; or via BRS/LHR for EDI	Slight	50%	11,813	45%	17,128	31,620	54.2%	Modest	Would work better with 19 seats. But more ops risk as airrcraft slower
VLY: x1 London + x1 ABZ/INV	31 Seat Aircraft (Direct for both services 5 days per week)	26,500	2	to LHR, Long to ABZ/INV; or via BRS/LHR for EDI	Modest	50%	13,250	40%	18,550	31,620	58.7%	Modest	Would work better with 19 seats. But more ops risk as airrcraft slower
VLY: x1 BHD + x1 ABZ/INV	31 Seat Aircraft (Direct to NHT for LHR)	19,500	2	drive by road/rail, Long to ABZ/INV; or via BRS/LHR for all.	High	60%	11,700	35%	15,795	31,620	50.0%	Modest	Would work better with 19 seats. But more ops risk as airrcraft slower
CWL Base - 4 Rotations													
CWL - London City	31 Seat Aircraft (Direct to NHT for LHR)	38,000	2	Surface by road/rail 3hr	Modest	50%	19,000	28%	24,320	37,945	64.1%	Possible	Costs at LCY means high fare & business only
CWL:Frankfurt and Norwich (Drop-in)	31 Seat Aircraft (Direct to NHT for LHR)	46,000	2	Surface by road/rail +5hr or FT via London	High	55%	25,300	30%	32,890	44,270	74.3%	Promising	NWI drop-in enroute to FKT merits further investigation.
CWL: Brussels and ABZ/INV	31 Seat Aircraft (Direct to NHT for LHR)	25,000	2	Surface by road/rail +6hr or via BRS	High	55%	13,750	40%	19,250	44,270	43.5%	Poor	Needs 19 seat; but even so better prospects elsewhere

Coding: NHT – Northolt; EDI - Edinburgh

APEX Commercial Analysis

Network Enhancement Services from Anglesey

3.17 The tables that follow capture outputs from the Apex model and thus offer insights into the indicative commercial performance of certain aircraft on a number of the most promising routes from the forecasts above. The most promising PSO enhancement options from Anglesey Airport would be a service to London – in this case, Luton was used to exemplify a generic London Airport, but others might equally be possible. The Initial PSO Enhancement Study particularly identified RAF Northolt as a possible London terminus for small regional aircraft because it offers relatively quick road connections by shuttle bus to Heathrow or access by heavy rail or tube into London (see Table 7).

TABLE 7 ANGLESEY TO LONDON

Anglesey Extension Routes	VLY-London	VLY-London	VLY-London	VLY-London
Aircraft (Seats)	DHC6-300 (19)	Dornier 328-100 (31)	DHC6-300 (19)	Dornier 328-100 (31)
Origin	Anglesey Airport	Anglesey Airport	Anglesey Airport	Anglesey Airport
Destination	London Luton Airport	London Luton Airport	London Luton Airport	London Luton Airport
Airline	Generic	Generic	Generic	Generic
Aircraft	DHC6-300	Dornier 328-100	DHC6-300	Dornier 328-100
Load Factor (%)	55	60	95	80
Total Pax	5,434	9,672	18,808	25,842
Average Fare	90	90	90	90
Frequency (wk)	5	5	10	10
Revenue (£)	**500,020.21**	**893,239.48**	**173,0664.36**	**2,386,552.67**
Costs (£)	**819,718.41**	**856,950.16**	**170,8112.62**	**1,771,303.75**
Route Profit/ Loss (£)	**(-319,698.2)**	**+36,289.32**	**+22,551.74**	**+615,248.92**

The idea of introducing small commercial passenger aircraft to Northolt, alongside the commercial business jets it already accommodates in addition to its military and VIP traffic, is a concept Flybe amongst others have been pressing with Government in order to improve regional air access to both London and Heathrow. Northolt is ideally suited to the kind of small aircraft that we have envisaged on this route and the charges should not be dissimilar to Luton or Stansted. The big stumbling block at the moment is MoD resistance to consider a change of use from the current business jet focused operation at Northolt, but this may be something the Welsh Government may be well placed to take up with MoD Ministers or via contacts at RAF Valley. We speculate that a service between RAF Valley and RAF Northolt may prove popular with military personnel as well as with other users.

TABLE 8: APEX PAX ESTIMATES VS LEAKAGE BASED FORECASTS

Aircraft	Route	Estimated	APEX
19 Seat Aircraft (Direct to LTN[12] or NHT)	**VLY - London 1/day**	7,920	6,916
31 Seat Aircraft (Direct to LTN or NHT)	**VLY - London 1/day**	9,315	11,284
31 Seat Aircraft (Direct to NHT for LHR[13])	**VLY - NHT for London 2/day**	30,500	25,842
19 Seat Aircraft (Potentially via Intermediate Point)	**VLY - INV 1/day**	6,811	6,916
19 Seat Aircraft (Potentially via Intermediate Point e.g. IOM[14])	**VLY - BHD 1/day**	6,429	8,866

3.18 Table 8 compares the forecast for the route in Tables 5 and 6, with the level of demand APEX calculates would be needed to produce a breakeven operation, and as can be seen the two are closely matched for a single 19 seat aircraft rotation and about 20% higher than forecast for a 31-seat aircraft flying a single daily rotation. This is because it will be the ability to do a day's business and return that will be the key to capturing a significant share of the traffic currently travelling from North West Wales to Heathrow by road, rail or air from Manchester. Hence it is projected that the double daily service using a 31-seat aircraft would be over-subscribed relative to APEX breakeven passenger throughput, based on an average one-way fare of £90 and a lead in of probably closer to £49. This level of fare stands scrutiny against typical single journey costs by road or rail in Table 9.

[12] London Luton
[13] London Heathrow
[14] Isle of Man

TABLE 9: SINGLE JOURNEY COSTS TO TARGET DESTINATIONS FROM BANGOR

Bangor to	Rail Cost (Tomorrow at 0700)	Rail Cost 30 days hence off peak	Rail Cost 60 days hence off peak	Time	Distance by road	Car @ £0.45p /mile	Time
London Kings Cross	£161	£94	£88	3h 40m	264	£119	5h 01m
Aberdeen	£150	£150	£150	7h 30m	427	£192	7h 02m
Inverness	£156	£156	£156	9h 00m	452	£203	7h 32m
Edinburgh	£117	£117	£117	5h 00m	298	£134	5h 12m
Glasgow	£122	£40	£47	5h 07m	294	£132	4h 42m
Belfast (via Holyhead ferry)	£49	£49	£49	7h 40m	198	£89	5h 09m

3.19 When similar comparisons are made for prospective routes from Anglesey Airport (VLY) to Belfast and Inverness in Table 10 using a 19-seat aircraft, the results are similarly positive, although it would appear the assumed fare in APEX of £80 to Belfast would need either to be higher to breakeven if volumes remained restricted or lowered to increase market stimulation and generate additional users. The 31 seat aircraft economics was also explored with profit being possible only at higher load factors and fares. At the moment, that service would make a material loss and the Inverness service only works when close to double the predicted traffic on the VLY-INV route is projected, and this seems unlikely.

TABLE 10: ANGLESEY TO OTHER UK DESTINATIONS

Anglesey Extension Routes	VLY-BHD	VLY-BHD	VLY-INV	VLY-INV
Aircraft (Seats)	Dornier 328-100 (31)	DHC6-300 (19)	DHC6-300 (19)	Dornier 328-100 (31)
Origin	Anglesey Airport	Anglesey Airport	Anglesey Airport	Anglesey Airport
Destination	Belfast City Airport	Belfast City Airport	Inverness Airport	Inverness Airport
Airline	Generic	Generic	Generic	Generic
Aircraft	Dornier 328-100	DHC6-300	DHC6-300	Dornier 328-100
Load Factor (%)	55	68	70	70
Total Pax	8,866	6,718	6,916	11,284
Average Fare	80	80	100	100
Frequency (wk)	5	5	5	5
Revenue (£)	720,716.37	544,900.13	712,401.74	1,167,996.29
Costs (£)	835,323.02	713,455.73	1,118,570.04	1,108,115.44
Route Profit/ Loss (£)	(-114,606.65)	(-168,555.6)	(-406,168.3)	+59,880.85

3.20 A single daily service from Anglesey to Amsterdam using a 31-seat aircraft in the middle of the day was considered (see Table 11). CAA data suggests that 19,425 passengers from Anglesey Airport's catchment area are already flying to Amsterdam each year (and that figure excludes those using Liverpool and so more realistically likely well over 20,000. Assuming 40% of these would switch to using a new Anglesey service and that the existence of the route would result in traffic stimulation of 50%, then nearly 11,700 passengers are projected to use the service. This is higher than the projected requirement by APEX based on a £120 one-way fare.

TABLE 11 ANGLESEY TO AN INTERNATIONAL HUB AIRPORT

Anglesey Extension Routes	VLY-AMS
Aircraft Seats	Dornier 328-100 (31)
Origin	Anglesey Airport
Destination	Amsterdam - Schiphol Airport
Airline	Generic
Aircraft	Dornier 328-100
Load Factor (%)	65
Total Pax	10478
Average Fare	120
Frequency (wk)	5
Revenue (£)	1,306,075.73
Costs (£)	1,263,450.24
Route Profit/ Loss (£)	+42,625.49

3.21 All of which points to a single daily Amsterdam service being an interesting one to consider alongside a London link, although with slots becoming scarce at Amsterdam as well as Heathrow, whether a 31-seat aircraft from a small market would be given priority at acceptable cost to gain access to Schiphol is unclear. However, Dundee Airport's service to Amsterdam, which achieved particularly good sales until it was temporarily switched to Edinburgh for operational reasons, provides a positive precedent.

Economic Impact Assessment

3.22 The indicative economic impacts of the service variants on the PSO Route and new route enhancement options are provided in the next two tables.

TABLE 12: IMPACTS OF THE PSO SERVICE VARIANT OPTIONS

Option Assumptions	Fares*	2015 Pax	2022 Pax	Incremental Pax by 2022	Estimated Direct Jobs	Indirect + Induced Jobs	Total Jobs Created	% Business Pax	Travel Cost Saving per Business Pax (£)	Time Savings per Pax (hrs)	Cost Saving pa - Air vs Road (£)	User Benefits (£)	GVA Per Year (£)
Baseline Forecasts	High Fare	11,000	11,173	173	0.2	0.3	0.5	78%	45	2	6,067	6,742	6,405
	Low Fare		13,464	2,464	3.0	3.6	6.6	68%	55	2	92,142	83,765	87,954
2x Daily, Weekdays													
With Longer Day & 31 Seat Aircraft	High Fare	11,000	12,945	1,945	2.3	2.8	5.2	78%	45	2	68,266	75,852	72,059
	Low Fare		14,593	3,593	4.3	5.2	9.6	68%	55	2	134,360	122,146	128,253
As above, with GDS and Marketing	High Fare	11,000	15,738	4,738	5.7	6.9	12.6	78%	45	2	166,308	184,787	175,548
	Low Fare		17,958	6,958	8.4	10.2	18.5	68%	55	2	260,246	236,587	248,416
3x Daily, Weekdays													
With Longer Day but 19 Seat Aircraft	High Fare	11,000	13,854	2,854	3.4	4.2	7.6	78%	45	2	100,188	111,320	105,754
	Low Fare		15,819	4,819	5.8	7.0	12.8	68%	55	2	180,246	163,860	172,053
As above, with GDS and Marketing	High Fare	11,000	16,648	5,648	6.8	8.2	15.0	78%	45	2	198,230	220,255	209,242
	Low Fare		19,185	8,185	9.8	12.0	21.8	68%	55	2	306,132	278,302	292,217

TABLE 13: ECONOMIC IMPACTS OF THE POTENTIAL EXTENSION ROUTES

Service Routing	Estimated Total Demand	Estimate of Generated Traffic	Projected Load Factor	Route Commercial Evaluation	Estimated Direct Jobs	Indirect + Induced Jobs	Total Jobs Created	% Business Pax	Travel Cost Saving per Business Pax (£)	Time Savings per Pax (hrs)	Cost Saving pa - Air vs Road (£)	User Benefits (£)	GVA (£/m)
Anglesey Base - 3 Rotations													
VLY - ABZ (19 seats)	4,240	707	43.8%	Poor	5	7	13	60%	80	4.0	186,564	443,088	0.630
VLY - INV (19 seats)	6,811	1,135	70.3%	Promising	8	12	20	30%	80	5.0	149,846	444,857	0.595
VLY - BHD (19 seats)	6,429	1,072	66.3%	Possible	8	11	19	35%	140	6.0	288,769	587,852	0.877
VLY - NHT (19 seats)	7,920	720	81.7%	Good	10	14	23	45%	20	2.0	68,040	323,190	0.391
VLY - NHT (31 Seats)	9,315	1,215	58.9%	Modest	11	16	27	45%	20	2.0	78,368	372,246	0.451
Cardiff Base - 3 Rotations (All 31 seats)													
Extra CDG	15,600	3,600	70.5%	Promising	19	27	46	40%	120	6.0	662,400	1,821,600	2.484
FRA	26,212	4,369	118.4%	Very Good	31	46	77	65%	210	10.0	3,279,699	8,589,688	11.869
ABZ and INV	10,586	2,117	47.8%	Poor	13	19	31	40%	115	5.5	438,248	995,585	1.434
ORK and SNN	11,700	3,900	52.9%	Modest	14	20	35	20%	95	6.0	185,250	643,500	0.829
Anglesey Base - 4 Rotations (Assumes longer opening hours at VLY and all 31 seats)													
VLY - NHT x2	30,500	8,714	96.5%	Very Strong	37	53	90	60%	30	2.0	470,581	1,490,174	1.961
VLY - NHT x1 + EDI x1	17,128	5,316	54.2%	Modest	21	30	51	60%	50	3.5	434,104	1,443,395	1.877
VLY - NHT x1 + ABZ/INV x1	18,550	5,300	58.7%	Modest	22	32	55	65%	50	4.5	516,750	2,209,106	2.726
VLY - BHD x1 + ABZ/INV x1	15,795	4,095	50.0%	Modest	19	28	47	45%	110	5.5	680,501	1,616,190	2.297
CWL Base - 4 Rotations (All 31 seats)													
CWL - LCY x 2	24,320	5,320	64.1%	Possible	29	43	72	75%	0	2.5	0	1,929,094	1.929
CWL - FRA + NWI (Drop-in) x 2	32,890	7,590	74.3%	Promising	39	58	97	60%	130	7.5	2,269,410	7,201,013	9.470
CWL - BRU + ABZ/INV x 2	19,250	5,500	43.5%	Poor	23	34	57	60%	100	5.5	990,000	2,994,750	3.985

3.23 The results suggest that the enhancements to the existing PSO service generate only small incremental economic benefits, but that some of the 'extension' routes using the PSO aircrafts down time could be very positive in terms of economic returns for any support provided, with Frankfurt substantially ahead of the others because of distance, but London and Amsterdam also demonstrating potentially material benefits.

Qualitative Appraisal of Long List

3.24 The non-quantified qualitative impacts arising from this appraisal chapter, and used to generate the WelTAG tables in the next, are summarised for convenience below in Table 14 for network enhancements from Anglesey and Table 15 for network enhancement options from Cardiff Airport.

TABLE 14: SUMMARY OF IMPACTS OF POSSIBLE AIR SERVICE NETWORK ENHANCEMENTS FROM ANGLESEY

Type of Enhancement	Impact	Intensity of Impact
Better PSO timetable	Improved popularity with Welsh residents and more productive trips possible	+
More capacity on PSO route	Will diversify usage with a presumed wider range of fares. Will also prove more useful for inbound tourism promotion from South Wales	+
Anglesey based Aircraft		
Double daily link with Northolt	Would be transformative in globalising the region and making it more accessible to a range of other long haul countries and the important London market. A smooth interchange with LHR would be imperative.	+ + +
Daily or double daily link with other London Airport	Would be transformative in raising the profile of the region in the EU and making it more accessible to a range of other destinations that also link with that London airport – even with self-connecting, and also the important London market	+ **OR** + +
Links with new British Isles Destinations	The Scottish market would be important for the Energy Island – Irish destinations which all offer different business and tourism opportunities - the Crown Protectorates would have less business impact	+ **OR** + +
Cardiff Based aircraft		
Enhanced connections at Cardiff	North Wales could also benefit from any onward connections at Cardiff if the same aircraft was used and if the timetabling was reasonably seamless. Conversely new destinations could more seamlessly access North Wales for short breaks via Cardiff.	+ **OR** + +

Note Plus signs (+ + +) indicate Intensity of impact with minus sign (-) indicating little or neutral.

