Airfield & Aerodrome AAM development opportunities

Transcript of AAM4Gov training resources for industry presentation on the topic "Local authorities, airports and AAM"

This resource was commissioned by the Community Integration Working Group (CIWG) and funded by UKRI Future Flight Challenge

1. Airfield and aerodrome development opportunities

Many local authorities in the UK own or have considerable shareholder interests in airports. Even if the local authority is not a direct shareholder, it will often have a major interest in the airport business which falls within its jurisdiction or serves the community which the council represents.

Reference: Local Authority Airports List, SASIG https://www.sasig.org.uk/wp-content/uploads/2016/10/Local-Authority-Airport-List.pdf

Future Flight Action Plan

In March 2024 the Department for Transport (DfT) and industry launched its joint Future of Flight action plan. The plan has targeted the first piloted flying taxi flight by 2026 and regular services by 2028, regular drone deliveries across our skies by 2027 and demos of autonomous flying taxis without pilots on board by 2030 – transforming how people and goods are transported.

"Some of the other actions set out in the plan include:

- "allowing drones to fly beyond visual line of sight (BVLOS) so that the sector can grow without limiting the skies for other aircraft
- "breathing life into smaller aerodromes by setting out how they can operate as vertiports for electric aircraft that take off vertically (sometimes known as electric vertical take-off and landing (eVTOL) aircraft)
- "developing standards to improve security for drones to boost public safety
- "engaging communities and local authorities so that they can enjoy the economic and social benefits of these technologies

"It will also enable the development of vertiports – mini-airports for drones and electric aircraft that take off vertically – by developing certification standards and reviewing the use of existing infrastructure to deliver at speed, boost safety and security and put the passenger first."

Reference: https://www.gov.uk/government/news/the-age-of-the-flying-taxi-draws-closer-with-the-future-of-flight-action-plan#:~:text=It%20details%20plans%20for%20the,people%20and%20goods%20are%20transported

Reference: https://www.gov.uk/government/publications/future-of-flight-action-plan

Regional Airports and Public Services Obligations

Many of the more remote communities in the UK rely on their local airport for vital supplies and connectivity to more socially and economically active areas. The government supports a network of public service obligation routes and subsidies these routes.

According to a "Regional airports" Research Briefing published by the House of Commons Library, quote:

"It is possible to ring-fence regional flights to a national hub (such as London, Glasgow or Cardiff) by creating a Public Service Obligation (PSO) route.

"PSOs routes are those that are subsidised by the government that might not otherwise be commercially viable.

"PSO routes are currently used to connect Scottish Islands airports and Glasgow; Cardiff and Anglesey; Newquay and London Gatwick; Dundee and London Stansted; and Derry and London Southend.

"PSOs have generally replaced other forms of 'start-up' aid for regional air routes.

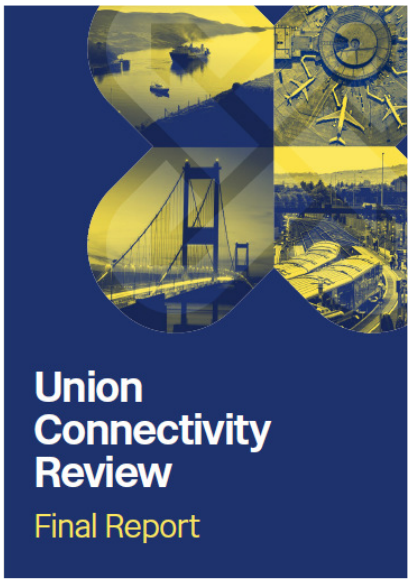
"In the 2021 Union Connectivity Review, conducted for the DfT by Sir Peter Hendy, one recommendation to Government was to revise existing PSO rules to allow routes between regional airports outside of London."

Reference: "Regional Airports" (UK), House of Commons Library
https://commonslibrary.parliament.uk/research-briefings/sn00323/

Regional flights to a national hub (such as London, Glasgow or Cardiff) made viable by creating a Public Service Obligation (PSO) route.

