



Lancashire Aerospace Task Force

A Recovery Plan for Lancashire

October 2020



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Enterprise Partnership



Aerospace
Lancashire

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North West Aerospace Alliance*



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Foreword

Steve Fogg, Chair of the LEP and Chair of the Aerospace Task Force

Claire Whelan, LEP Board Director and member of the Aerospace Task Force

The Lancashire Enterprise Partnership (LEP) is a business-led, strategic collaboration, charged with leading the economic growth strategy for Lancashire. It is a public-private sector partnership that spans its entire geography – the only strategic body that truly represents the whole of Lancashire. The LEP has a responsibility to look at the county through an economic lens and shape the right interventions at scale, to secure strong economic and inclusive growth for all of its communities and lead the local response to any economic challenges Lancashire might face.

Consequently, in response to the global economic shock arising from Covid19, Lancashire Enterprise Partnership convened a major collaboration with businesses across key industry sectors, to secure a rapid and proportionate response to the crisis. From the outset, it was clear that different sectors are being impacted in very different ways, and some more adversely affected than others, including the aerospace sector.

As part of that work, the Lancashire Enterprise Partnership's Manufacturing Group established a business-led, Aerospace Task Force to respond to specific challenges, particularly those operating within civil aircraft production. A wider stakeholder group, including the political leadership of the county, also urged prompt and effective action to protect businesses and local community jobs at risk.

The Lancashire Aerospace Recovery Plan is the culmination of a series of roundtable sessions and individual business interviews. The recommendations in the Recovery Plan are therefore evidence-led, backed by industry and based on forensic analysis of the emergent impact of Covid 19 and the scope and ability of the sector to respond.

The Lancashire Enterprise Partnership will work with Government and local partners to now build strong support and action to deliver the Lancashire Aerospace Delivery Plan.





Overview of the Work

- ✚ **The Lancashire Enterprise Partnership** convened the Lancashire Aerospace Task Force comprised of business leaders from a cross section of the Lancashire aerospace sector, in response to the impact of Covid-19 on the industry. The Task Force was chaired by Steve Fogg and supported by Dr. David Bailey FRAeS, a well-known aerospace industry specialist.
- ✚ **The Lancashire Aerospace Task Force met a number of times** to discuss the impact of Covid-19 on the civil aerospace sector and the supply chain in particular.
- ✚ **Company Interviews** were completed with **senior business leaders**, to obtain data relating to predicted revenues and employment, cross-sector portfolios, potential new markets, and skills and training for their employees.
- ✚ The Task Force contributed their time and ideas to the development of an **evidence base** that supports a **range of potential interventions** which will help Lancashire Aerospace companies to **stabilise, recover** and become more competitive, and return to **growth**.
- ✚ A number of **scenarios** have been developed and the interventions identified by the Task Force have been aligned to the scenarios as possible **solutions**. Together, the evidence gathered and the solutions proposed, have formed the **Lancashire Aerospace Recovery Plan**.



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The Need for a Lancashire Aerospace Recovery Plan





The Need for a Lancashire Aerospace Recovery Plan

Introduction

- ✂ At the Paris International Air Show in **June 2019**, airlines ordered 866 aircraft worth more than \$60 Billion. The Airbus global market forecast was for a requirement to build 39,200 new aircraft across a 20 year period worth over \$6 Trillion. **Within 9 months the industry was in crisis.**
- ✂ **The Covid-19 pandemic** caused a huge drop in air travel and has significantly impacted both industry sectors of aviation (the operation and maintenance of civil aircraft by airlines) and aerospace (the design and manufacture of aircraft by primes).
- ✂ Covid-19 is the **nemesis for air travel** as it combines the fear of a perceived health risk, government restrictions on travel and an economic downturn, all at the same time.
- ✂ The International Air Transport Association (IATA) has reported that its members (the airlines) have already **lost \$419 Billion** in revenues in 2020.
- ✂ As countries entered lockdown, over **90% of global commercial flights were cancelled.**
- ✂ The two largest aircraft manufacturers in the world (Airbus and Boeing) **cut aircraft production** in 2020 by between 30% and 50%.