TABLE 15: SUMMARY OF IMPACTS OF POTENTIAL AIR SERVICE NETWORK ENHANCEMENTS FROM CARDIFF AIRPORT

Type of Enhancement	Impact	Intensity of Impact
Better PSO timetable	Improved popularity with N Welsh residents. Less beneficial to Cardiff catchment	-
More capacity on PSO route	Will diversify usage with a presumed wider range of fares	+
Cardiff Based aircraft		
Double daily to LCY	This would be particularly welcome for the Financial sector, and there are a range of onward destinations at LCY that would also be of interest	+ + +
Additional frequency to Paris	This would facilitate business in both Paris and its substantial range of onward connections	+ + +
Once / day to Frankfurt	A welcome addition to Wales destination board and possible Norwich elaboration might also be welcome	+ +
North of Scotland	Potential to serve Inverness, improve links to Aberdeen and perhaps use intermediary stops such as LBA or NCL could all have utility	+ +
Southern Ireland	Cork and Shannon would be useful destinations to reassert at Cardiff	+ +
Channel Isles	Strengthening links with the Channel Isles would be welcome, but not particularly transformative	+
Cardiff enhancements	Some of these near Europe, Irish, Channel Isle and Norwich enhancements would be of interest to Anglesey catchment and would drive some through traffic	+
Anglesey based Aircraft		
Links with new British Isles Destinations	New Links to Inverness, Belfast, and IOM might be of utility to the Cardiff catchment	+ +

Conclusions and Recommendations from the Route Extension Study

3.25 Whatever mix of potential delivery mechanisms is employed to optimise PSO associated route network enhancements, it is clear from our analysis and the appraisal that a key decision is going to be whether those enhancements will have a North or South Wales centric complexion. There are also trade-offs to be made between additional capital costs in Anglesey, the need for a bigger PSO aircraft if Cardiff is to benefit and the distribution of connectivity benefits at either end of the route.

3.26 However, the decision on this does not need to be made immediately as several important preparatory building blocks need laid in the meantime. Ideally the development of some sort of consensual political will for a project that straddles political cycles; identification of budgets; the key role that RAF will play in this, the availability of Northolt for scheduled flights and further investigation as to suitable state aid facilitation measures still need to be undertaken.

3.27 Summarising the recommendations made in the Technical Report we suggested the following milestone steps were actioned:

i. Prepare current PSO Invitation to Tender (ITT) assuming CWL based aircraft. Leave room for elaboration before or during PSO (e.g. change in operating hours). Find a way to turbo charge route marketing to ensure patronage grows, as this reduces risk and cost on subsequent elaborations.

ii. Commence dialogue with the RAF/DIO to discuss:

- Longer weekly opening hours;
- Possible weekend opening, even if only for occasional special 'charters';
- Potential to base aircraft in Anglesey and implications (e.g. hangar and larger enclave footprint);
- NASP adaptions and timescales;
- Cost.

iii. Complete a more detailed assessment of NASP in parallel with these discussions; quantify cost, obtain quote for equipment, agree with RAF and establish timescales.

iv. Undertake socio economic studies to see if PSOs from VLY-London and or Amsterdam can be justified, and similarly appropriate forms of route support for an additional daily frequency to Paris or new routes to London or Frankfurt can be justified/maintained. This will require more detailed work, including potentially visitor surveys, to be undertaken on the North-West Wales tourism market so the potential benefits of enhanced connectivity can be properly understood and assessed.

v. The most promising London option for both Anglesey (and possibly Cardiff) until the third runway is built at Heathrow, is a service to RAF Northolt, and the Welsh Government should attempt to negotiate an agreement with the MoD to facilitate this.

vi. In tandem, it would be appropriate to draft, and then seek approval on a Welsh RDF[15] scheme, which can be used both on PSO route enhancements and other route enhancements at CWL and VLY.

vii. In the autumn of 2016[16] award a PSO contract until end 2020. Ideally this will include a 2018 break clause if the operator is not willing to contemplate aircraft upgrades or other route opportunities. Subsequently it has been agreed with the Welsh Government that it would be better to seek a temporary extension to the existing contract to allow proper planning for a new PSO contract in 2018.

viii. This makes it important that the extra time available is used for careful planning of the re-tender and for considerations such as infrastructure preparations (e.g. the hangar, requisite car park and road re-alignments improvements to permit basing of an aircraft in Valley largely using the current civilian footprint) to be addressed.

ix. It is also important that the Welsh Government takes time to confer with CWL and air operators on various route options and available state aid before the new tender is published.

x. This in turn will help to refine the final PSO ITT which ideally should be published at least one year before start date. This additional time will be used to better evaluate the various enhancement options; tie down the bidders into some sort of credible commitments on their additional route development initiatives, and allow time to launch any new routes with a better chance of success.

xi. Shortly after award of the 2018 PSO we would recommend that preparations begin on the subsequent PSO, which ideally will be building on the work of the previous 6/7 years.

xii. Whichever company is appointed as PSO operator, it must be obliged to develop a comprehensive marketing plan for not only the PSO route but also any enhancements, which is shared and bought into by relevant partners and properly funded in order to make a substantive impact.

3.28 In addition to the above, we also offered a series of other more detailed recommendations that were more tactical in nature:

a) Ensure that the DfT and the new runway sponsor (LHR in all likelihood) are clear that Wales expects to have slots for both Cardiff and Anglesey Airports when any additional runway capacity becomes available. Flag that the expectation is that these will be protected by PSOs.

[15] Route Development Fund is an EU state Aid approved category of route support under specified circumstances and principles

[16] Please note during the authoring of the various reports the timetable of possible PSO commencement dates evolves. These dates should be considered as illustrative rather than definitive.

b) Express support to the DfT for the use of Northolt as an interim measure whilst new runway capacity is made available. This is likely to be of more interest from Anglesey than from Cardiff because of its shorter terrestrial access times.

c) Review with the RAF/DIO whether the JSP360 funding model works best for the Anglesey Airport civilian enclave. For instance, a fixed annual fee rather than JSP360 discounted fee might work better. There is concern that additional civilian business that could be attracted to the airport by the marketing efforts of the national and regional stakeholders would solely benefit the RAF. This does not seem fair, and does not incentivise various bodies to optimise the economic and tourist potential of the civil side of the airport (which they are funding). Additional charters using the PSO aircraft, business and general aviation, IT[17] charters and limited weekend opening in the meantime should also be explored.

d) United and Coordinated Stakeholder Action for instance in Marketing - Air operators prefer to work with a united and coordinated group of stakeholders when launching and developing their route. They also prefer to be able to negotiate with one representative of the region rather than several different agencies. The Irish and Scottish Government approaches to route support offers a model, and in regional France they often have a Syndicate Mix with a President, (usually advised by the local airport) who is empowered to make deals with the airline.

e) The ITT and PSO contract terms will be very important in ensuring WG aims are well aligned with air operator aims. Some examples were provided in the conclusions of the 2016 *Demand Forecasting, Economic Analysis and Exploring Extending the Aircraft Size and Operating Hours at Anglesey Airport* report.

f) Innovation - It is recommended that options are introduced into the tender competition so that different operator solutions are encouraged and can be compared against the PSO programme aims. The Invitation to Tender can invite operators to offer other solutions that fulfil the programme aims by means unanticipated in the specifications. The Government should retain the flexibility to entertain novel solutions.

g) More than six months' notice - The PSO regulations (Regulation No. 1008/2008) require procuring authorities to give 'at least' six months' notice of intention to award a PSO. Nearly all have interpreted this in practice to mean (invariably) six months. For the complexity of marrying a PSO with other enhancements being considered here we would strongly recommend that WG offer more like 12 months on their ITT. This permits proper preparation, pre-marketing, smooth handover and thorough preparation and pre-marking of any additional routes. The aim should be to award the PSO contract at least three months before start date.

h) Use trialling to avoid re-tendering - If there is a desire to change the specification of a PSO during the term of the contract this can only be properly achieved with a full re-tender. However minor anticipated changes can be covered by trials, which can be periodically reviewed and dropped if unsuccessful. We would recommend that many

[17] Inclusive Travel such as Package Holidays

aspects (such as yield maximisation experiments, even timetable details) are presented as trials that can be tweaked without triggering a full re-tender.

i) Test Options and anticipated different solutions - It may well be that the tendering process itself presents different route enhancement options for selection by the Welsh Government. The Welsh Government cannot micro-manage the desired route initiatives and it should also be noted that different operators will have differing analysis and different assessment of operational convenience.

j) PSO incentives - Some PSO contracts, because of their deficit funding clauses, can create poor incentives to develop the route or assign adequate resources to marketing. In other words, any improvement in the route revenue will be used to reduce the subsidy, and not benefit the airline[18]. Authorities are increasingly addressing this contractual anomaly.

k) PSO Route Development Plan - A persuasive route development plan that explains how route revenues can be developed and patronage can be increased should be encouraged and rewarded in the assessment of tender bids, and these efforts should be reflected in year on year passenger and revenue growth projections, and targets presented in the submission.

l) The Maximum Fare tool is a rather blunt instrument to ensure affordability and maximum participation. The airline and sponsoring authority will have different ambitions with regard to average yield and numbers travelling and clear guidance and influence should be applied to the pricing policy, which as we appreciate from the route forecasting can result in very different numbers travelling.

m) PSO proposal Evaluation Criteria. According to the regulation the subsidy requested is only to be a main and not the only determinant of the preferred bidder. Other criteria can be developed to reward solutions that better suit the wider strategic objectives of the Welsh Government.

n) Conceptualise a progressive range of enhancement steps and timetable that can be committed to, and then monitored, particularly against key milestones (e.g. increases in route patronage, NASP quantified, RAF quantified, PSOs/RDFs delineated, stakeholders jointly committed).

3.29 Based on the foregoing the immediate next steps can be summarised as follows:

- Create (possibly consult on) a formal exposition of the PSO programme aims, which then can act as a reference point for much subsequent action.
- Enter dialogue with RAF/DIO on a range of enhancement possibilities.

[18] **Merkert, R. and O'Fee, B. (2013)** Efficient procurement of public air services - Lessons learned from European transport authorities' perspectives, Transport Policy (June 2013)

- Finalise the current ITT with whatever simple enhancements can be incorporated within the pressing timescale – we suggest:

  - Extended day if agreeable with RAF within the timescale and budget of Department
  - Enhanced and better resourced marketing
  - Incentives for the air operator to cooperate in that marketing
  - Consideration on how best to positively influence the yield management policy to broaden participation in service usage
  - Pre-agree some additional 'PSO' weekend schedules at outset of each year (e.g. Rugby, Football, TT races, Christmas shopping, stand out events)
  - Positively score any voluntary route enhancements by the bidders

3.30 The conclusions and recommendations have been encompassed within the Recommendations and Next Steps in Section 10 of this report.

4 THIN ROUTE DEVELOPMENT OPTIONS FROM CARDIFF INTERNATIONAL AIRPORT

4.1 As there was a significant amount of overlap between the draft work already undertaken on a *Cardiff Airport: PSO Thin Routes* and the *Welsh PSO route enhancement study (see Table 1)*; it was proposed that the outputs of both studies might usefully be combined in one more comprehensive exercise identifying short haul routes that are likely to require Welsh Government intervention if they are to be secured and consolidated over the next 3-5 years.

4.2 The PSO work explored routes that it might be possible to serve with aircraft in the 19-34 seat category as an adjunct to the core PSO service; this Thin Route study focused on routes to and from Cardiff (CWL) of 50,000 passengers a year or less, and therefore less likely to be commercially viable on a free-standing basis than those with a potential market larger than that. The report used an equivalent appraisal to ease comparison with PSO enhancement options.

4.3 Using a similar approach to the prior PSO enhancement study the study team were not constrained by having to use the 'Anglesey' PSO aircraft and were also seeking routes that could survive on a basis other than a PSO e.g. normal route development incentives and Route Development Funds.

4.4 Demand was estimated from catchment leakage as derived from CAA passenger surveys and commercial viability was tested using APEX modelling as before.

4.5 A range of routes were identified and scored based upon quantitative and qualitative criteria. Some key issues include fares vs surface modes or competitiveness vs Bristol fares. Both studies were concerned with state aid interventions; that are legal and capable of contributing substantively to route development.

4.6 The study concludes that there are between 10-15 worthwhile route development opportunities from Cardiff that are not outbound leisure orientated (there is probably another 10-15 of these as well), which a mixture of RDF and DMF[19] funding could help to support and for which there is potentially an economic case to do so. Further work is needed to develop a methodology that will satisfy green book requirements[20] and allow value for money to be demonstrated, but the core work to justify commissioning a more in-depth evaluation of that kind, covering Cardiff as well as Anglesey, is provided by the analysis in this report and the accompanying PSO extension study.

4.7 This report considers five facilitative mechanisms which could play a role in route development:

[19] Destination Marketing Funds are a common way that public funds support key routes within specified limits.
[20] HM Treasury guidance for public sector bodies on how to appraise proposals before committing funds to a policy, programme or project

i. Public Service Obligations (PSOs);

ii. EU approved state or locally sponsored Route Development Funds;

iii. Destination marketing initiatives;

iv. De-minimis funding; and

v. Normal airport funded route support packages.

Summary of Thin Route Study Review

TABLE 16: THIN ROUTE APPRAISAL IDENTIFIED 10-15 POSSIBLE ROUTE INITIATIVES

	Frequency of rotations / week	Benefit to Wales PLC	Likelihood of Delivery	Delivery Mechanism
United Kingdom				
Norwich Airport	5 / week twinned with near Europe	✓	✓	RDF
Aberdeen Airport	3/6 week & enhance current service	✓✓	**Significant doubt**	normal route dev
Inverness Airport	3/5/6 week	✓	✓	RDF
Leeds/Bradford	4/5 twinned with Scotland?	✓	**Significant doubt**	RDF
London City	10 (not modelled)	✓✓	✓	PSO
Crown Dependencies				
Isle of Man Airport	3 shared with Guernsey	✓	✓	normal route dev
Guernsey Airport	3/week	**Minor or neutral**	✓	normal route dev
S Ireland				
Cork Airport	5/6 or shared	✓✓	✓✓	normal route dev
Shannon Airport	3/week	✓	✓	RDF
Near Europe				
Paris - CDG Airport	5 in addition to current	✓✓✓	✓✓	PSO
Brussels Airport	4/5 week	✓✓	✓	RDF
Berlin - Schoenefeld	2 shared	✓	✓	RDF
Zurich Airport	2 shared	✓	✓	RDF
Hamburg Airport	4/5 week	✓✓	✓	RDF
Frankfurt Airport	5/6 week	✓✓✓	✓✓	RDF
Frankfurt Airport	10 (slots?)	✓✓✓	**Significant doubt**	PSO / RDF
Geneva Airport	3/week	✓	✓	RDF
Oslo Airport	1/week	✓	**Significant doubt**	RDF
Toulouse - Blagnac	4 / week	✓✓✓	✓✓	RDF
Bordeaux Airport	2 shared	✓	✓	RDF
Far Europe				
Milan - Linate Airport	3/5 week	✓✓	✓	RDF
Rome - Fiumicino	3/week	✓	✓	RDF

Rome - Fiumicino	5week	✓✓	✓	RDF
Istanbul - Ataturk	3/5 week	✓✓	**Significant doubt**	RDF
The ✓ scoring symbol indicates strength of assessment and the colour coding is to distinguish the delivery options				

5 EVALUATION OF NASP COMPLIANCE - ANGLESEY AND HAWARDEN AIRPORTS

5.1 One of the key components of aviation security within the UK is the National Aviation Security Programme. This is the Government standard that ensures the national requirements, policies and procedures covering all relevant provisions for aviation security within the implementing regulations under UK and EU law, are defined. All aircraft with either a maximum take-off weight (MTOW) of 10,000 kg and/or more than 19 seats are required to come under the provisions of NASP. Additionally, under NASP, a Security Restricted Area (SRA) and/or Critical Part (CP) thereof, must be established at the airport and clearly marked as the defined airside area in which the aircraft to be used, is stationed, and into which all those persons with a legitimate need to access the CP, may do so. This will include screened baggage, passengers, vehicles and staff. Protection of the SRA/CP is the main priority within the provision of NASP. Designation of the SRA/CP will need to be agreed with and approved by the regulator prior to the commencement of any NASP operations.