PSO routes are currently used to connect :

- Scottish Islands airports and Glasgow
- Cardiff and Anglesey
- Newquay and London Gatwick
- Dundee and London Stansted
- Derry and London Southend.



Reference: "Union Connectivity Review" (2021)
https://assets.publishing.service.gov.uk/media/619f8681e90e07043e8ff3c0/union-connectivity-review-final-report.pdf

Airfields and aerodromes

While Commercial Air Transport or airline operations are focused on scheduled flights from just 25 airports around the UK, General Aviation (GA) with smaller aircraft types uses more than 120 aerodromes licensed by the Civil Aviation Authority for non-scheduled passenger carrying and between 350 and 500 unlicensed flying sites, according to the General Aviation Council.

This network of GA aerodromes around the UK has been recognised by DfT as providing vital amenities for sport flying, connectivity for business travellers and acting as an important part of the national transport infrastructure;

providing economic benefits and 'point to point' access. This allows passengers and cargoes to be delivered closer to their ultimate destination, reducing time, cost, fuel use and emissions.

Reference: "Keep Airfields Greenfields", GAAC https://www.gaac.org.uk/keep-airfields-greenfields/

Reference: "Airfields Finer", Airfields of Britain Conservation Trust (ABCT) https://www.abct.org.uk/airfields/airfield-finder/

Economic, social and educational impact

According to a General Aviation (GA) handbook guide published by the Department for Transport for local authority planners:

Quote, "GA airfields can play an important role in contributing to local and national economic growth and priorities. The full economic, social and educational value of airfields – as well as the GA users they serve including business aviation, businesses, training and emergency service needs – should be understood and valued in all considerations. As these GA airfields can form part of a larger network, local authorities should also consider the extent to which an airfield contributes to transport and commercial connectivity outside the authority's own boundaries, working together with other authorities and Local Enterprise Partnerships to maintain effective cooperation" unquote.

Reference: "General Aviation Handbook – For stakeholders, including local planning authorities https://assets.publishing.service.gov.uk/media/643e789322ef3b000c66f3e5/general-aviation-handbook.pdf

Community Airports

Another report by the Airport Operators Association (AOA), the trade body for UK airports, highlights the vital contribution airports make to their local communities.

Entitled 'Airports in the Community', the report shows that as well as making a huge economic contribution to the UK economy, airports also provide many social benefits locally.

According to the AOA:

"Airports are an integral part of a UK aviation sector which supports a million jobs, £50bn GDP and provides £8bn in tax to the Treasury.

"They also provide local employment, offer commercial opportunities to businesses in the supply chain, and provide essential national and international connectivity.

Locally, airports across the UK:

- Play a key role in economic development;
- Assist local communities, through raising money for and supporting local groups and organisations;
- Help local health charities;
- Inspire children and young people; and
- Help job seekers and young entrepreneurs."

Reference: "UK Airports make 'vital and sustained contribution' to local communities" Airport Operators Association (AOA) https://www.aoa.org.uk/uk-airports-make-vital-and-sustained-contribution-to-local-communities/

Reference: "Airports in the Community" AOA http://www.aoa.org.uk/wp-content/uploads/2014/06/AOA-AIRPORTS-IN-THE-COMMUNITY1.pdf

Economic impact in local communities

The report quantifies the economic impact of airports throughout the UK, finding that:

- Aberdeen Airport provides 2,000 jobs and supports 4,000 more;
- Bristol Airport employs over 3,000 people on site;
- Heathrow employs 76,000 people directly;
- Liverpool's John Lennon Airport contributes £170 million to the local economy;
- 3.5million people pass through London City Airport every year;
- Stansted provides over 10,000 jobs in over 200 on-site businesses; and
- Newcastle Airport contributes £650 million to the North-East's economy.

Closure of airfields

Many regional airports and general aviation airfields are under threat of closure.

Reference: "Airfields continue to close …" https://www.gaac.org.uk/airfields-continue-to-close/

For house-builders, airfield sites are perfect brownfield development sites.