The Need for a Lancashire Aerospace Recovery Plan

Introduction

- ✈️ Airbus and Boeing forecast aircraft orders based on very detailed predictions of how many passengers will fly each year, and on what routes. The cumulative measure **RPK**, is an indicator of the total number of kilometers travelled by all passengers and as such, is a good measure of sales volume of passenger traffic.
- ✈️ The industry is using RPK forecasts to estimate ***when passengers will return to flying*** and in what numbers and therefore, when aircraft production will recover and grow.
- ✈️ Across the ***summer of 2020***, whilst some passengers returned, quarantine restrictions are thought to have resulted in air travel recovering to ***only 20% of pre-Covid (2019) levels***.
- ✈️ The cuts to aircraft production by primes such as Airbus and Boeing have a corresponding ***impact on all levels of the supply chain***; from Rolls Royce down to the SMEs.
- ✈️ Given Lancashire's critical mass of companies in the Aerospace Supply Chain it was important to ***understand the impact of Covid-19 on the industry in Lancashire***.



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Overview of the Markets:
Civil Aerospace,
Aircraft Production Rates,
and Defence Spending





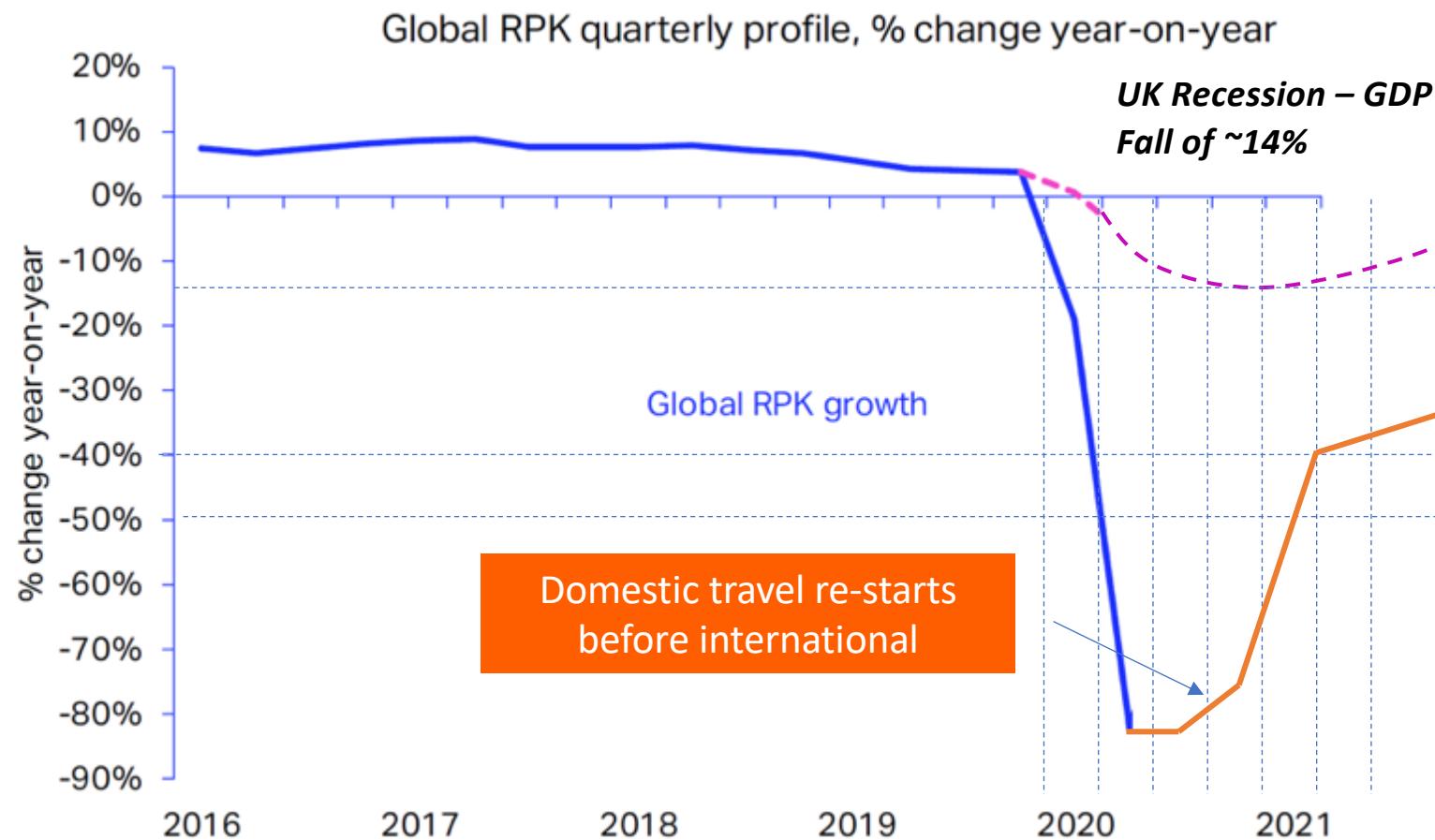
Likely Assumptions

- Travel demand continues to stay low / decline into winter. Recovery over 12 to 24 months over a course of a recession.
- 50% lower passenger demand in 2020, comparable to pre-2005 levels when global fleet was 30% smaller.

Likely Assumptions

- Single aisle production rate: 70% pre-crisis levels
- Widebody production rate: 50% of pre-crisis levels
- Timescales to recover fully to 2019 production rates (2023-25 – Single Aisle) / (2025-27 – Wide Body)

RPK = Revenue Passenger Kilometers
 A cumulative measure of the total number of kilometers travelled by all passengers. RPK is a measure of sales volume of passenger traffic.



Q3/4 is a risk to the Supply Chain – There is a lot of inventory in place

Only the most competitive will remain in the Supply Chain

Please Note: This is the Author's view based on a range of scenarios presented by different organisations. The reader should consider scenarios developed by IATA, ADS, AGP, Oxford Economics etc.