5.2 This report built upon work that indicated options where 19+ seat aircraft could operate out of Anglesey Airport and would therefore have to comply with this more stringent set of security standards.

5.3 A 2015 Quelltex report for the Isle of Anglesey County Council (IACC) on potential NASP compliance at Anglesey Airport which built upon an earlier 2009 report by Quelltex on the same topic, were made available to this study. The report was also informed by site visits to Hawarden and Anglesey Airports and discussions with Airbus, APG, Bilfinger Terminal staff and Isles of Anglesey Council.

5.4 The study did also undertake visits to other Welsh regional airports, although it was judged unlikely that inclusion under NASP would be required within any likely route enhancement scenario at these other airports.

5.5 The report estimated that Anglesey would require an approximate spend of circa £750,000 to become NASP compliant and Hawarden Airport between £1.36m - £2.3m, dependent upon whether a new terminal was required to be built alongside NASP compliance. The APG enclave at Hawarden was acknowledged as the best area to host such a development. In terms of timescales it would be prudent to allow 6-8 months to complete the transition as it requires new equipment to be purchased, staff to be trained, airport operators (RAF and Airbus to cooperate) and regulatory approval to be gained.

5.6 The Anglesey c£750k figure is a best estimate for what it would cost to be fully compliant for the change to level 3 for hold baggage screening by Sep 2018. That figure also includes new cabin baggage system which anticipates an imminent change to that requirement. This is what has been done at Newquay Airport for instance to future-proof themselves. Also, this level of equipment will be adequate for well in excess of 60K passengers p.a. as long as there is room for them to queue up. Anecdotally, Newquay

has only one security ‘arch’ and is expecting to be able to process 400K+ passengers with 2 machines running some of the time.

5.7 It may be possible to negotiate removing electronic security completely for a 19 seat Welsh PSO, especially as so few passengers are interlining at Cardiff Airport. Such an arrangement has recently been secured, with CAA approval in Scotland at airports such as Campbeltown, Tiree and Barra flying into Glasgow. Nonetheless until NASP compliance is achieved at Anglesey Airport, it would not be possible for southbound passengers to interline seamlessly as, on arrival from Anglesey, they would need to re-clear security (at Cardiff Airport) in order to continue their onward air travel.

6 AIRCRAFT-RELATED CONSIDERATIONS ASSOCIATED WITH WELSH PSO PROCUREMENT

6.1 The study team were asked to examine the impact that certification of single engine turbine (SET) aircraft for commercial public transport services by the *European Aviation Safety Agency (EASA)* might make on the viability of the different routes under consideration, and to consider the potential role of Alternative Ownership and Operating Models where the Welsh Government might facilitate desired innovation.

6.2 The study considered two representative SET types from a range of operational and perspectives, and the type does offer possibilities within Wales under certain options.

6.3 The potential for cost savings is not dramatic in the short term, but the potential for downstream intra Welsh route elaboration does exist, although most of these possibilities, it is suggested, are revisited in 3-5 years.

6.4 Two types were examined in detail as being representative of the 'class'. The Cessna Grand Caravan (unpressurised) and the Pilatus P12 (pressurised). A pressurised aircraft delivers a superior passenger experience, by flying 'above the weather', avoiding de-compression discomfort and, because of height, requiring fewer emergency divert airfields.

6.5 Some savings are possible (see table 17), but not so significant if the more attractive Pilatus P12 is selected. A series of cost estimates were made on both the existing route and some possible other intra-Welsh routes (Table 18).

TABLE 17: COST COMPARISON - INCUMBENT BASE CASE (LET410) VS ALTERNATIVE S.E.T.S

Anglesey to Cardiff (x2 daily M-F)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
LET 410 – 17 seat	16660	967,000	Base
Cessna Grand Caravan – 9 seat	8820	773,000	-194,000
Pilatus PC12 – 9 seat	8820	946,000	- 21,000

Anglesey to Cardiff (x3 daily M-F)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
Cessna Grand Caravan – 9 seat	13230	948,000	- 19,000
Pilatus PC12 – 9 seat	13230	1,129,000	+ 162,000

Anglesey to Cardiff (x4 daily M-F)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
Cessna Grand Caravan – 9 seat	17640	1,122,000	+ 155,000
Pilatus PC12 – 9 seat	17640	1,313,000	+ 346,000

TABLE 18: COST COMPARISON - INCUMBENT BASE CASE (LET410) VS ALTERNATIVE S.E.T.S FOR NEW ROUTES

New route options:

Hawarden to Cardiff (x2 daily M-F + x1 daily Sat/Sun)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
LET 410 – 17 seat	20400	1,345,000	Base
Cessna Grand Caravan – 9 seat	10800	987,000	- 358,000
Pilatus PC12 – 9 seat	10800	1,201,000	- 144,000

Hawarden to Cardiff (x3 daily M-F + x2 daily Sat/Sun)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
LET 410 – 17 seat	32300	1,771,000	Base
Cessna Grand Caravan – 9 seat	17100	1,256,000	- 515,000
Pilatus PC12 – 9 seat	17100	1,505,000	- 241,000

Hawarden to Haverford West (x2 daily M-F + x1 daily Sat/Sun)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
LET 410 – 17 seat	20400	1,277,000	Base
Cessna Grand Caravan – 9 seat	10800	933,000	- 344,000
Pilatus PC12 – 9 seat	10800	1,147,000	- 130,000

Cardiff to Haverford West (x2 daily M-F + x1 daily Sat/Sun)

Aircraft Type	Seat Capacity (PA)	Op Cost Estimate (£ PA)	Ops Cost relative to base/estimated change in PSO Subsidy (£ PA)
LET 410 – 17 seat	20400	1,214,000	Base
Cessna Grand Caravan – 9 seat	10800	893,000	- 321,000
Pilatus PC12 – 9 seat	10800	1,110,000	- 104,000

6.6 Table 18 examines potential cost savings on possible new intra-Welsh routes and does illustrate some quite significant savings. For instance, at Haverfordwest[21] a 9-seater aircraft would also likely remove the need for security infrastructure to be installed, and suggests a very simple customer terminal waiting area would suffice delivering further savings.

6.7 Care needs to be taken with regard to public acceptance and confidence in the aircraft type and single engine concept.

[21] Haverfordwest is an airport in West Wales run by Pembrokeshire County Council that does not currently cater for commercial scheduled air services.

7 FUTURE OPTIONS FOR AVIATION PSO'S IN WALES

7.1 The Welsh Government commissioned a wider-ranging review of the prospects for internal scheduled air transport services in Wales. This included options for reducing the costs/subsidy per head of the extant Valley service, comparing that service routing against a possible alternative from Hawarden to Cardiff and then latterly looking at the prospects for internal services from Haverfordwest and the other smaller airports in Wales and different combinations thereof.

7.2 It was established from passenger surveys, that the use of the PSO is much more diverse than is pre-supposed (Figure 3); 25% of pax surveyed were on their first PSO flight suggesting a significant 'churn' of users (Figure 4). The presence of regular users also indicates that a real benefit is being delivered by the service. Two thousand separate people and about six thousand different people should use the route over a 4 year PSO period.

FIGURE 3A: 2016 PASSENGER SURVEY – BUSINESS TRAVELLERS ANALYSED

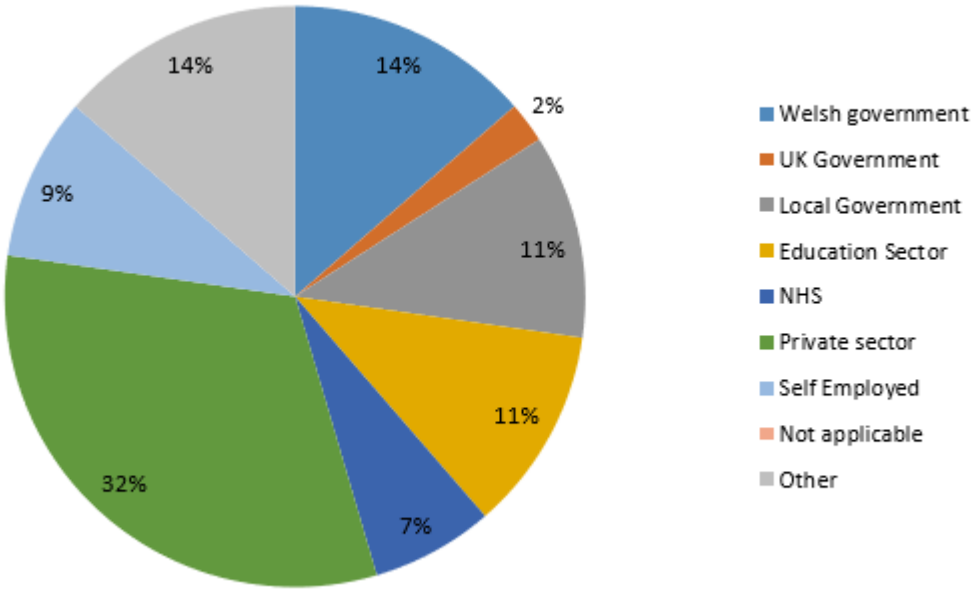
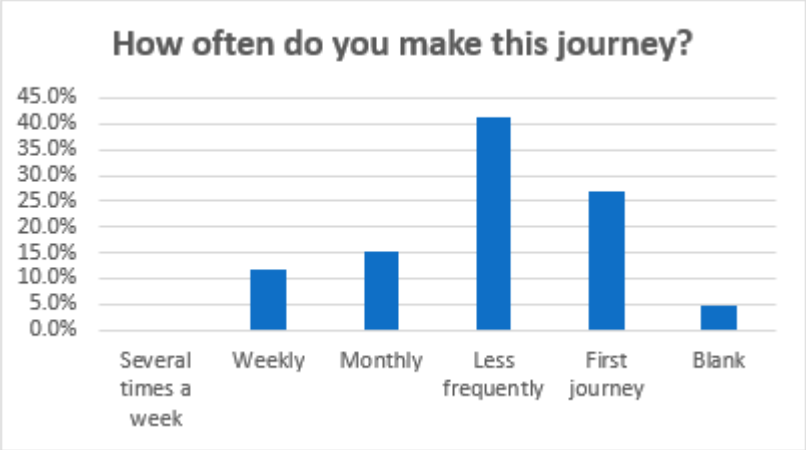


FIGURE 4: 2016 PASSENGER SURVEY – HOW OFTEN DO YOU MAKE THIS JOURNEY?



7.3 The work was undertaken in two key parts; the first of which was to include reduction of, or even closure implications on, the PSO service. In addition, Hawarden was also examined with regard to a PSO to Cardiff and also other route development opportunities out of the airfield – assuming that scheduled air services were established there.

TABLE 19: IMPACT ON JOBS UNDER VARIOUS SCENARIOS

	Assum'd Pax Nos in 2017	Estimated Direct Jobs	Indirect + Induced Jobs	Total Jobs Supported
Ceasing all provision	-9000	-10.8	-16	-27
Reducing frequency of flights	7200	8.64	13	21
Maintaining the status quo - change little	9000	10.8	16	27
Maintaining status quo with changes (timetable, marketing and operator incentives)	11000	13.2	19	32

7.4 Approximately 30 jobs are involved in providing the current level of service (Table 19). If the PSO aircraft can find other tasks, then the jobs created approximately double. If access to LHR is achieved, significant multiples of current employment are created (see Tables 20).

TABLE 20: IMPACT ON JOBS FOR EXPANSIONIST SCENARIOS

Pax Forecasts	Est. 2022 Pax Nos	Estimated Direct Jobs	Indirect + Induced Jobs	Total Jobs Supported
Maintaining status quo with changes (timetable, marketing and incentives)	13,000	15.6	23	38
Increasing usage - adding other routes/services (assumes move to 30 seater in 5 years) and Franchise / GDS marketing	18,000	21.6	32	53
Illustrative enhancement CWL-FRA via NWI	20,800	24.96	36	61
Basing aircraft in Anglesey (capital costs) Hanger and NASP	17,000	20.4	30	50
Illustrative enhancement VLY-NHT or VLY-LHR	99,000	118.8	173	292

7.5 The current subsidy approximates to current benefits. Increasing usage on current services increases VFM[22]. Additional aircraft use and LHR access delivers some much larger prizes (see Table 21 & 22).

TABLE 21: ECONOMIC IMPACT (GVA) UNDER CORE SCENARIOS

[22] Value for Money

Pax Forecasts	Est. 2017 Pax Nos	% Business Pax	Travel Cost Saving per Business Pax (£)	Time Savings per Pax (hrs)	Cost Saving pa - Air vs Road (£)	User Benefits (£)	GVA (£/m)
Ceasing all provision	-9,000	62%	£48	2.5	-£267,840	-£1,125,000	-£1.39
Reducing frequency of flights	7,200	62%	£48	2.5	£214,272	£900,000	£1.11
Maintaining the status quo - change little	9,000	62%	£48	2.5	£267,840	£1,125,000	£1.39
Maintaining status quo with changes (timetable, marketing and operator incentives)	11,000	62%	£48	2.5	£327,360	£1,375,000	£1.70