"developers and local planning authorities are increasingly and inappropriately treating airfields as brownfield sites for land redevelopment, leading both to the loss of an important part of national transport infrastructure and the destruction of significant areas of natural habitat within airfield boundaries."

Reference: https://www.gaac.org.uk/airfields-continue-to-close/

Given their historically high budget constraints and a dire need to build more homes it is not surprising that many councils in the UK are persuaded that turning a low volume, mainly recreational airfield into a new housing estate which will provide income to the council and housing to young families looks like a good deal.
The following sections will provide some arguments and evidence to help the AAM industry engage with councils – to protect not only valuable vanishing aviation facilities but genuinely improve life for the community in many ways.

2. The potential impact of AAM on local airports

In this section we will examine the arguments for local authorities to consider developing AAM services in their area and particularly the benefits of revitalising underused aviation facilities.

The launch of AAM services across the UK could spur the reopening of abandoned smaller, regional airports and keep alive those whose futures are uncertain. Developing electric aircraft take-off and landing facilities at these airfields will play a critical role in enabling AAM operations, offering sustainable, convenient air connections and transforming how people move to, through, and between cities.

Reference: AAM to drive growth of regional airports" Farnborough International https://www.wearefinn.com/topics/posts/aam-to-drive-growth-of-regional-airports/

In many ways this is an ideal time to launch a new type of transport network in the UK. With the closure of programmes such as the northern spur of HS2 many cities are looking to find new ways of connectivity. AAM requires minimal government and local government investment, exploits underused current infrastructure and with an environmental footprint most ground transport networks can only dream of.

Over the last few years, a host of research reports have identified the economic, business and environmental benefits that AAM will bring to the UK's regional airports and airfields.

Economic impact potential of AAM

A recent report by Swanson Aviation Consultancy/EAMaven for UK Research and Innovation noted that early electric aircraft operators were likely to operate out of smaller airports and vertiports.

The report said that as the density of future electric aircraft operators increases, more routes will be opened as they seek new markets.

The research on 20 routes suggests these elements would generate £704m in annual revenue, including an economic stimulation of around £124m a year directly from the increased productivity the future aviation system brings. This also creates a societal time saving benefit of 528 person years resulting from improved connectivity. In line with net zero ambitions, the Market Assessment study also considers measures for reducing the carbon and energy impact of travel. The results suggest around 9,000 tonnes of carbon emissions can be saved over the identified routes from passengers switching from road to AAM transport, based upon reduced travel time and congestion, as well as changes to energy use.

This assessment also outlined a number of important conclusions from the research:

- AAM is indeed economically viable and would provide a significant contribution to the economy, whilst also reducing carbon emissions of travel.
- On many of the northern routes, there are viable numbers of travelers given the anticipated lower cost of AAM services, so the economic, environmental and societal benefits could be significant.
- AAM can and should play an important role in connecting the four nations through the provision of services not economically viable through building new road or rail infrastructure.

Commercially viable routes are available that could be developed through private investment in the vehicles and infrastructure, with no need for investment from the public.

Reference: "UK Advanced Air Mobility Market Assessment" EAMaven https://www.ukri.org/wp-content/uploads/2022/11/IUK-02112022-Advanced-Air-Mobility-Demand-Assessment-Report.pdf

EAMaven also identified 390 other potential routes with one airport having 28 routes which include both eVTOL and eCTOL routes and estimated that over five million passengers per week could travel on these services where a large proportion of them would come from people travelling by car, helping to decarbonise regional travel in the UK.

Economic, social and environmental benefits

In January 2024 the UK's Connected Place Catapult research agency published a study "Vertiports: Incidental economic, social and environmental benefits to local Communities" ... which also identified the incidental benefits that vertiports will bring to local communities.

According to the report: “improved transport connectivity will enable access to more jobs over a larger geography; access to out-of-town services, such as shopping, education, and specialist medicine will contribute towards the local population’s standard of living and better health outcomes.