Airbus and Boeing Production Rates

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Aircraft Engines

CFM – Leap 1A
P&W 1000G



A320 neo

Rate 2019	Rate 2020
63	40

B737 MAX

Rate 2019	Rate 2021
0	31

CFM – Leap 1B



A330 neo

Rate 2019	Rate 2020
4	2

B787

Rate 2019	Rate 2021
14	7

RR – Trent 1000
GE – GENx



RR – Trent 7000



A350

Rate 2019	Rate 2020
10	6

B777/X

Rate 2019	Rate 2021
5	3

GE – GE9X



RR – Trent XWB



A = Airbus
RR = Rolls Royce
P&W = Pratt & Whitney

B = Boeing
GE = General Electric
CFM = General Electric and Safran





UK Defence Spending

The UK Government is committed, through NATO, to spend close to 2% of its GDP on defence.

This commitment is unlikely to change significantly in the short to medium term.

As such, whilst defence spending may be impacted by any falls in the UK's GDP in the long-term, the government is already committed to spend on the equipment order pipeline in the short and medium term.

Furthermore, defence is an increasing priority area and supports the wider economy. Some companies in the defence supply chain are reporting job growth.

UK Defense Budget Forecast Scenarios from FY2016 to FY2024



Source: UK's Ministry of Defense and GlobalData Intelligence

Companies in Military Aerospace have not felt the same levels of impact as those in Civil Aerospace. As such, companies such as BAE Systems and Leonardo have less exposure – and so do their supply chains.





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The Lancashire Aerospace Task Force
Understanding the potential scale of
the problem for Lancashire Jobs,
Problem & Vision Statements,
and Roadmap





Analysis - Nomis Data: Business Register and Employment Survey for 2018

✂ The Nomis Data shows that there are 87,000 people working in Manufacturing within Lancashire (almost 6% of the total population).

✂ Of these, the top 6 sectors make up over 60% of all manufacturing jobs in Lancashire.

✂ Aerospace Sector	13,000
✂ Food Products	12,000
✂ Fabricated Metal Products	11,000
✂ Rubber and Plastic Products	8,000
✂ Chemicals and Chemical Products	4,500
✂ Automotive	4,500

✂ However, we know that the official data under-represents the employment levels in Lancashire's Aerospace Sector.