TABLE 22 ECONOMIC IMPACT (GVA) UNDER VARYING SCENARIOS

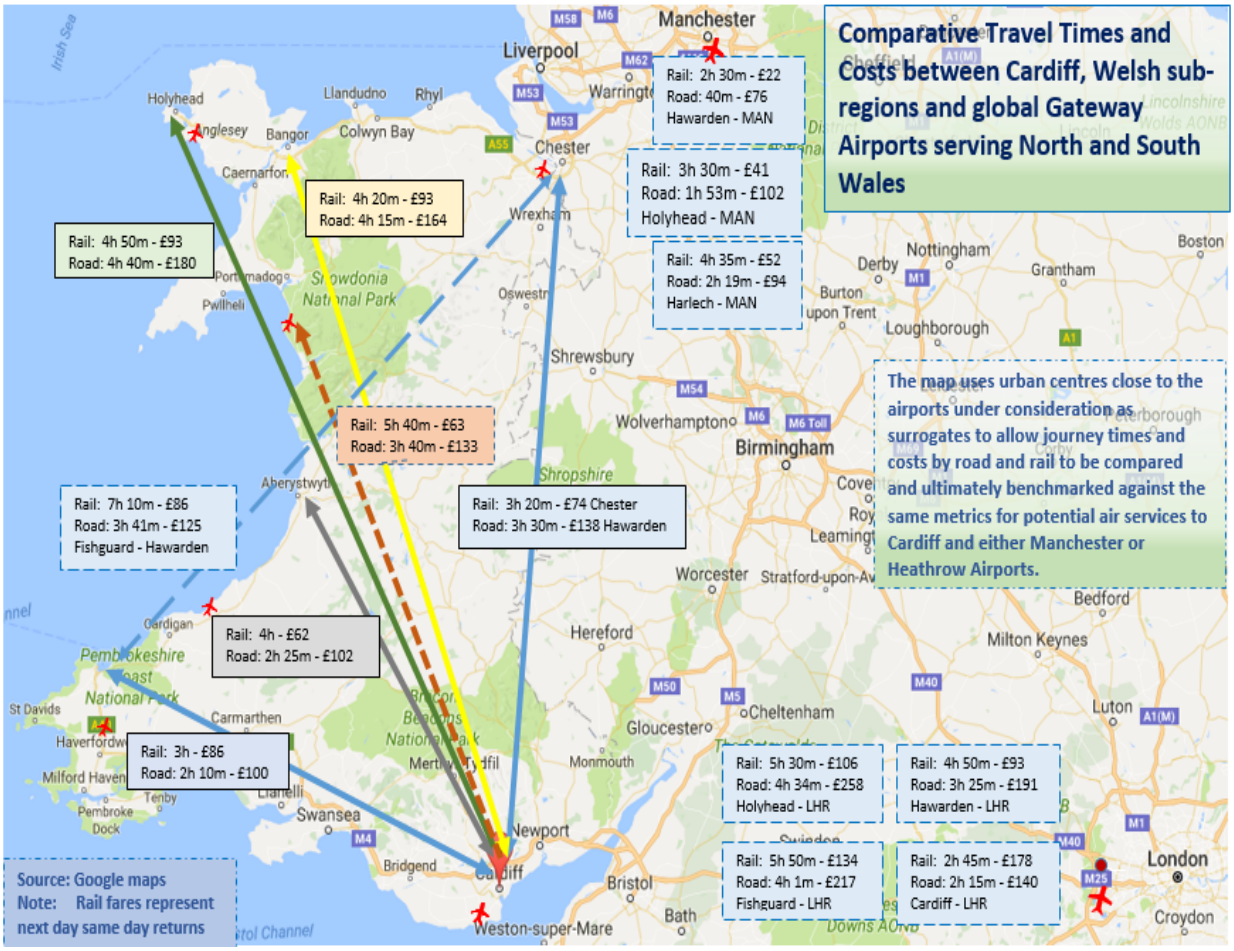
Pax Forecasts	Est. 2022 Pax Nos	% Business Pax	Travel Cost Saving per Business Pax (£)	Time Savings per Pax (hrs)	Cost Saving pa - Air vs Road (£)	User Benefits (£)	GVA (£/m)
Maintaining status quo with changes (timetable, marketing and incentives)	13,000	62%	48	2.5	£20,150	£1,625,000	£1.65
Increasing usage - adding other routes/services (assumes 30 seater in 5 years & GDS marketing)	18,000	62%	48	2.5	£27,900	£2,250,000	£2.28
Illustrative enhancement CWL-FRA via NWI	20,800	68%	55	7.5	£106,080	£7,800,000	£7.91
Basing aircraft in Anglesey (capital costs) Hanger and NASP	18,000	62%	48	2.5	£27,900	£2,250,000	£2.28
Illustrative enhancement VLY- NHT or VLY-LHR	99,000	68%	48	4.5	£302,940	£22,275,000	£22.58

7.6 n the second phase of the PSO Review, the prospects for other airfields such as Caernarfon, Llanbedr, Aberporth, Mid Wales Airport, Haverfordwest, Swansea and Pembrey were also considered from the point of view of possible PSO air services. They were each rejected on the grounds set out in the substantive supporting technical report, with only Haverfordwest identified as having a possible medium term role, leaving us with

potentially four airports still under consideration, each of which served a different part of Wales.

7.7 We then compared travel times and costs between Cardiff, Welsh sub-regions and global gateway airports serving Wales – most notably Manchester and Heathrow. The results are summarised in Figure 5.

FIGURE 5: COMPARATIVE TRAVEL TIMES AND COSTS BETWEEN CARDIFF, WELSH SUB-REGIONS AND GLOBAL GATWEWAY AIRPORTS SERVING N & S WALES



7.8 As a rule of thumb terrestrial journeys of less than two hours leave little room for air travel to play a role. Between two and three hours in certain circumstances (mainly business) air can have a role to play, whilst above three and particularly over four hours, air services can contribute significantly to the connectivity of a region.

7.9 The previous analysis leads to some simple geographic truths about what may be both required, and possible, in the four corners of Wales (see Figure 6) in terms of air services. This is reinforced when the potential importance of air connectivity is considered to and between these areas, and the Enterprise Zones located in them, as their economies change and their infrastructure is enhanced over time. Hence:

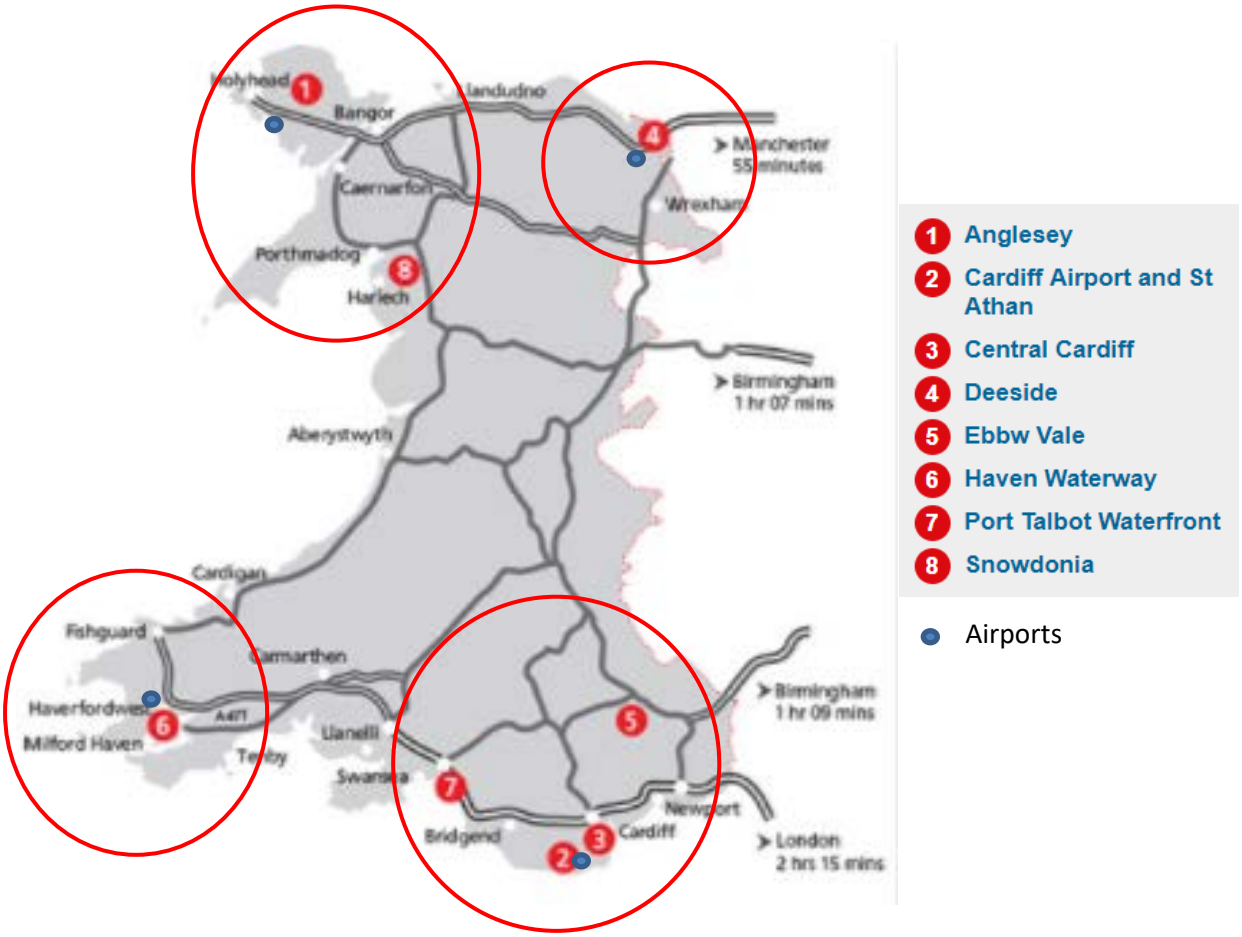
Cardiff Airport/St Athan - is now in public ownership and being targeted for aerospace/motor industry

Deeside Hawarden – is a high-tech employment cluster of UK significance

NW Wales – exciting projects – Nuclear Power – Energy Island – University – Holyhead waterfront renewal – World Class tourist offer

SW Wales – adjusting to contractions in oil refining – tourist destination

FIGURE 6: WELSH DEVELOPMENT ZONES AND RELATIONSHIP WITH WELSH AIRPORTS



7.10 This led us to focus our subsequent route level investigations on Hawarden and Haverfordwest (with Cardiff and Anglesey having been thoroughly investigated previously). The qualification to this was examining the potential utility of SET aircraft operating out of Cardiff to Valley. Then as in the PSO Extension study, we generated a significant number of route forecasts, subjected them to Apex analysis before considering them in terms of economic impacts and finally examined them through the lens of the WelTAG process. This analysis is summarised in the Tables that follow.

Market Analysis and Demand Forecasting

7.11 Our starting point was to take advantage of recently released 2015 CAA survey data to explore the existing travel patterns of air passengers lying within a 30-minute drive-time catchment of Hawarden Airfield and one 2-3 times as large for Haverfordwest, the difference being competition from Liverpool and Manchester at Hawarden, whereas Haverfordwest has little or none. We also recalibrated the Gravity Model used in the original 2003 route feasibility studies to estimate the number of passengers who currently make surface journeys; and from that, we derive a number of passengers that would potentially switch to air travel, as this is not picked-up in the CAA data (see Table 23).

TABLE 23: GRAVITY MODELLED AIR DEMAND BETWEEN VARIOUS RELEVANT AIRPORTS

	Cardiff – Haverfordwest	Cardiff - Hawarden	Hawarden - Haverfordwest	London - Hawarden
Base Market Potential	10,617	14,855	12,391	17,416
3x Daily Service	8,494	11,884	9,913	13,933
2x Daily Service	6,901	9,656	8,054	11,320

7.12 Then combining both, we generated Table 25, which is a high-level overview that sets out overall projected demand figures and integrates them with optimal frequency and aircraft type to identify routes that look likely to succeed. The red scoring indicates those that are most promising and the basis for reaching those conclusions is set out in Table 24 below.

TABLE 24

Route Evaluation	
Less 30%	Non-starter
30-40%	Very Poor
40-50%	Poor
50-60%	Modest
60-70%	Possible
70-80%	Promising
80-90%	Good
90-100%	Very Good
Greater 100%	Outstanding

TABLE 25: HIGH LEVEL MARKET APPRAISAL OF PSO REVIEW ROUTE OPTIONS

Service Routing	Assumptions	Catchment Leakage	Freq'y per week	Competition	Attractiv'ness over Alternatives	Assumed Market Penetr'ti'n	Existing Market Captured	Potential Stimulation	Estimated Total Demand	Seat Capacity	Projected Load Factor	Route Evaluation	Comments
Anglesey - 9 seater													
VLY - CWL	9-seater	11,000	10	Road/rail	High	70%	7,700	-10%	6,930	8,640	80.2%	Good	PTP traffic source PSO commercial data; higher seat costs than existing.
VLY - CWL	9-seater	11,000	15	Road/rail	High	80%	8,800	10%	9,680	12,960	74.7%	Promising	PTP traffic source PSO commercial data; higher seat cosst than existings
Hawarden													
CEG-CWL	9-seater	9,656	12	Road/rail	Moderate	60%	5,794	20%	6,952	10,800	64.4%	Possible	PTP traffic sourced from RCFM;
CEG-CWL	9-seater	11,884	17	Road/rail	Moderate	70%	8,319	20%	9,983	15,200	65.7%	Possible	PTP traffic sourced from RCFM;
CEG-CWL	19-seater	9,656	12	Road/rail	Moderate	65%	6,276	25%	7,846	22,800	34.4%	Very Poor	PTP traffic sourced from RCFM;
CEG-CWL	19-seater	11,884	17	Road/rail	Moderate	75%	8,913	25%	11,141	32,300	34.5%	Very Poor	PTP traffic sourced from RCFM;
CEG-LHR	31-seater	100000	12	Road/rail	Moderate	20%	20,000	15%	23,000	37,200	61.8%	Possible	Larger and quicker aircraft will be needed for access to Heathrow
CEG-LHR	31-seater	100,000	17	Road/rail	Moderate	30%	30,000	25%	37,500	52,700	71.2%	Promising	Larger and quicker aircraft will be needed for access to Heathrow
CEG-LHR	50-seater	100,000	12	Road/rail	Moderate	25%	25,000	20%	30,000	60,000	50.0%	Modest	Larger and quicker aircraft will be needed for access to Heathrow
CEG-LHR	50-seater	100,000	17	Road/rail	Moderate	35%	35,000	30%	45,500	85,000	53.5%	Modest	Larger and quicker aircraft will be needed for access to Heathrow
CEG-AMS	31-seater	142,000	12	Air LIV/MAN	Moderate	20%	28,400	10%	31,240	37,200	84.0%	Good	Good performance to alternative hubs - big connecting market
CEG-CDG	31-seater	80,000	12	Air MAN	Moderate	35%	28,000	15%	32,200	37,200	86.6%	Good	As above but less competition from LIV on Paris
CEG-IOM	9-seater	34,000	12	Air LIV/MAN	Low/Moderate	15%	5,100	20%	6,120	10,400	58.8%	Non-Starter	Probably not
CEG-INV	19-seater	9,280	6	Air MAN	High	60%	5,568	30%	7,238	11,400	63.5%	Possible	ostensibly good but risks
CEG-DUB	31-seater	117,000	12	Air LIV/MAN	Low	10%	11,700	15%	13,455	37,200	36.2%	Very Poor	ostensibly good but risks
CEG-BHD	19-seater	100,000	12	Air LIV/MAN	Low/Moderate	15%	15,000	15%	17,250	22,800	75.7%	Promising	ostensibly good but risks
Haverfordwest													
HAW-CWL	9-seater	10,620	12	road/rail	Moderate	60%	6,372	10%	7,009	10,800	64.9%	Possible	Market less strong than Angleseydue to shorter travel times on alt modes
HAW-CWL	9-seater	10,620	17	road/rail	Moderate	75%	7,965	10%	8,762	15,200	57.6%	Modest	Market less strong than Angleseydue to shorter travel times on alt modes
HAW-CWL-LHR	9-seater	72,500	17	road/rail	Moderate	20%	14,500	15%	16,675	15,200	109.7%	Outstanding	When can connect to LHR shuttle at CWL becomes outsanding
HAW-CWL-LHR	19-seater	72,500	6	road/rail	Moderate	15%	10,875	10%	11,963	11,400	104.9%	Outstanding	When can connect to LHR shuttle at CWL becomes outsanding
HAW-CEG	9-seater	12,390	12	road/rail	Moderate/High	65%	8,054	5%	8,456	10,800	78.3%	Promising	More than I frequency a day and attractive pricing could make this promising
HAW-CEG	9-seater	12,390	17	road/rail	Moderate/High	75%	9,293	15%	10,686	15,200	70.3%	Promising	More than I frequency a day and attractive pricing could make this promising
Triangulation between VLY and CEG													
VLY/CEG-CWL	19-seater	25,855	10	road/rail	Moderate/High	60%	15,513	5%	16,289	18,240	89.3%	Good	risks and sig. subsidy
VLY/CEG-CWL	19-seater	25,855	15	road/rail	Moderate/High	75%	19,391	5%	20,361	27,360	74.4%	Promising	risks and sig. subsidy
VLY/CEG-CWL	31-seater	25,855	10	road/rail	Moderate/High	60%	15,513	5%	16,289	29,760	54.7%	Modest	risks and sig. subsidy
VLY/CEG-CWL	31-seater	25,855	15	road/rail	Moderate/High	75%	19,391	5%	20,361	44,640	45.6%	Poor	risks and sig. subsidy
VLY/CEG-CWL	50-seater	25,855	10	road/rail	Moderate/High	65%	16,806	10%	18,486	48,000	38.5%	Very Poor	risks and sig. subsidy
VLY/CEG-LHR	31-seater	140,000	15	Air MAN/road/rail	Moderate	35%	49,000	20%	58,800	44,640	131.7%	Outstanding	very attractive
VLY/CEG-LHR	50-seater	140,000	10	Air MAN/road/rail	Moderate	25%	35,000	15%	40,250	48,000	83.9%	Good	very attractive
VLY/CEG-LHR	50-seater	140,000	15	Air MAN/road/rail	Moderate	40%	56,000	25%	70,000	72,000	97.2%	Very Good	very attractive

Commentary: This table (Table 25) was used to shortlist the PSO aircraft route enhancement options. The red scoring indicated those that justified exploring further. However, additional filters thinned this further. For instance, though the 9-seat solution looked promising in terms of load factors, the more detailed review of SET's undertaken separately rejected them on the basis of cost (and some other considerations). The links to Hubs all scored well. (**Note:** PTP stands for **Point to Point** and RCFM **Regional Connectivity Forecasting Model**)

APEX Commercial Appraisal

7.13 In order to provide a consistent and up to date platform for undertaking the kind of commercial modelling the study required, Northpoint secured access to RDC Aviation's APEX model, which allows multiple options and input variations to be examined relatively quickly, and produces outputs in a useful spreadsheet format. There were a number of limitations with using APEX to examine the kind of PSO and thin route services the study is focused on:

- the standard input menu in the model contains only a limited number of small aircraft – for example the Cessna Caravan is not represented and it was necessary to introduce new aircraft into the simulation: the pressurised Pilatus P12, as representative of the 9 seat category (although more expensive than the Caravan) and also the Dornier 228NG, which is an unpressurised 19 seater but has recently been brought back into production.
- not all potential destinations were accessible (e.g. Hawarden and Haverfordwest had to be introduced into the software as new airfields with some reasonable, but approximated, assumptions about their charges being made.)
- drop-in or tri-angulated services are not easy to appraise as the model works on a single sector at a time.