Reduced congestion, noise, and emissions on surface transportation as travellers switch to AAM. Enhanced attractiveness and competitiveness of the local area for businesses and residents with, for example, freight and logistics firms setting up near rural-based vertiports where land is cheaper. Potential to save more lives during emergencies, with time-critical patients transported to hospitals.”

Reference: “Vertiports: Incidental economic, social and environmental benefits to local Communities” Connected Places Catapult https://cp.catapult.org.uk/report/vertiports-incidental-economic-social-and-environmental-benefits-to-local-communities/

For local authorities, AAM means economic growth, tax revenue and employment - according to the report authors. It will mean developing new connections between city centres, small airfields, rural areas and major shopping centre.

It could also play a role in connecting the community to other nearby centres, increasing tourism and reducing the local authority’s carbon footprint by taking private car journeys off the road.

And it will mean developing new partnership with other UAM stakeholders, first defining the roles and responsibilities for each partner organisation.

Stakeholder	Issue (what do they care about?)	Location(s)
Local authority	Economic growth, employment, well-being, tax revenue	City centre, small airfield, rural area, major shopping centre
eVTOL owners/operators and infrastructure investors. Examples: Supernal/Hyundai Motor Group (invested in Urban-Air Ports), Ferrovial Airports	Making profit, ability to operate as many routes as economically viable	City centre, small airfield, rural area, major shopping centre
eVTOL users	Travel time, comfort, safety	City centre, small airfield, rural area, major shopping centre
Regulator, e.g., NATS, CAA, Air traffic control.	Safety, security, consumer protection	National, local
Public bodies e.g., IUK	Safety, integration with other modes	City centre, small airfield, rural area, major shopping centre
Travellers on alternate modes	Travel times, congestion and crowding, lack of disruption	City centre, small airfield, rural area, major shopping centre
Residents	Noise, privacy, access to jobs, use of land, transport options, crime, prosperity	City centre, rural area
Local airport	Airspace availability, runway space	City centre, small airfield, rural area
Local businesses	Access to customers, access to talent	City centre, major shopping centre, rural area
Emergency services	Ability to respond to emergencies quickly in all conditions, cost efficiency	City centre, rural area
NHS	Ability to deliver medication, transport specialists, provide emergency care, reduction of health inequality, cost efficiency	City centre, rural area
Delivery services	Fast, reliable deliveries to as many customers as possible, at lowest cost	City centre, small airfield, major shopping centre, rural area
Tourists	Access to as many places as possible, flexible travel times, reduced journey times, comfort, luggage space	City Centre, rural area, major shopping centre
Shopping centre owner	Profit maximisation, footfall, rent paid by shops, parking revenues	Major shopping centre

According to the report authors:

Quote, “Improved connectivity opens new opportunities, particularly jobs, for those to whom they were previously unavailable. A person may be able to live in a poorly connected community where previously road travel to a nearby town or city was unviable, however the introduction of a vertiport and regular eVTOL services could allow them to secure employment and make occasional business trips (e.g., weekly or fortnightly) into the town. This means people are less restricted by distance when it comes to employment opportunity, and can secure higher paying, more productive jobs, even if they are not geographically close to the source of employment.

"This could mean that 'brain drains' of the most talented people into big cities could be slowed down, and instead these individuals might stay in their hometown and bring more money into their local area. It is even possible that the vertiport could encourage people from bigger cities to move out of town, knowing that they can still access work and essential services."

There is evidence that building regional rail transport leads to interest from building companies to develop residential property, and the same could be true for vertiports also. This could help to more geographically balance out the UK's population and allow people to move out of expensive cities, leading to increased demand for local services and business growth.
This has the potential to alter the UK's economy and wealth distribution, which at present is one of the most geographically unequal in the developed world despite 'Northern Powerhouse' or 'Levelling Up' government agendas. This is due to lack of serious investment from central government.

AAM, and the presence of a vertiport in a more deprived area, alters the dynamics and reduces the dependence on big investments from central government for economic growth.

This speaks directly to why local authorities need to add AAM into their strategic transport plans.

And there are other reasons why councils should consider AAM in their strategic transport plans and defend aviation facilities from non aviation development.