Nomis Data: Business Register and Employment Survey for 2018

Local Enterprise Partnership	Lancashire
Population	1,460,893
% of Population Employed in Manufacturing	5.96%
3 : Manufacturing (C)	87,000
10 : Manufacture of food products	12,000
11 : Manufacture of beverages	500
13 : Manufacture of textiles	3,000
17 : Manufacture of paper and paper products	3,500
19 : Manufacture of coke and refined petroleum products	100
20 : Manufacture of chemicals and chemical products	4,500
21 : Manufacture of basic pharmaceutical products and pharmaceutical preparations	350
22 : Manufacture of rubber and plastic products	8,000
23 : Manufacture of other non-metallic mineral products	1,500
24 : Manufacture of basic metals	1,500
25 : Manufacture of fabricated metal products, except machinery and equipment	11,000
26 : Manufacture of computer, electronic and optical products	2,000
27 : Manufacture of electrical equipment	1,500
28 : Manufacture of machinery and equipment n.e.c.	4,000
29 : Manufacture of motor vehicles, trailers and semi-trailers	4,500
30 : Manufacture of other transport equipment	13,000
32 : Other manufacturing	2,000
33 : Repair and installation of machinery and equipment	1,000



Comparisons across the UK

The Nomis data shows that the UK's Aerospace Sector is largely represented in a few LEP regions. Just 7 LEPs (Lancashire, D2N2, Gloucestershire, Heart of the South West, West of England, Enterprise M3 and the Solent) represent almost 70% of all employment.

Region	The North West of England						The Midlands				The South West of England				Farnborough	Sheffield
	Local Enterprise Partnership	Cheshire and Warrington	Cumbria	Greater Manchester	Lancashire	Liverpool City Region	The North West of England	Coventry and Warwickshire	Derby, Derbyshire, Nottingham and Nottinghamshire	Greater Birmingham and Solihull	The Midlands	Gloucestershire	Heart of the South West	West of England	The South West	Enterprise M3
Population	901,963	499,858	2,682,528	1,460,893	1,506,935	7,052,177	862,434	2,109,920	1,944,057	4,916,411	596,984	1,663,714	1,069,583	3,330,281	1,628,782	1,806,257
% of Population Employed in Manufacturing	4.55%	7.40%	3.88%	5.96%	3.25%	4.51%	6.38%	5.92%	4.68%		5.70%	4.15%	3.37%		2.64%	5.09%
3 : Manufacturing (C)	41,000	37,000	104,000	87,000	49,000	318,000	55,000	125,000	91,000	271,000	34,000	69,000	36,000	139,000	43,000	92,000
10 : Manufacture of food products	5,000	4,000	16,000	12,000	6,000	43,000	3,500	18,000	5,000	26,500	3,000	12,000	3,500	18,500	2,500	14,000
11 : Manufacture of beverages	175	300	1,000	500	400	2,375	400	700	1,750	2,850	500	1,000	500	2,000	450	600
13 : Manufacture of textiles	450	500	7,000	3,000	800	11,750	450	4,000	1,750	6,200	350	1,000	350	1,700	350	700
17 : Manufacture of paper and paper products	1,750	1,500	3,000	3,500	800	10,550	250	2,250	1,500	4,000	500	1,000	1,250	2,750	700	1,250
19 : Manufacture of coke and refined petroleum products	1,000	0	500	100	300	1,900	0	250	45	295	0	0	0	-	100	300
20 : Manufacture of chemicals and chemical products	4,000	450	9,000	4,500	5,000	22,950	2,000	4,000	4,000	10,000	350	1,250	700	2,300	2,500	2,000
21 : Manufacture of basic pharmaceutical products and pharmaceutical preparations	1,000	400	600	350	2,250	4,600	0	1,750	0	1,750	200	1,000	300	1,500	1,000	200
22 : Manufacture of rubber and plastic products	2,250	3,000	11,000	8,000	3,000	27,250	2,500	9,000	5,000	16,500	2,000	4,000	1,250	7,250	1,750	8,000
23 : Manufacture of other non-metallic mineral products	1,500	1,000	2,250	1,500	3,000	9,250	1,750	6,000	2,500	10,250	900	2,000	1,250	4,150	1,000	5,000
24 : Manufacture of basic metals	600	10,000	1,250	1,500	600	13,950	500	2,000	2,000	4,500	900	900	150	1,950	300	7,000
25 : Manufacture of fabricated metal products, except machinery and equipment	6,000	3,500	15,000	11,000	6,000	41,500	8,000	14,000	16,000	38,000	5,000	7,000	6,000	18,000	6,000	17,000
26 : Manufacture of computer, electronic and optical products	2,500	800	5,000	2,000	1,250	11,550	1,500	2,500	2,250	6,250	4,000	3,000	1,750	8,750	5,000	2,000
27 : Manufacture of electrical equipment	1,000	800	3,000	1,500	1,500	7,800	1,250	3,000	2,250	6,500	1,250	3,000	1,000	5,250	2,000	3,500
28 : Manufacture of machinery and equipment n.e.c.	1,750	500	6,000	4,000	1,750	14,000	4,500	8,000	9,000	21,500	4,500	4,500	2,500	11,500	3,000	6,000
29 : Manufacture of motor vehicles, trailers and semi-trailers	7,000	200	3,500	4,500	8,000	23,200	22,000	4,500	21,000	47,500	1,250	600	1,000	2,850	3,500	4,000
30 : Manufacture of other transport equipment	450	8,000	1,750	13,000	1,500	24,700	1,500	19,000	1,250	21,750	4,500	14,000	8,000	26,500	1,750	900
32 : Other manufacturing	800	500	2,000	2,000	1,000	6,300	800	4,000	4,000	8,800	1,500	2,500	1,000	5,000	1,500	4,500
33 : Repair and installation of machinery and equipment	1,250	350	3,000	1,000	1,000	6,600	1,750	7,000	4,500	13,250	900	1,250	1,750	3,900	6,000	5,000