7.14 Nonetheless, APEX utilises up to date operating cost information from aircraft manufacturers and airports, and has the facility to specify fuel price and charging discount assumptions. It is also helpful for facilitating direct comparisons between carriers, aircraft types or nearby airport alternatives and allows the user either to use a simple 'breakeven' mode where very little by way of external inputs are required, or a more complex advanced function in which a range of input parameters can be used to refine and tailor model runs to local conditions or external user judgements. Northpoint has made significant use of the latter to generate the financial outputs that follow, using their in-depth knowledge of individual markets, competition, airport pricing strategies and airline business models.

7.15 More details on the APEX outputs can be found in the main ***Technical Report into Long Term Future Options for Aviation PSOs in Wales (Table 1)***, but the key results are summarised in the Tables 26 – 30 below. These tables also contain a final column where Northpoint has adjusted the output profit and loss figures from APEX to generate an implied subsidy level based on the fares that realistically, might be expected. So, for example in Table 26 the SET aircraft study assumed the average fare would remain similar to the current fare of c£45 and hence subsidy projected was higher. In the ***Aircraft Considerations Report (Table 1)***, it assumed the P12 would cost an extra £20k subsidy per year for current service levels, and an extra £160k per year if 3 flights per day were operated.

Cardiff to Anglesey

TABLE 26(a): CARDIFF TO ANGLESEY PILATUS P12 ROUTE APPRAISAL

Route	Aircraft Size	Frequency	Route Profit and Loss	Implied Subsidy (+/- 15%)
CWL-VLY	8 (Pilatus P12)	10 (reduced capacity) assumed £80 av. fare	Loss of £225,000 on 80% load factor (6600 pax)	£650,000 (incl £350k VLY civilian enclave)
CWL-VLY	8 (Pilatus P12)	15 (current capacity) assumed £80 av. fare	Loss of £380,000 on 74.7% load factor (9320 pax)	£780,000 (incl £350k VLY civilian enclave)

7.16 Table 26a, is extracted from the separate SET study summarised above (referenced in Table 1). The aircraft can be operated in a one or two pilot configuration. The requisite subsidy will in our estimation not be so very different from the Let 410 subsidy but it will offer even with less capacity. Table 26b estimates subsidy per head over the last decade. It should also be noted that the subsidy estimate was based upon higher fares that currently achieved (£80 vis a vis an estimated £45 per sector). Indeed to reach breakeven average fares of £110 would be required on anticipated and reduced carryings. It is worth noting that current average fares are estimated to be in the £45 range, and should not be confused with the PSO stipulated £70-£90 maximum fare range.

TABLE 26(b): ESTIMATED SUBSIDY PER HEAD

Period	Pax Numbers	Annual Subsidy	Subsidy / pax
May07-Aprl08	14,133	£810,000	£57
May08-Aprl09	14,718	£710,000	£48
May09-Aprl10	8,894	£730,000	£82
Jun10-May11	9,240	£820,000	£89
Jun11-May12	9,663	£1,150,000	£119
Jun12-May13	8,307	£1,125,000	£135
Jun13-May14	8,526	£1,194,000	£140
Jun14-May15	10,046	£1,201,000	£120

7.17 Bearing in mind that the public purse would still have to accept the cost of the Anglesey Airport civilian enclave operation (at approximately £350k per annum) we can appreciate that for example 6,600 passengers (which was modelled) using the route with the P12 would be requiring something of the order of £53 / head to contribute the civilian enclave aspect alone.

The public purse might be facing a subsidy of approximately £110 / head. Of course, because of the reduced capacity, there might be room to raise the fare on the route and thereby reduce this burden somewhat. However, the scope for fulfilling social inclusion aspirations and broadening the pool of beneficiaries for the service would be reduced and it might be susceptible to claims that it was a subsidised business class service.

7.18 Increasing the frequency as set out below will better respond to (or match) current demand, but with the average subsidy per passenger now rising to over £120 / head. (***PSO Review Technical Report*** for more detail)

Cardiff to Haverfordwest

TABLE 27: CARDIFF TO HAVERFORDWEST

Route	Aircraft Size	Weekly Frequency	Route Profit and Loss	Implied Annual Subsidy (+/- 15%)
CWL-HAW	9 seats (Pilatus P12)	12/week assumed £80 av. fare. However, if £45 is more achievable then a higher subsidy will be required	Loss of between £285,000 to £510,000 (load factors 65% - 6,500 pax)	£350,000- £575,000 (Marketing and additional minor staff costs at HAW of £65k assumed)
CWL-HAW	18 seats (Dornier 228)	6/week assumed £100 av. fare. However, if £45 av. fare is more achievable then a higher subsidy will be required	Projected requiring no subsidy with only 1 flight per day, but expensive £100 av. fare, all of which would reduce attraction and hard to credit 7,600 pax carried (65% load factor).	Subsidy thereby approaching £200,000 with additional costs at HAW, but likely much more as market is constrained.
CWL-HAW	18 seats (Dornier 228)	12/week assumed £100 av. fare. However, if £45 is more achievable then a higher subsidy will be required	Scenarios range between profit of £358,000 to loss of £180,000 projected on load factors of 65%, which is above demand estimates.	No subsidy to £200,000 subsidy. (Marketing and additional staff costs at HAW of £65k assumed), but likely much more
CWL-HAW	31 seats (Dornier 328)	12/week assumed £100 av. fare. However, if £45 av. fare is more achievable then a higher subsidy will be required	Profit of £982,000 possible on an unlikely 80% load factor and 32,000 carryings.	If 65% load factor and £45 av. fare assumed, then subsidy of £1.45 million is projected. (Marketing and additional staff costs at HAW of £65k assumed.) NASP and extra staffing would also be required (un-costed)

7.19 Turning to Haverfordwest, a 12-rotations per week service requires a fare of over £120 to breakeven unless load factors are particularly high (such as a difficult to achieve 90% load factor), when average fare may fall to more like £100.

7.20 APEX was then used to explore the route economics of an un-pressurised 19 seat Dornier 228 and a pressurised 31 seat Dornier 328. Even with very large passenger patronage (above what market demand indicates from our other enquiries) or high load factors (again hard to envisage) the services could not be made to breakeven on £100 average fares.

Hawarden to Heathrow, Amsterdam and Paris

7.21 In this section, the high-level economics of running various aircraft to major hubs such as Heathrow and Amsterdam are considered. (***PSO Review Technical Report*** for more detail)

TABLE 28: HAWARDEN (CEG) TO HEATHROW (LHR), AMSTERDAM (AMS) AND PARIS (CDG)

Route	Aircraft Size (Capacity)	Weekly Frequency	Route Profit and Loss	Implied Annual Subsidy (+/- 15%)
CEG-LHR	**Dornier 328-100 (31)**	12	754,000 loss (assumes high-ish £150 average fare so could be more) 65% load factor	£800,000 subsidy plus NASP capital cost
CEG-LHR	**Dornier 328-100 (31)**	17	Approaches breakeven at £175 average fare. 65% load factor	Suggests modest / no subsidy plus NASP capital cost
CEG-AMS	**Dornier 328-100 (31)**	12	£350,000 profit on £140 av. Fare. and 65% load factor	No subsidy but NASP capital cost
CEG-AMS	**Dornier 328-100 (31)**	17	Similar profit on £120 av. Fare and 75%. Load factor	No subsidy but NASP capital cost
CEG-CDG	**Dornier 328-100 (31)**	12	Breakeven at 70% load factor and £120 fare	No subsidy but NASP capital cost

7.22 Turning our attention to Heathrow we can appreciate that a Dornier 328 can exceed breakeven with 65% load factor with three flights per day, although with a rather expensive average yield (£175). Two flights per day does not really work on comparable load factors.

7.23 Table 28 establishes that if average load factors are higher, then profitability is achievable, without the fares being too high. However, load factors of say 85% are very hard to envisage and achieve, and it is possible that a service to LHR may require subsidy.

7.24 The prospect of commercially profitable operations at Amsterdam looks strong across all options and at lower fares. This is no doubt partially due to airport charges being lower. However, it should be remembered that Heathrow is offering discounted packages to UK regions and this might be become material to the economics of routes such as this, and certainly charges at Northolt would be competitive if access were permitted.

7.25 A Dornier 328 to CDG (Charles de Gaulle) looks promising across a range of price points, but requires a strong load factor.

Hawarden to Haverfordwest

TABLE 29: HAWARDEN TO HAVERFORDWEST, AND HAWARDEN TO BELFAST CITY

Route	Aircraft Size (Capacity)	Weekly Frequency	Route Profit and Loss	Implied Subsidy (+/- 15%)
CEG-HAW	Pilatus P12 (8)	12	£385,000 loss on £75 av. fare and 78.3% load factor	£500,000 (Marketing and additional minor staff costs at HAW of £65k assumed)
CEG-HAW	Pilatus P12 (8)	17	£500,000 loss on av. £80 fare and 70.3% load factor	£565,000 (Marketing and additional minor staff costs at HAW of £65k assumed)
CEG-BHD	Dornier 228 (19)	12	£200,000 loss on av. £80 fare and high load factor of 70%	£265,000 (Marketing and additional minor staff costs at HAW of £65k assumed)
CEG-BHD	Dornier 328-100 (32)	12	£900,000 profit on 70% load factor and 27,000 pax demand	Possibly self funding

7.26 In the case of a service between Haverfordwest and Hawarden, it is hard to envisage profitability on a 9-seater aircraft at likely price points and hence it looks like a PSO subsidy would be required. Increasing the frequency only compounds the challenge.

7.27 A 19 seat Dornier 228 can potentially be made to work on a flight to Belfast City with good load factors and the Dornier 328 also works at a similar load factor.

Triangular Routes Linking Cardiff to Hawarden and Anglesey

TABLE 30: TRIANGULAR ROUTES LINKING CARDIFF TO HAWARDEN AND ANGLESEY

Route	Aircraft Size (capacity)	Weekly Frequency	Route Profit and Loss	Implied Subsidy (+/- 15%)
CWL-HAW-VLY	Dornier 228 (19)	12	Loss of £2.9m on 75% and 60% load factor (LF) on diff. legs (£50 & £25 av. fares) £125 return	£3m loss likely
CWL-CEG-VLY	Dornier 228 (19)	12	Loss of £3.4m on low fare regime and 75% and 60% LF on diff. legs (£65 & £45 av. fares) £175 return	£3.5m loss likely
CWL-CEG-VLY	Dornier 228 (19)	12	Loss of £125k on higher fare regime and 75% and 60% LF on diff. legs (£80 & £45 av. fares) £205 return	£125k loss likely on higher fare regime
VLY-CEG-LHR	Dornier 328-100 (32)	12	£3.2m loss predicted. Fare regime on high 80% and 60% LF and £100 & £50 av. fares £250 return	£3.2m loss likely plus £350k civilian enclave at CEG and NASP costs at both
VLY-CEG-LHR	Saab 2000 (50)	12	£152k loss predicted. Fare regime on 75% and 60% LF and £90 & £60 av. fares £240 return	£152,000 loss likely plus £350k civilian enclave at CEG and NASP costs at both

7.28 In Table 30 we look at a possible 'triangulation'. There are several attractions to triangulation that can be balanced against its downsides for passengers requiring slightly longer journey time than otherwise (with an interim stop). The first three simulations are with a 19 seat Dornier 228 and explore losses at varying fares. The final options are a 32 seat Dornier 328 and 50 seat Saab2000 flying into Heathrow.

7.29 Note the combined fares highlighted (e.g. CEG-LHR x 2 Plus 1 VLY-CEG) will in effect be a return fare, assuming the routing is true triangle[23]. In these simulations the VLY-CEG leg has been priced lower than the other 'more desirable' leg, and it is assumed that each passenger will pay a return on the desirable leg and one single on the VLY-CEG leg. It has also been assumed that load factors on the VLY-CEG leg will be lower, as this is not really point to point demand, but largely through travel demand. Hence the return fare is twice the high fare leg and once the lower fare leg.

7.30 If a higher fare regime is used on CWL-CEG-VLY losses are reduced considerably, albeit at high assumed load factors, which because of the demand sharing identified, might be expected.

[23] There can be different permutations to such a routing eg VLY-CEG-LHR and then LHR-VLY-CEG or VLY-CEG-LHR and then LHR-CEG-VLY. We have assumed the former which is referred to as a true triangle.

7.31 The advantages of triangulation are:

- Creating viability, where otherwise it would not exist;
- Justifying a larger aircraft than might otherwise be the case;
- Creating new itinerary options with split journeys for instance at each location;
- Sharing the benefits of public support more widely;
- And finally, as we will consider later, taking better advantage of scarce slots at a congested hub.

7.32 Until recently, Air South West used to successfully operate this kind of service from Plymouth and Newquay into London Gatwick. It was self-sustaining and profitable throughout the 1990's and 2000's, until Air South West were challenged on the route by Flybe.

7.33 However there have also been other examples such as:

- Inverness – Dundee – London;
- Faroes – Shetland – London;
- Inverness – Kirkwall – Sumburgh; and
- A PSO route between Benbecula – Stornoway (as a PSO), shared with Stornoway – Inverness as a non PSO service, with passengers remaining on the aircraft.

7.34 Because APEX is not able to automate this process, the individual outputs for each leg need to be combined to produce a final result. Hence the three legs are illustrated and then combined in a final read summary. It will be noted that lower carryings and load factors are anticipated on the weaker leg.

7.35 Looking at the triangulation from North Wales into Heathrow, a picture emerges whereby the larger aircraft (Saab 2000) approaches breakeven. Heathrow is offering discounted packages to UK regions and this might become material to the economics of routes such as this – we estimate in the range of £10 / pax, which in these examples, would represent a £319,130 reduction in deficit on the Dornier and £584,900 contribution on the Saab bringing the operation into surplus.

7.36 The outcome of the APEX work was a slightly shorter list of route options that were then subjected to the same kind of indicative economic impact assessment and WelTAG appraisal as described for the enhancement and extension options in Chapter 3. The latter comprised considering a series of transport objectives, high-level WelTAG criteria, and finally Welsh Government Economic and Transport Policy Directives. The results are set out in Tables 31-34.