According to a recent study Advanced Air Mobility An Assessment of a Coming Revolution in Air Transportation and Logistics by BryceTech, supported by the University of Birmingham, Civil Aviation Authority (CAA), and Connected Places Catapult:

Reference: "Advanced Air Mobility – As Assessment o the coming revolution in air transportation and logistics" Bryce Tech https://assets.publishing.service.gov.uk/media/6571b635049516000f49be06/advanced-air-mobility-evidence-review.pdf

Accessibility and Inclusivity: AAM has the potential to offer alternative transport options for disabled users and connect underserved communities, thereby improving social equity. However, in order to address these areas and prevent discrimination, the design of AAM infrastructure should consider aspects including user requirements, physical accessibility, affordability, and existing infrastructure.

Regional Connectivity: AAM could connect remote communities across the country, for example the Scottish Highlands and isles, introduce new or improved connections between regional centres, and increase access to education, healthcare, and other essential services.

Healthcare Access and Time-Critical Delivery: Electric air ambulances could take patients to hospital more efficiently and cheaper than current helicopter services and potentially improve response times for medical personnel and patient transport. Additionally, AAM could provide options for time-critical cargo deliveries of vital medical supplies such as blood, plasma, organs, and radioisotopes.

Job Creation and Socioeconomic Impacts: Job creation and socioeconomic impacts are highly dependent on AAM adoption and the market growth of the sector. However, whilst AAM offers the potential for job creation, concerns exist regarding job displacement, and the possibility of job losses due to automation of services.

Transit Comfort: AAM may provide an alternative transport option that could offer safety and comfort benefits. However, the extent of these benefits is unclear and would likely depend on several factors, including the suitability of AAM as a substitute to public transport options.

That's the theory – but councils will need to be convinced that the industry is serious and will be able to deliver on its promises. What evidence is there that the UK's advanced air mobility will take off in the way it plans?

3. Launching AAM services in the UK

By 2026 or 2027 at the latest, the first advanced air mobility commercial services are likely to have taken off in the UK.

Most of the 24 AAM vertiports being planned are based on existing airfields, airports and helipads.

There are around 660 helipads currently operating in the UK – but as the Connected Places Catapult study shows, the initial AAM operations will be centred mainly at regional airports.

Reference: https://cp.catapult.org.uk/report/vertiports-incidental-economic-social-and-environmental-benefits-to-local-communities/)

Planned Vertiports

Table 10. Table of UK planned vertiport locations (incomplete list)

Site/Type	Location	Airport	Developer	Status
London City Airport	Upminster, London	Yes	Ferrovial Airports	Operational (2024)
Skyports London Heliport; Canary Wharf	Canary Wharf	No		
Coventry Airport	Coventry	Yes	Ferrovial Airports	Operational (2024)
Farnborough Airport	Farnborough, Hampshire	Yes	Ferrovial Airports	Operational (2024)
Glasgow Airport	Paisley, Renfrewshire	Yes	Ferrovial Airports	Operational (2024)
Aberdeen Airport	Dyce, Aberdeenshire	Yes	Ferrovial Airports	Operational (2024)
Southampton Airport	Southampton	Yes	Ferrovial Airports	Operational (2024)
Manchester Airport	Manchester	Yes	Manchester Airports Group	Planned
Heathrow Airport	London	Yes	Heathrow Airport Holdings	Planned
Gatwick Airport	London	Yes	Gatwick Airport Limited	Planned
Birmingham Airport	Birmingham	Yes	Birmingham Airport Limited	Planned
Bristol Airport	Bristol	Yes	Bristol Airport Limited	Planned
Leeds Bradford Airport	Leeds	Yes	Leeds Bradford Airport Limited	Planned
Thames Estuary	London	No	Various	Planned