Note : 30:Manufacturing of other transport equipment includes; Air & Spacecraft, Ships & Boats, Trains and Military Vehicles. Hence the 8,000 employees in Cumbria are largely related to Barrow Submarines.





Aerospace Employment is Under-Represented

- ✂ A report by the North West Aerospace Alliance (NWAA) in 2017 entitled “Lancashire ... No.1 for Aerospace Jobs” suggested that the Office of National Statistics data, under-represented employment in the North West and Lancashire.
- ✂ Analysis by NWAA, focussing on aerospace related manufacturing, indicates that, in reality, the top 56 Aerospace companies in the North West of England have a combined turnover of over £8 Billion and employ approximately 25,000 people directly i.e. over one fifth of all Aerospace workers in the UK.
- ✂ Of these 56 companies, some **31 are located in Lancashire and have a combined turnover of almost £5 Billion and employ 17,000 people**, some 25% more than the official numbers would suggest. Furthermore, there are an additional 22 NWAA members with a Lancashire postcode.





Analysis of the 17,000 Aerospace Jobs in Lancashire

- ✚ Approximately 9,000 of these jobs are in BAE Systems (Warton and Samlesbury), the other 8,000 are in the 50+ supply chain companies.
- ✚ There is no indication of any impact of Covid-19 on employment within BAE Systems.
- ✚ This analysis is focused on the impact on employment, of the remaining 8,000 jobs in the Lancashire Aerospace Supply Chain.
- ✚ We have seen that on average, most companies tend to reflect a split of work of:
 - ✚ 55% Civil Aerospace
 - ✚ 26% Military Aerospace
 - ✚ 13% Power Generation
- ✚ The Civil Aerospace sector is experiencing a fall in work of between 30% and 50% depending on aircraft type (short haul vs long haul).
- ✚ The defence market is unlikely to be impacted due to NATO commitments other than as a % of a reduced UK GDP.



Analysis of the 17,000 Aerospace Jobs in Lancashire

- ✂ On average, the Civil Aerospace market has suffered a 40% reduction in work. This will significantly impact the Lancashire Aerospace Supply Chain's 55% workshare.
- ✂ As such, we might expect that companies will lose 40% of 55% of their workload – i.e. some 22% of their revenues.
- ✂ We can therefore estimate a 22% hit to employment of the 8,000 people in Lancashire's aerospace supply chain.
- ✂ This provides an estimate of 1,760 redundancies from Lancashire's Aerospace Suppliers.