TABLE 31: ECONOMIC IMPACT APPRAISAL

Service Routing	Seat Capacity of Aircraft	Frequency per Week (Rtn Trip)	Estimated Total Demand	Estimate of Generated Traffic (think I did this wrong)	Projected Load Factor	Route Commercial Evaluation	Estimated Direct Jobs	Indirect + Induced Jobs	Total Jobs Created	% Business Pax	Travel Cost Saving per Business Pax (£)	Time Savings per Pax (hrs)	Cost Saving pa - Air vs Road (£)	User Benefits (£)	GVA (£/m)
VLY - CWL	9-seater	10	6,930	-770	80.0%	Good	8	12	20	62%	80	2.5	362,824	623,604	0.986
VLY - CWL	9-seater	15	9,680	880	75.0%	Promising	12	17	29	62%	80	2.5	458,304	787,710	1.246
CEG-LHR	31-seater	17	37,500	7,500	71.0%	Promising	45	66	111	60%	140	2.0	2,835,000	2,227,500	5.063
CEG-AMS	31-seater	12	31,240	2,840	84.0%	Good	37	55	92	50%	20	2.0	298,200	1,640,100	1.938
CEG-CDG	31-seater	12	32,200	4,200	87.0%	Good	39	56	95	50%	20	2.0	301,000	1,655,500	1.957
CEG-BHD	19-seater	12	17,250	2,250	76.0%	Promising	21	30	51	60%	120	2.0	1,161,000	1,064,250	2.225
HAW-CWL-LHR	9-seater	17	16,675	2,175	110.0%	Outstanding	20	29	49	60%	210	4.0	1,964,025	2,057,550	4.022
HAW-CWL-LHR	19-seater	6	11,963	1,088	105.0%	Outstanding	14	21	35	60%	115	4.0	787,877	1,507,242	2.295
HAW-CEG	9-seater	12	8,456	403	78.0%	Promising	10	15	25	50%	95	3.0	392,097	681,011	1.073
HAW-CEG	9-seater	17	10,686	1,394	70.0%	Promising	13	19	32	50%	30	3.0	149,841	824,123	0.974
VLY/CEG-CWL	19-seater	10	16,829	776	89.0%	Good	20	29	50	62%	50	2.0	509,671	1,121,276	1.631
VLY/CEG-CWL	19-seater	15	20,361	970	74.0%	Promising	24	36	60	62%	50	2.0	616,156	1,355,543	1.972
VLY/CEG-LHR	31-seater	15	58,800	9,800	132.0%	Outstanding	71	103	174	50%	110	3.0	2,964,500	4,446,750	7.411
VLY/CEG-LHR	50-seater	10	40,250	5,250	84.0%	Good	48	71	119	50%	110	3.0	2,069,375	3,104,063	5.173
VLY/CEG-LHR	50-seater	15	70,000	14,000	97.0%	Very Good	84	123	207	50%	130	3.0	4,095,000	5,197,500	9.293
Note: APEX runs were often for 12 rather than 10 or 15 so hard to interpolate.															

Commentary: Links into hubs deliver large GVA benefits. Larger aircraft, if they can be justified by demand, and if triangulations are entertained, also perform well.

TABLE 32: APPRAISAL AGAINST COMMERCIAL AND OPERATIONAL CONSIDERARTIONS

Appraisal Against Commercial and Operational Considerations							
Route Option	Size	Per week	Minimise nos of late running flights	Delivers a good day's work at either end of the route	Contributes to the economic development of the catchments	Enhance external connectivity (direct & onward)	Maximise benefit of aircraft
VLY-CWL	9-seater	10	/	+ +	+	+	/
VLY-CWL	9-seater	15	/	+ +	+	+ +	+ +
CEG-LHR	31-seater	17	/	+ + +	+ + +	+ + +	+ + +
CEG-AMS	31-seater	12	/	+ +	+ + +	+ + +	+ +
CEG-CDG	31-seater	12	/	+ +	+ + +	+ + +	+ +
CEG-BHD	19-seater	12	/	+ +	+	+	+ +
HAW-CWL-LHR	9-seater	17	-	+ + +	+ + +	+ + +	+ + +
HAW-CWL-LHR	19-seater	6	-	/	+	+ +	-
HAW-CEG	9-seater	12	/	+ +	+	+	+ +
HAW-CEG	9-seater	17	/	+ +	+	+ +	+ +
VLY/CEG-CWL	19-seater	10	/	+ +	+ +	+	+
VLY/CEG-CWL	19-seater	15	-	+ + +	+ +	+	+ + +
VLY/CEG-LHR	31-seater	15	-	+ + +	+ + +	+ + +	+ + +
VLY/CEG-LHR	50-seater	10	/	+ +	+ + +	+ + +	+ +
VLY/CEG-LHR	50-seater	15	-	+ + +	+ + +	+ + +	+ + +

Appraisal Scoring	
+ + +	Large Beneficial
+ +	Moderate Beneficial
+	Slight Beneficial
/	Neutral
-	Slight Adverse
- -	Moderate Adverse
- - -	Large Adverse

Commentary: This table provides some three star read-acrosses such as large 31 or 50 seat aircraft delivering a frequent point to point or triangulated service into LHR. A 9-seater also scores well, although this aircraft would be very unlikely to secure a slot at LHR, and so would be rejected on this (and other grounds).

TABLE 33: APPRAISAL AGAINST ESTABLISHED ECONOMIC, SOCIAL AND ENVIRONMENAL DIRECTIVES

Appraisal Against Established Policy Directives					
Route Option	Size	Per week	Economy	Environment	Social
VLY-CWL	9-seater	10	+	-	+
VLY-CWL	9-seater	15	+ +	-	+ +
CEG-LHR	31-seater	17	+ + +	/	+ + +
CEG-AMS	31-seater	12	+ + +	/	+ +
CEG-CDG	31-seater	12	+ + +	/	+ +
CEG-BHD	19-seater	12	+ +	/	+ +
HAW-CWL-LHR	9-seater	17	+ +	-	+ +
HAW-CWL-LHR	19-seater	6	+ +	/	+ +
HAW-CEG	9-seater	12	+	+	+
HAW-CEG	9-seater	17	+	+	+
VLY/CEG-CWL	19-seater	10	+	+	+ +
VLY/CEG-CWL	19-seater	15	+	+	+ +
VLY/CEG-LHR	31-seater	15	+ + +	/	+ +
VLY/CEG-LHR	50-seater	10	+ + +	/	+ + +
VLY/CEG-LHR	50-seater	15	+ + +	/	+ + +

Commentary: This table provides some strong read-acrosses such as large 31 or 50 seat aircraft delivering a frequent point to point or triangulated service into LHR. However, the larger aircraft scores more neutrally on environmental grounds which must balance the greater emissions against the avoidance of long terrestrial access journeys (usually by car the evidence suggests) to a very congested part of the UK at LHR.

TABLE 34: APPRAISAL AGAINST A SERIES OF ECONOMIC AND TRANSPORT OBJECTIVES THAT THE STUDY TEAM DEVELOPED

Appraisal Against Established Policy			Economic					Transport				
Route Option	Size	Per week	Investing in quality/ sustainable infrastructure (airports, air	Making Wales a more attractive place to do business (+ inward investment)	Broadening and deepening the skills base	Encouraging innovation	Targeted business support (Priority Sectors, SMEs and Enterprise Zones)	Reduce environmental impacts (reduce large car fed	Integrate Transport	Improve access between key sites	Enhance International Connectivity	Increase safety and security
VLY-CWL	9-seater	10	+	+	+	+	++	+	+	+	+	+
VLY-CWL	9-seater	15	++	++	+	+	++	+	+	+	+	+
CEG-LHR	31-seater	17	+++	+++	++	++	+++	+	++	+++	+++	+
CEG-AMS	31-seater	12	++	+++	++	++	++	+	++	++	+++	+
CEG-CDG	31-seater	12	++	+++	++	++	++	+	++	++	+++	+
CEG-BHD	19-seater	12	+	+	+	+	+	+	+	+	+	/
HAW-CWL-LHR	9-seater	17	+++	+++	++	++	+++	+	++	+++	+++	+
HAW-CWL-LHR	19-seater	6	++	++	+	+	++	+	+	++	++	+
HAW-CEG	9-seater	12	/	/	+	+	/	/	+	+	+	/
HAW-CEG	9-seater	17	/	/	+	+	/	/	+	+	+	/
VLY/CEG-CWL	19-seater	10	++	+	+	+	+	/	+	++	/	/
VLY/CEG-CWL	19-seater	15	++	++	++	++	++	/	++	+	/	/
VLY/CEG-LHR	31-seater	15	+++	+++	++	++	+++	+	++	+++	+++	+
VLY/CEG-LHR	50-seater	10	+++	+++	++	++	+++	+	++	+++	+++	+
VLY/CEG-LHR	50-seater	15	+++	+++	++	++	+++	+	++	+++	+++	+

Commentary: This attempt at a balanced and multi-faceted evaluation highlights the attractiveness of hubs and higher frequencies and capacities yet again. The triangulation options potentially justify larger aircraft on the route than if the routes were solely point to point.

PSO Regulations

7.37 With regard to the relevance of the EU PSO Regulations

- The only potential internal Welsh route that may have difficulty in justifying a PSO is Hawarden – Cardiff. Care would need to be taken to justify how this link is 'vital'.
- Haverfordwest – Cardiff would be hard to justify as standalone, but if linked with a LHR shuttle, it should be justifiable.
- Haverfordwest – Hawarden should be justifiable.
- Routes into LHR should be able to be designed as PSOs once LHR has additional capacity – this should be resisted in the interim on pragmatic grounds – (no slots).
- There are niceties to observe regarding 'bundling' and 'grouping' of routes that are aired in the report narrative, and would need to be addressed with care.

Conclusions

7.38 In essence, this piece of work brings Hawarden into sharper focus for both intra Wales and possible other air services. It also permitted the study to take a more limited view on the possible role of other Welsh Regional Airports and these are reflected in the recommendations.

7.39 Overall, the appraisal tables point to the considerable benefits associated with developing links to hubs (Heathrow in particular). The attractions of triangulated or feeder flights are also apparent.

FIGURE 1: ILLUSTRATIVE AIR SERVICE DEPLOYMENT INTO EXPANDED HEATHROW

7.40 A key decision for the Welsh Government when considering the option appraisal, is whether in the light of this they want to focus on optimising use of a smaller 9 or 19 seat aircraft, or develop new routes and whether to support the additional cost of introducing +19 seat aircraft (including NASP implications), to expand the range of options that are possible, including international hubs as well domestic services, routes from Cardiff as well as Anglesey/Hawarden. On the assumption that this latter route share would be required to make it acceptable for Government and Heathrow to make available slots for such a North Wales air service.

7.41 Cardiff's larger market will offer reduced risk in route innovation and potentially bigger paybacks for Wales Plc in absolute terms.

8 STRATEGIC POLICY SCENARIOS

8.1 The portfolio of reports has made a range of more detailed recommendations for consideration. This section distils the detail into a set of options dependent upon strategic priorities.

The Policy Scenarios

8.2 Twelve Policy Options were summarised and subjected to a multi-faceted assessment.

i. Base Case/Do Nothing: The PSO continues as now, no interventions; only background market growth assumed.

ii. Terminate Cardiff Anglesey PSO: The Welsh Government shuts down the PSO altogether, saves £1.5m per annum, and relies on train travel, but writes down investment costs and loss of economic benefits (negative Net Present Value (NPV) as a result of slower journey times). N.B. It should be highlighted that extra costs will be required to restore market confidence if the service is stopped in the meantime and then re-started in future. The Welsh Government should only terminate the service if it is 100% certain it does not want to operate it now, or in future.

iii. Adopt SET Solution for CWL-VLY: An option would be to retreat to a 9-seater and potentially save a maximum of £300k per annum, but reduce the passenger market further and increase the subsidy per passenger.

iv. Replace CWL-VLY with SET at CEG-CWL: The total market may well be bigger, and it would link two important aerospace clusters. North West Wales would need to access the service by car. This option would save on subsidy as it may only need a 9 seater aircraft with slightly shorter sector lengths.

v. Triangulate Anglesey & Hawarden to Cardiff route: This is an option using an existing 19 seat aircraft to avoid NASP (cost £750k), but has the result of increasing load factors vs Base Case. Motivated by a need to reduce the subsidy and increase the connectivity offered by the PSO. The previous shared Plymouth – Newquay – London service provides a precedent; of which there are also others.

vi. Optimisation of Existing service: This option resolves to hold steady with the current solution (19 seat) but with a re-invigorated route development and marketing campaign. Various aspects include initiatives such as a £100k marketing fund; optimisation of timings for CWL onward connections; through ticketing onto buses at either end and fast track at CWL for ticket holders for a trial period.

vii. Incremental enhancement of existing VLY service: This option includes making progress in line with ***Route Enhancement Study*** recommendations moving towards (a) 31 seat aircraft with two rotations daily or (b) two times daily rotations with a 19 seater and a middle of the day 9 seat rotation.

viii. Introduction Midday Commercial Routes to Complement the PSO from VLY: In addition to vii, this option also envisages (a) midday new routes out of Cardiff with the PSO aircraft to other destinations (detailed in the ***Thin Route Study*** + £725k VLY NASP) or (b) midday routes VLY to BHD or AMS (an estimated £110k+ route loss for BHD and approaching breakeven at AMS). However hangarage and NASP would also likely be required at VLY (c. £700k & £700k respectively).

ix. Incremental enhancement of VLY and add independent services from CEG: Under this option incremental enhancements at VLY would be sought. These might be initially an addition of a 9 seat aircraft to augment the morning and evening services with a midday service (e.g. VLY – CWL 2 x 19 + 1 x 9 seat); or an Anglesey departing midday rotation each workday with a 19 seat aircraft to another non-London destination; or incorporating Hawarden (VLY- CEG – CWL) using 3 rotations with a 9 seat aircraft.

x. Three Airport strategy: Build upon the current arrangements (ix. above) but introduce a 9 seater three times daily from HAW to CWL.

xi. Hub connections Strategy: This option would be as x. (above) but with (a) 31-seat aircraft triangulated via VLY + CGE services 2 x daily to LHR and 1x daily to AMS or (b) 50 seat aircraft doing the same; plus feeder flights to Cardiff with 9-seater from HAW timed to connect with a CWL - London shuttle. This would require a CWL – LHR PSO and a VLY-CEG-LHR PSO. Requirements would likely include a NASP upgrade in North (and a £3m NASP and new Terminal investment in CEG as detailed in the ***PSO Review Technical Report***) and likely subsidy on North Wales flights and a HAW-CWL PSO. There is the possibility of some private sector joint funding at Hawarden.

xii. Full Network Strategy: This option is as xi. (above) but with a 19 seat aircraft used for the PSO, and serving an additional service from Anglesey e.g. to Inverness (INV). This could eventually result in 4 rotations each day with the 19 seater with an additional rotation triangulating to Belfast (BHD). The 31-seater would be used to triangulate on LHR with double drop for AMS, or also used to double drop to CDG (these enhancements could be free market or require Route Development Fund support only) from CEG. This would require NASP at both northern Airports. There are many possible permutations.

Applying Different Weights based on Strategic Policy Aims

8.3 Each scenario was then considered against a range of WelTAG appraisal. A synthesis of this analysis, which is set out at greater length in the ***Technical Report into Long Term Future Options for Aviation PSOs in Wales*** is provided in Table 35. We sought to use the following strategic policy aims to guide decision-making by identifying which scenarios performed best under each.