Site/Type	Location	Airport	Developer	Status
Liverpool John Lennon Airport	Liverpool	No	Liverpool John Lennon Airport	Planned
London Oxford Airport	Kidlington, Oxfordshire	No	London Oxford Airport	Planned
London Luton Airport	Luton, Bedfordshire	No	London Luton Airport	Planned
London Stansted Airport	Stansted Mountfitchet, Essex	No	London Stansted Airport	Planned
Newcastle Airport	Newcastle upon Tyne	No	Newcastle Airport	Planned
Edinburgh Airport	Edinburgh	No	Edinburgh Airport	Planned
Inverness Airport	Inverness	No	Highlands and Islands Airports Limited	Planned
Cardiff Airport	Cardiff	No	Cardiff Airport	Planned
Belfast City Airport	Belfast	No	Belfast City Airport	Planned
Isle of Man Airport	Ronaldsway	No	Isle of Man Government	Planned

Source: web search

But smaller airfields and airports are also gearing up for the AAM revolution.

Leading AAM projects in the UK

Aircraft charging company AeroVolt is installing a network of aircraft smart chargers around the United Kingdom at airports and aerodromes. At the start of 2024 AeroVolt already had five operational sites and is due to have 24 operational by 2025, with plans in place for 60+ sites.

AeroVolt will also operate its own Axe eVTOL, which it will use for network development, and which will be available to hire by members of their subscription service and all-electric flying club, Squadron.

Reference: "Skyfly and AeroVolt to perform UK's first airfield-to-airfield eVTOL flight with recharging" press release https://skyflytech.com/skyfly-and-aerovolt-to-perform-uks-first-airfield-to-airfield-evtol-flight-with-recharging/

For many local authorities, early trials of operational AAM services are an opportunity to become early movers – attracting finance from private and public sources.

For example, a consortium led by Atkins and involving Vertical Aerospace and the West of England Combined Authority has secured an industrial research grant by the UK Government to look at the feasibility of an air taxi service in the South West Region of England before conducting a demonstration in a live environment.

The UKP2.5m project has secured partial funding through the Government's Future of Flight Challenge, which was created to find innovative methods of achieving greener flight, finding new ways to travel, increasing mobility, improving connectivity and reducing congestion.

The project is expected to take 18 months, and will comprise an assessment of the demand for air taxi services in the South West of England; development of use-cases for the technology; and an evaluation of the integration and impact on the wider transportation network, including the region's airports, as well as the benefits to cities and residents.

It will establish viable markets and businesses cases for these services and seek to understand public perceptions and attitudes towards eVTOL aircraft. These activities aim to culminate in a series of full-system demonstrations in live airspace across the region.

In May 2023 Ferrovial Vertiports UK reported it was partnering with UK property development company Milligan to develop a network of vertiports throughout the UK. And in November 2023 Volatus Infrastructure & Energy Solutions and eVTOL manufacturer LYTE Aviation formed a partnership "to fulfil the infrastructure requirements for all types of eVTOL technologies"

Meanwhile, in July 2022 Vertical Aerospace, Virgin Atlantic, Atkins, Skyports and NATS, along with Connected Places Catapult and academic institutions Cranfield University and WMG, University of Warwick, announced the creation of the Advanced Mobility Ecosystem Consortium.

"The Consortium has been awarded a UKP9.5 million grant by the UK Government's Future Flight Challenge to develop the essential building blocks of a viable AAM ecosystem that has the potential to be progressed into full commercial operations. This first-of-a-kind ecosystem will accelerate AAM in the UK by creating and testing technological developments in aircraft electrification, airspace management, ground infrastructure, operational procedures and the systems and supporting business cases required to implement a new model of aerial passenger transport in the UK.

The project will demonstrate the feasibility of a UK AAM ecosystem using Vertical Aerospace's VX4 eVTOL aircraft, operated by Virgin Atlantic. Two physical flights will take place from Bristol Airport to an airfield in South West England, and between London Heathrow Airport and the Living Lab vertiport. A third simulation flight will demonstrate urban connectivity between London City and Bristol airports.

And as AAM operations are adopted by cities around the world - starting most probably in Paris in 2024 - the arguments for UK local authorities to integrate AAM into their airport-interest transport planning will accelerate faster.

The End