- Minimising Public Outlay
- Maximising Connectivity and Accessibility
- Maximising Economic Benefit for Wales PLC
- Sustainable and Environmental objectives
- Regional / National Integration

- Integrated Strategic Approach

8.4 The results are summarised in the remainder of this Chapter which follows Table 35.

TABLE 35: APPRAISAL OF SELECTED STRATEGIC SCENARIOS AGAINST A RANGE OF CONSIDERATIONS

No	Strategic Scenarios	Changes to the connectivity, frequency and travel times allowed	Direct cost of travel/Value of time per pax	Impact on cost of operation at Anglesey Airport & its future use	Potential Cost to the public purse	Impact on jobs, GVA and the relevant Local economies	Effect on Energy Island proposal + plans to develop infrastructure in North Wales	Effect on the Welsh economy as a whole	Risk	State Aid mechanisms	Nation Building and National Integration	Symbolism of such a move	Environmental	Social and Tourism
1	Base Case/Do Nothing	/	/	/	/	/	/	/	/	PSO	/	/	/	/
2	Terminate Cardiff Anglesey PSO	---	--	+++	+++	-	--	-	-	n/a	--	---	/	/
3	Adopt SET Solution for CWL-VLY	/	-	-	+	-	-	-	-	PSO	-	--	/	/
4	Replace CWL-VLY with SET at HAW-CWL	-	--	+++	/	-	-	-	-	PSO?	--	--	/	/
5	Triangulate Anglesey & Hawarden to Cardiff route	++	+	/	-	+	/	+	-	PSO	+	++	/	+
6	Optimisation of Existing Service	++	+	+	--	++	+	+	-	PSO	+	++	/	+
7	Incremental Enhancement of existing VLY Service	++	++	++	--	++	+	+	-	PSO	++	++	/	+
8	Introduction Midday Routes to Complement the PSO from VLY	++	++	++	--	++	++	++	-	PSO/RDF	++	+++	/	++
9	Incremental Enhancement of VLY and Add Independent Services from Hawarden	+++	++	+++	---	++	+	+	--	PSO	+++	++	/	+
10	Three Airport Strategy	++	++	++	--	++	+	+	--	PSO?	+++	++	/	+
11	Hub connections Strategy	+++	+++	+++	---	+++	+++	+++	--	PSO/RDF	+	+++	-	+++
12	Full Network Strategy	+++	+++	+++	---	+++	+++	+++	--	PSO/RDF	+	+++	-	+++

Commentary: These 12 strategic scenarios endeavour to highlight the most attractive options and the likely support mechanism that will facilitate. Inevitably the most attractive options are more costly to the public purse. Incremental enhancements also score well in balancing risk against cost.

Minimising Public Financial Outlay

8.5 If this is the overriding criterion, then two possibilities present themselves.

Cease the Service

- This will save approx. £1.5m with loss of approx. 27 jobs and loss of £1.4 GVA
- However, it will cause regional disquiet. It would be prudent to prepare for some blowback, and it might be prudent to offer the area compensatory initiatives to mollify the region. These of course would likely not be cost free.

Put a 9-seater on route

- This could save approx. £300k pa but will reduce formal capacity to 8,820 and realistic capacity to about 80% of that (7,000).
- However, it will likely have the presentational disadvantage of increased subsidy per pax.
- This option is unlikely to be operationally available for a couple of years.

Maximising Connectivity and Accessibility

8.6 If the long-term focus is to improve connectivity and accessibility then the following are attractive, especially in light of Brexit strategizing.

Intra – Wales Connectivity – grow PSO route to justify +29 seat aircraft (using enhanced marketing focus) – it may take two (2x 4 year) PSO cycles to achieve. This aircraft may then play a role in some of the following. If access to LHR is possible, consider VLY-CEG-LHR triangulation and feeder flights to CWL from HAW. In 5 years, review if HAW-CEG can be justified/incorporated.

Wales – Rest of UK (RUK) and Ireland Connectivity – use various state support mechanisms to enrich links to London, Scotland, Belfast, S. Ireland, and Crown Dependencies.

Rest of Europe Connectivity – use various state support mechanisms to enrich links to FRA or CDG from CWL.

Long Haul Connectivity – strengthen CWL links with AMS, CDG and FRA and/or support N. Wales links with some of these.

Maximising Economic Benefit for Wales PLC

8.7 This concern suggests the following key objectives guide to decision making:

- The link with LHR is the standout most beneficial achievement; link with other London airport(s) is valuable (e.g. LCY).
- Links with FRA and enhanced links with CDG deliver good benefits.

- Links with RUK and enhanced links with S Ireland are less impressive in terms of economic benefit but easier to achieve and still worth striving for.

- Anglesey centric and Hawarden centric initiatives have been featured below.

Sustainable and Environmental objectives

8.8 Because of the current lack of a comprehensive portfolio of Welsh air services, there are very high catchment leakage rates from Wales to English Airports.

8.9 Leakage is mostly undertaken by car, although rail is significant on N Wales to Cardiff City, Manchester City and Central London, and Cardiff to Central London; and improvements on these lines will underpin this. However, public transport percentages to Manchester, Bristol, Birmingham and Heathrow Airports are all very low. Reducing the use of the car should somewhat offset the additional emissions from additional flights or larger aircraft.

8.10 To be Politically and Financially Sustainable, the North Wales PSO urgently needs to increase patronage and utility to forestall criticism.

8.11 Additional tangible benefits such as a link with LHR will gain widespread support in both North and South Wales, especially as public subsidy should be low or not required.

Facilitating Regional / National Integration

8.12 If the overriding objective is to stimulate the Welsh regions, then:

NW Wales

- Increase size of aircraft on PSO and stimulate demand through better resourced marketing and selection of suitable carrier with superior GDS and inter-lining and increase opening hours at Anglesey (by only about 1 hour in evening). Underwrite NASP upgrade.

- Base aircraft in Anglesey and seek Anglesey originating destinations in line with report – NHT/LHR; Scotland; IOM, Belfast.

- NE Wales

- If access to LHR is secured triangulate flight with Anglesey; underwrite/facilitate NASP and other upgrades.

- Support other route development opportunities out of Hawarden on back of these investments; Scotland, Ireland and near Europe.

- Consider triangulated VLY-CEG-CWL service, which may help justify larger aircraft.

SW Wales

- If CWL secures slots at LHR then consider sub-NASP 9 seat feeder flight from HAW. Once established consider HAW – CEG. None of this is an immediate prospect.

Integrated Strategic Approach

8.13 Secure existing PSO with better resourced marketing, explore CWL involvement in running VLY civilian enclave, lengthen VLY opening hours, and if operator emerges with +29 seat aircraft and persuasive proposition underwrite NASP upgrade (thereby consider longer lead in time for start of enhanced service to permit upgrade). Reward GDS visibility and code-sharing, and additional midday intention to use aircraft in tender Evaluation Criteria.

8.14 Consider option in tender to include VLY-CEG-CWL triangulation and accept bids using 19 seat and +29 seat aircraft. Leave option open for 9 seater submissions in tender, although operators may not be ready for this in short term. If persuasive +29 seat submission received, consider underwriting NASP upgrade at HAW. Liaise with AGP and Airbus on these possibilities before issuing tenders.

8.15 In Parallel seek slots with LHR and if secured for CWL, consider CWL-LHR PSO and HAW-CWL feeder PSO.

8.16 If LHR slots for aircraft in N Wales are secured, institute NASP upgrades and tender for triangulated PSO (there are some tendering niceties that may need to be observed to attain this result).

8.17 In medium term, and if some/all of this comes to pass, consider additional uses for 9-seater within Wales such as HAW-CEG and to nearby destinations such as HAW-DUB or VLY-IOM.

9 POSSIBLE ORGANISATIONAL INNOVATIONS IN WELSH AVIATION

9.1 One final area we were asked to consider over the course of the Review was whether there were any Innovative Stewardship Models that the Welsh Government ought to be considering. The Aircraft Considerations report listed several possibilities, and possible airport options are discussed in the main PSO Review Technical Report. The options include:

- Public Ownership of Aircraft
- Joint Ventures: Public Sector Bodies Forming Joint Ventures with the Private Sector
- Private Finance Initiative
- Trust Model and Not for Profit Organisations
- Third Sector Organisations

9.2 The possible adoption of SETs for one or more thin PSO routes, and the need to ensure the right aircraft type is available to fly to Cardiff and London Heathrow from North and West Wales offers the opportunity for feeder flights from peripheral Wales, at the very least highlights the need for the Welsh Government to consider its options for how the aircraft required are procured and indeed owned. If there is a significant political commitment to enhancing the network of internal air services and connections to a UK national hub at Heathrow, then as a minimum the acquisition of relevant aircraft types by the Welsh Government (whether purchased or leased), as in the case of Transport Scotland, might help to guarantee key routes are served as required. And if the Aurigny model is adopted, it would also help to ensure that any associated value (e.g. from grandfather rights of Heathrow slots) are internalised rather than being created for a private operator.

9.3 By countering some of the market reluctance to acquire new aircraft, especially where the required type is relatively specialised, PSO contenders would then be able to bid to operate and maintain the aircraft type rather than also supply it. Such an approach does offer the potential for the maximum number of potential bidders for a PSO to emerge. However for this to occur it is also necessary to allow bidders sufficient operational start up time to add the type to their AOCs. This can be a challenge for PSO renewals where the provided assets may not be available to allow AOC set-up activities to occur in parallel with ongoing operations by the incumbent. However, this approach may be less suitable where the aircraft required is a more common type than that which may be offered by the market.

9.4 Our analysis shows that the Dornier 228NG and its bigger elder brother the pressurised D328 turbo-prop could both be suitable to serve a Welsh PSO network, whilst also having

the capability to accomplish additional 'lunchtime' and possible evening tasks that would be of benefit to Wales PLC.

If the Welsh Government acquired examples of the type, possibly alongside a 9-seater, then more coherent PSO and non-PSO route planning could be undertaken.

9.5 The importance of strong marketing of the routes is emphasised in many of the technical reports on Welsh PSO's accompanying this one. In a very real sense Wales PLC 'owns' these routes more than the current operator and hence the branding and marketing of these routes might better be undertaken by a para-entity that could be managed by the Welsh Government (WG), Cardiff Airport, or Isle of Anglesey County Council (IACC). Ideally key stakeholders including the air operator would support its work.

9.6 Moreover, the running of the civilian enclave at RAF Valley might also benefit from ownership being consolidated within Cardiff International Airport Ltd, particularly if NASP is required. This would protect IACC being further drawn into areas outside of its core competencies, and existing accountable managers at CWL could have their responsibilities cost effectively extended to cover Anglesey Airport and Welsh PSO route marketing. This arrangement could also provide worthwhile operational cost savings to the WG.

9.7 A more unusual option would be for the WG to enter a Joint Venture with an existing airline to form a company that had at its core a mission to route innovate out of Welsh Airports. The resultant organisation could be designed as a 'not-for-personal-profit' rather than a 'not-for-profit organisations' as it would need to make surpluses (or 'profits') to be financially sustainable. However, care would need to be taken to ensure the company was arm's length and did not receive inadmissible state aid to support its operations.

9.8 These various possibilities need to be considered in greater depth once a decision has been made about the scale of commitment that the Welsh Government wishes to make to support a PSO service network comprising internal, and possibly, London hub links.

9.9 This recommendation is reflected in the final section of the Summary Report (Section 10).

10 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

10.1 This Summary Document has endeavoured to assimilate and present the key market analysis, option appraisal and strategic policy evaluations from between 5-600 pages of supporting material in the background technical reports. Given that the work in those reports has taken close to a year, thinking has moved on in a number of areas, and there have been several helpful discussions with Welsh Government officials. Based on the synopsis of all that work in the preceding chapters of this document, we have identified 12 strategic recommendations for consideration by Welsh Government Ministers; we have then assigned them to what we envisage as a series of important future milestones, creating a timeline that can provide the 'next steps agenda' for the Welsh Government to endorse and then implement.

Immediate Recommendations

Bringing Clarity to the Future of the PSO Service

There is a strong economic case for the retention of the PSO service between Cardiff and Anglesey airports based on the fact that journey time savings to business passengers generates GVA that broadly matches the amount of subsidy being invested. In addition, it also supports existing jobs and has the ability to create new ones, particularly in Anglesey, and provides connectivity with South Wales which neither rail nor road can match for the level of financial support offered. Strategically, it provides an important functional and symbolic link that connects north and south Wales, which facilitates easier access to internal markets for Welsh companies.

Extending the Current Contract

The PSO shows clear signs of having the potential to grow further than witnessed to date, but in the short term, it needs a period of consistent unbroken operation, scheduling and pricing optimisation and most importantly, better marketing for that growth to be realised. In addition to these essential steps, avoiding further political speculation about the route's future is important if passenger confidence in, and usage of, the route is to grow.

The findings of this study programme suggest that there are a number of short term steps such as reversing the basing of the aircraft, extending weekday operating hours, adding rotations, keeping fares competitive and increasing awareness of the service that could help to enhance the service's performance and improve the value for money that it already offers to Wales. These could all be tested, with the agreement of the operator, if the existing temporary contract were extended sufficiently to allow plenty of time for re-tendering the PSO.

Our economic impact assessment predicts that if a 19-seat aircraft operation were retained, but with extended operating hours and attractively priced fares, then by 2022, the number of passengers using the route could increase from what we considered to be a reasonable approximation of the normalised baseline in 2015 - circa 11,000 passengers per annum (ppa) - to just over 14,200 or 73% seat occupancy. Adding substantially improved marketing (including promotion through GDS

systems) and a third rotation would achieve 19,150 (at a seat occupancy of 66%), creating an estimated 20 jobs and additional GVA of approximately £290k per annum.

If we were to apply a similar suite of enhancements, but increase aircraft size to 31 seats and remain with only 2 rotations a day on the route, the return is estimated to be almost 18,000 passengers per annum (a seat occupancy rate of less than 60%), with up to 18 jobs created and GVA in the region of £250k per annum.

This suggests that there is a strong case for extending existing temporary contract to 30 September 2018 - long enough for commercial and operational innovations to be trialled sufficiently to inform the requirements of the subsequent 4-year contract. The extension to September 2018 will also provide reasonable time to undertake the tender process – allowing requirements to be fully scoped, and a future operator to be competitively procured and appointed 6-8 months ahead of the commencement of services. This vital lead time will enable the operator to successfully mobilise and undertake preparatory work before taking over the operational delivery.

Any extension to the temporary contract will require detailed negotiations with the current provider, who may seek additional compensation for taking on additional operational or commercial risks associated with some of the innovations proposed (e.g. basing the aircraft at Anglesey during the summer may need weekend positioning for maintenance to alternatives such as the Isle of Man or possibly Caernarfon). But it also provides a unique opportunity for 'real world' trial of these ideas, and generates invaluable empirical evidence for the medium to long term. With this in mind, we support the extension of the current contract.

Immediate Recommendations:

I	Retain the North-South PSO between Cardiff and Anglesey.
II	Extend the temporary contract with Van Air to 30th September 2018 as soon as possible.
III	In so doing, introduce a series of potential service enhancements and some targeted external support. These should include some or all of the following: ▪ Increase the frequency with which the PSO aircraft is used to 3 rotations per day, either by adding a midday service on the Cardiff-Anglesey route or by identifying with the operator, a commercial non-PSO destination for the aircraft to serve. ▪ Discuss a trial with the operator to test the demand for a reversed timetable by rescheduling the PSO and basing it at VLY for summer 2017. ▪ Extend the operating hours at VLY as soon as this can be agreed with the RAF, but only if the new schedule requires it. ▪ Negotiate any variation required to the current subsidy agreement arising from these changes, subject to an orderly handover being achieved to any new PSO dispensation, especially if it involves a new operator. ▪ Increase the provision of marketing support on a match funded basis – we consider this could mean a capped public contribution of up to £25,000 in the period to September 2017 and a further £50,000 between September 2017 and the end of the extended contract period. ▪ A 'micro-networking' marketing plan needs to be agreed between the airline, the airports and other key stakeholders (north Wales' tourism interests, Isle of Anglesey County Council (IACC) and Gwynedd County Council). WG should lead preparation of the plan via a PSO stakeholder marketing group, but once it is complete, delegate responsibility for implementation to a suitable member of the collaboration. ▪ Resource commitments in cash or kind to be secured from the marketing collaboration members, and identify a way to manage, coordinate and monitor on-going efforts. These commitments can be advertised in the Invitation to Tender document for PSO bidders where they may be presented as match funded undertakings by the operator.

Short Term Recommendations for the Period to September 2018

Maximising Use of the PSO Aircraft

Realistically, even if the aircraft contracted for the Cardiff - Anglesey PSO were to be based at RAF Valley, it would be difficult to achieve four rotations a day without extending the length of the RAF Valley's current operating hours. Initial approaches to the RAF indicated they might be willing to explore some modest variations on weekdays, providing they were appropriately compensated, but would not be willing to introduce weekend operations due to a high proportion of RAF personnel leaving the base at weekends to return home to family or visit friends. Experience suggests coming to an agreement with the RAF will take some time, and is thus better assigned as a 'short term' rather than 'immediate' recommendation.

The study did, however, identify a number of exciting potential route opportunities the next 4 year PSO contract (October 2018 – September 2022) can be used to explore, especially if the size of the aircraft is increased from 19 to +30 seats. Conceptually, if the implementation of the 'immediate' recommendations has the positive impact on passenger numbers we expect, then the use of a larger aircraft twice a day on the PSO route may ultimately be justified by the end of the next PSO contract period (i.e. 2022) as load factors on a twice a day service would have reached 65%.

However, the big attraction of securing the use of a larger aircraft on the PSO is that it would open up the potential to serve other destinations like a London airport from Anglesey (initially Luton, and eventually when the third runway is open, Heathrow) and similarly other hub destinations like Amsterdam (for which there is evidence of significant demand for a one a day service from North West Wales) or Paris, using the aircraft to add a second rotation from Cardiff. Thirty seat aircraft have the attraction of being pressurised and in some cases substantially quicker than 19 seat equivalents and are therefore more attractive to passengers, are more likely to be accepted as meriting a slot at congested airports and have better route economics at equivalent load factors therefore offering scope for cheaper fares.

Although the prospects for some of these routes (particularly the overseas hubs, may be made more speculative should bids for the next PSO remain based on a 19- seat aircraft, a London flight would remain a possibility, with Northolt a destination that should be explored with the MoD, and there are other domestic options like Belfast or the Isle of Man which may generate interest.

The 2018-22 PSO Tender process

The extension of the current temporary arrangements provides an important opportunity to better adapt the next four year PSO to secure preferred outcomes. These will include:

- seeking a strong operator,
- with a larger aircraft,
- offering credible additional use of the aircraft on non PSO task(s),
- based on a persuasive route development plan that includes increasing patronage and yield, and hence reducing subsidy requests;
- access to extended marketing capability (which may include GDS visibility, interlining, franchising), and
- a persuasive and well thought out marketing plan for extending the commercial reach of the PSO service (geographically and in terms of market segments (e.g. attracting inbound leisure passengers to North West Wales), developing new routes, and working with both Cardiff and Anglesey airports and local stakeholders to optimise the value for money of on-going marketing support.

It also provides a longer lead time before launch to permit optimal preparations and marketing. This includes putting in place new arrangements with the RAF (see below) and marketing the route(s) for several months in advance using micro networking techniques to maximise value for money.

The recommendation around enhanced and sustained marketing provision is based upon the early experience of Highland Airways on the route, where they enjoyed patronage at least 2,000 p.a. more than their successor operators. Highland Airways also enjoyed significant stakeholder support from a range of agencies including IACC, CWL, the Welsh Language Board and deft community micro marketing that was summarised in an appendix to the PSO Enhancement Study. Such techniques (e.g. social media campaigns, competitions with local radio stations, PR stories, cross marketing with attractions and key accommodation suppliers), rather than simply relying on expensive newspaper or poster advertising, are in common use at smaller airports and are recognised as being effective.

Scottish evidence also suggests an uplift in patronage on a PSO, when a higher profile franchise operator took over the route from a standalone airline. There was also evidence from the route when a more 'bolder' yield management strategy, where deeper ticket discounts were offered, had a positive impact on carryings both during Highland Airways' and Links Air's tenures.

Implications of Basing the Aircraft at Anglesey

If, as a result of the 2018-22 PSO tender process, it looks like the operator will be willing to base their aircraft at Anglesey, then a dedicated hangar would likely be a requirement for permanent overnighting. A Rubb-style hangar can be erected within 3-4 months and at modest cost (c£750,000 for a 19 to 31-seat aircraft plus any required groundworks) and has the advantage of being demountable and therefore the capability of being moved elsewhere if needed.

Introducing a 31-seat aircraft would also require the airport at Anglesey to become NASP (National Aviation Security Programme) compliant. This would require level three screening equipment to be introduced and a range of other measures airside to prevent intrusions into the restricted area. Costs are again estimated at c£750,000.

Engagement with the RAF

The RAF is a key partner in the PSO operation providing the airside infrastructure and operations support without which the civil enclave could not operate. Variations to, or expansion of, the current PSO service will require their continued collaboration and in some cases material changes to their existing operating hours. Of the recommendations above, the marketing scheme and probably a single additional midday rotation can be implemented without varying the existing agreement with the RAF/DIO [24]. Initial indications are that they may be willing to show some flexibility, but new arrangements will take time to negotiate and the aim must be to secure temporary dispensations with a new agreement coming into place at the commencement of the new PSO.

The new arrangements are likely to result in additional costs both in terms of additional charges from the RAF for the use of their airfield and capital costs to enhance the capability and capacity of facilities within the existing or expanded civil enclave. The RAF will be justified in passing on these costs in full if they are solely for the purpose of PSO related air transport movements and outside their current core operating hours; moreover, if not cost reflective, this could give rise to issues relating to illegal state aid. The scale of these costs need to be firmed up as quickly as possible and if accepted, turned into appropriate budgetary provision moving forward.

The position concerning to state aid also needs to be confirmed. Although it is possible that a formal notification may not be needed to cover any additional revenue support costs or capital expenditure on enhanced facilities on de-minimis threshold or SGEI grounds for future accounting officer and audit purposes, it would be prudent to secure DfT and EU confirmation of this.

Airport Governance

For a variety of reasons, preparation for the new PSO may provide the opportunity to review the ownership and operation of the civil enclave at Anglesey. These are set out in more detail in Section 9 of the report, but are associated with operating efficiencies, the availability of marketing resources, expertise in security and a seamless approach to Welsh Government policy and implementation.

[24] Defence Infrastructure Organisation

For this reason, we believe serious consideration should be given to asking CWL (Cardiff International Airport Ltd) to take over the running of the Anglesey Airport operation on the Welsh Government's behalf, at a date to be agreed with Isle of Anglesey County Council (IACC) and their contractor Bilfinger. TUPE rules would mean existing staff would move with any transfer of the operating contract.

We are aware that IACC is currently the legal owners of Anglesey Airport facilities built with the benefit of a long lease from the RAF. However, the costs of the operational management are fully underwritten by the Welsh Government and IACC are under-resourced to take on the expanded client role for a major expansion of the civil enclave envisaged in our other recommendations.

Therefore, it would almost certainly be simpler all round if ownership was transferred to the Welsh Government and they took responsibility for finding an operator.

Services from Hawarden

The possibility of developing service offerings out of Hawarden are, in our view, limited until 2022 and beyond, however, there would be merit in discussing the possibility further with APG and Airbus during the extended contract period so that a clear understanding can be presented to tenderers about the facilities and charges that would be offered to a possible PSO operator if access were to be permitted at all.

Our indicative view, prior to these formal discussions, is that securing access to Hawarden is likely to be too expensive, would require significant capital investment, may attract state aid complaints from the nearby Liverpool and Manchester Airports and makes the continued serving of the North-West Wales region by air, which all the evidence from the supporting technical studies indicates is strategically important, more complicated and therefore potentially also more expensive. Furthermore, on a very strict reading of the PSO Regulations we have doubts about whether the services between Hawarden and Anglesey/Cardiff Airports would qualify as a PSO.

In the longer term (i.e. for the PSO period 2022-26) it may be possible to develop a package of key stakeholder support (especially amongst companies based in the relevant enterprise zones at either end of the route, to secure 9-seat direct service linking Hawarden with Cardiff, but that can be for a future review.

More significantly, in a drop-in or triangulated format (e.g. VLY-CEG (Hawarden)-LHR-CEG-VLY) is the most likely way North Wales will secure direct access to Heathrow when its new runway opens, due to the likely limitations that will be imposed on the number of slots that will be released for domestic services. Such a service would generate very substantial positive benefits in terms of connectivity for the wider economy of North Wales and, in our view, should be aggressively pursued by Welsh Government over the next 2 years for commitments from the UK Government and Heathrow during its DCO (Development Consent Order) process.

Access to Heathrow

Both demand and economic impact investigations indicated that access to LHR would score highly from South Wales as well as North Wales. A shuttle service 3-4 times a day would primarily serve the onward connecting market from South Wales, most of which currently drives and parks at Heathrow. Its impact on the point-to-point market heading for central London from Sout Wales, which will be well-served by improved rail journey times, is expected to be small. But with an overall market we estimate at over 200,000 passengers, securing slots for such a shuttle service from Cardiff to Heathrow would be of great significance economically and ought to be a high priority for the Welsh Government in the short term, with the objective obtaining a commitment, both political and contractual, between the Welsh Government and the UK Government (and arguably also Heathrow) before the Development Consent Order (DCO) application for the third runway is submitted in 2019.

Cardiff Thin Route Support

Our studies identified potential for route development out of CWL both with the PSO aircraft (particularly if it was 29+ seat) as well as for routes defined in the study as 'thin' (less than 50,000 pax per annum). State aid measures above and beyond more normal airport route development mechanisms were examined. In addition to the Heathrow Shuttle above, other hub destinations in mainland Europe like Frankfurt were identified as potentially high performing; especially if a double daily weekday frequency could be reached. A number of domestic routes from Cardiff also look promising and merit further investigation, either because the links currently don't exist or because they would benefit from enhanced daily frequency. These include Manchester, Belfast, Leeds, Newcastle, Aberdeen and Norwich.

Options for securing these objectives include additional PSO's, support from UK Government RACF [25] Funding or a time limited route development scheme established and funded by the Welsh Government itself but in line with established UK - EU protocols.

[25] The Regional Air Connectivity Fund is a DfT initiative to support route development in conformity with permitted State Aid Route Development Funds

Short Term Recommendations:

I. Include the option of supporting a 30-seat aircraft in the 2018-22 tender process and ask bidders to highlight any other destinations they might seek to serve if the PSO were to be awarded on that basis.

II. Issue the Sept. 2018 PSO Tender in Autumn 2017 with aim to award in January 2018.

- Ensure Tender Options explore both current 19 seat solution and larger aircraft solutions (ideally with additional midday PSO or credible non-PSO route development initiatives encouraged).
- Ensure Tender Selection Criteria properly weights preferred outcomes and this will include superior patronage development and marketing plans; basing of aircraft; additional use of aircraft; GDS[3], interlining, franchising or other benefits. Properly weight quality versus cost in evaluation – we suggest 70% to 30% respectively.
- Pre-canvas a sample of operators to better inform the options being tendered.

III. If, as a result of a summer trial in 2017, basing the aircraft in Anglesey and adapting the timetable accordingly looks promising, a site for a hangar will need to be agreed with RAF Valley and a value for money hangarage solution identified and implemented.

IV. If 29+ seater is successful in tender competition then invoke NASP compliance preparations in parallel with lead in time for a new PSO launch. Refine NASP preparations further as a contingency in the interim.

V. Negotiate a new agreement concerning the operation of the civil enclave, covering opening hours, additional charges associated therewith, approval to introduce NASP measures should these be needed in the future and permission to expand car parking and other supporting infrastructure (e.g. an aircraft hangar) if required.

VI. Appoint a project manager for the capital works:

- Draw-up a timetable for designing, securing approval and having budgetary authorisation to complete the works;
- Generate architectural and engineering drawings for the planned physical enhancements (inside and out);
- Specifications for any new equipment associated therewith;
- Secure planning and building consent for the designs.

VII. Develop appropriate budget provision– capital and running cost – to cover these items.

VIII. Assess whether state aid approval is needed and either:

- Secure DfT and the European Commission confirmation that formal state aid notification is not required; or

- Submit a notification for the full potential expansion under these recommendations and all those that follow within the next 3 calendar months in order that state aid approval is in place before the operator of the new PSO is chosen and the capital works begin.

IX. Tender and undertake any facilities enhancement work associated with the new operational schedule prior to the new PSO contract commencing.

X. Explore with IACC and CIAL the practicality of CIAL taking over responsibility of running Anglesey Airport and managing the NASP upgrade.

XI. Conclude outline discussions with APG and Airbus about using Hawarden for civilian scheduled services:

- Gain clarity on the need to build a new passenger terminal or re-task the restaurant (which would be less expensive) if NASP was required.
- Explore APG's appetite for investment in any such civilian air service initiatives.
- Ensure Airbus is informed and content with how things are 'left'.
- Seek 'North Wales' slots at LHR3 for a triangulated air service.
- If SET obtained for HAW-CWL (see below) consider other permutations for the aircraft (e.g. HAW-CEG).

XII. Pursue the case for slot access from CWL and VLY to LHR strongly with DfT and the wider UK Government.

XIII. Active support should be offered to CWL for 'thin route' development, independent of, but complementary to, the existing PSO, using either further PSO designations or a formally authorised Route Development Fund (RDF) to bolster standard airport commercial efforts in this area, but also to act as an alternative to discounted APD (Air Passenger Duty) if this power is not ultimately devolved to the Welsh Government.

- Explore further national and international PSO designations.
- Develop a formally authorised Route Development Fund (RDF); most probably based on similar methodology to the already approved DfT Regional Air Connectivity Fund.
- Anticipate and counter competition and state aid complaints from Bristol Airport and establish definitively that Bristol and Cardiff do not share the same catchment area. This is crucial to all potential initiatives in this area. Commission a Catchment Study that supports the case for this assertion.

Medium to Long Term (2019+) Recommendations

Expanding the Network from North West Wales

As outlined above, the new PSO (i.e. 2018-22) is likely to be the opportunity to consolidate any trial undertaken in basing an aircraft in North West Wales. This maximises the opportunities for developing additional routes from there. The subsequent PSO (2022-26) might then be used as the chance to expand the network of routes from Anglesey by adding additional services and possibly introducing a further PSO and aircraft.

Single Engine Turbines

It is arguable that this is also the time for a decision to discount the use of 9-seat Single Engine Turbines (SETs) at higher frequencies on the main PSO route. Of the SETs considered the Pilatus PC12 is the most attractive option but costly to run; the Cessna Caravan offers lower costs but does not provide an attractive passenger environment and only achieves minimal cost savings compared to a 19- seat aircraft if there is sufficient demand to justify three rotations a day. The SETs would also introduce significant constraints on seat capacity and could affect future levels of demand as there is evidence that some passengers will avoid flying on very small aircraft (as happened during Links Air's use of a King Air on the PSO in December 2015).

The use of SETs should only be contemplated if demand drops precipitously or to less than 7,500 passengers on an annual basis and it is considered desirable to maintain the PSO service. With this exception, it is our view that the use of SETs could be restricted to long-term options such as a (HAW) Haverfordwest – CWL to offer connecting flights to a Heathrow shuttle from Cardiff, and to any cross-country options (e.g. HAW - CEG (Hawarden) or Llanbedr to Cardiff as and when these are considered necessary or expedient.

Aircraft ownership Option

In addition to keeping the progress of the PSO under close scrutiny and ensuring its cost-effective delivery, the issue of potential ownership of the aircraft being used should be explored further as option, perhaps with an eye on the 2022-2026 PSO period.

Medium – Long Term Recommendations:

I.	Review future route prospects, when the performance of services provided under the 2018-22 contract becomes clear.
II.	Do not pursue SET for current PSO. Revisit SET if CWL gains access to LHR. This aircraft could then provide a useful feeder flight from HAW to CWL, for its shuttle to LHR and also offer the potential to provide a CEG-CWL link.
III.	Explore the possibility of a Joint Venture with an operator to be developed to help share risk and allow the Welsh Government to benefit from any acquisition of Heathrow slots.

APPENDIX A: BIBLIOGRAPHY

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- April 2008 - 211 responses. The results are taken from the 2009 Halcrow report. Also, included interviews with rail passengers and those travelling by road between North and South Wales;
- July 2014 - 164 responses. The results are taken from the 2015 Arup report, supplemented by further analysis of the raw survey data;
- September-October 2015 - 100 responses. The completed questionnaires were analysed alongside a full statistical review for the 2016 Enhancement study; and
- 85 responses from a recent Van Air / CityWing 2016 passenger survey are also incorporated into this report.

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APPENDIX B: MEETINGS AND CONSULTATIONS

Organisation	Individuals
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Special Branch Holyhead Police	Keith Horton
Visit Wales	Andrew Forfar
North Wales Tourism	Jim Jones
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Hawarden Airport - Airbus UK	Paul Bastock, Richard Kinnear and Steve Thomas
Hawarden Airport - Airport Park Group	Carl Poland, Andy McKinney, Darren Williams in person and Caroline Craft by Phone
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