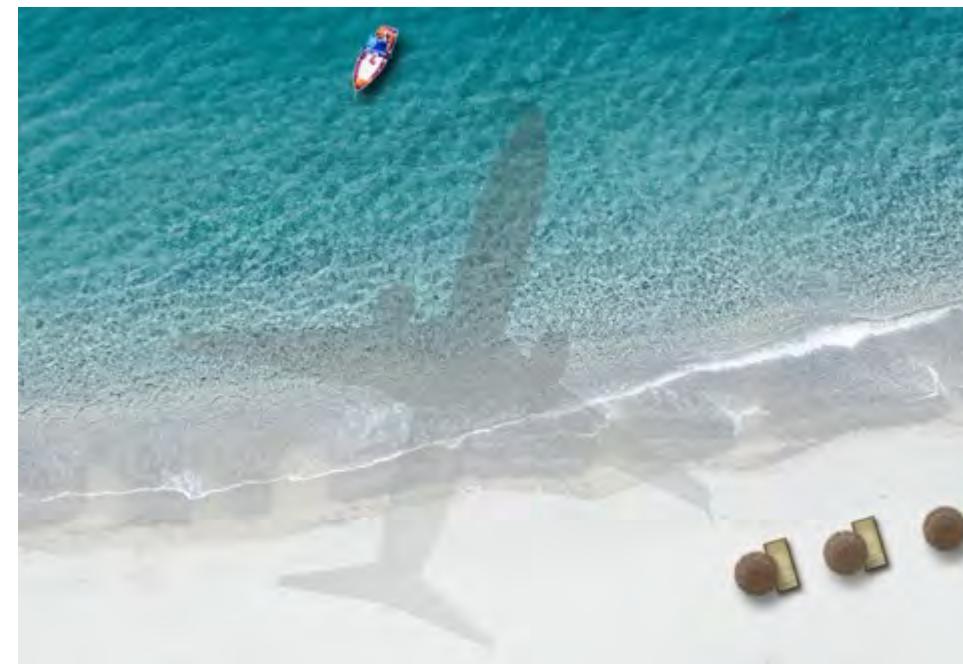
Analysis of the Wider Impact on Jobs

- ✂ The Oxford Economics report “The contribution of BAE Systems to the UK Economy”, indicates that aerospace employment has a corresponding impact on other employment in the supply chain (described as indirect) and then also on employment supported by worker spending (described as induced).
- ✂ In 2018, BAE Systems employed 34,100 people in the UK and Oxford Economics calculated that this impacted a further 49,000 jobs in the supply chain and 42,000 jobs based on BAE employees spending. This provides a ratio of the total number of direct, indirect and induced jobs, a multiplier of 3.67.
- ✂ If we apply this ratio to the estimated 1,760 redundancies from the Lancashire Aerospace Supply Chain, we can predict that Covid-19 could impact as many as 6,459 direct, indirect and induced jobs.



The New Normal – Re-building for the Future

- ✚ The Lancashire Aerospace Task Force recognises that Governments are now considering the pandemic as a possible opportunity to invest and re-position the Aviation Sector for lower carbon emissions.
- ✚ The UK Government has established a “Jet Zero” council, which will focus on reducing carbon dioxide emissions and delivering clean growth. It will operate in the context of the UK’s wider target for net zero emissions by 2050 – one of the most ambitious targets in the world.
- ✚ As such, in our response to the pandemic, we must also consider how Lancashire’s AEM Sector and its Innovation Ecosystems will be ready with the relevant capabilities and new technologies to support a low-carbon aviation sector.
- ✚ Prior to the Covid-19 pandemic, the forecast for sales of conventionally fuelled, gas turbine powered aircraft was worth \$6 Trillion across a 20 year period.
- ✚ The Aerospace Technology Institute forecast that replacement of conventional single aisle aircraft (Airbus A320 and Boeing 737 Max) with hybrid electric aircraft would create a market worth \$17 Trillion.
- ✚ We must recognise and respond to this future opportunity for the Lancashire Aerospace Supply Chain.





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Problem Statement

The Covid-19 pandemic threatens the supply chain and high-value manufacturing jobs that have been built on a rich heritage of over 100 years of aircraft production in Lancashire.

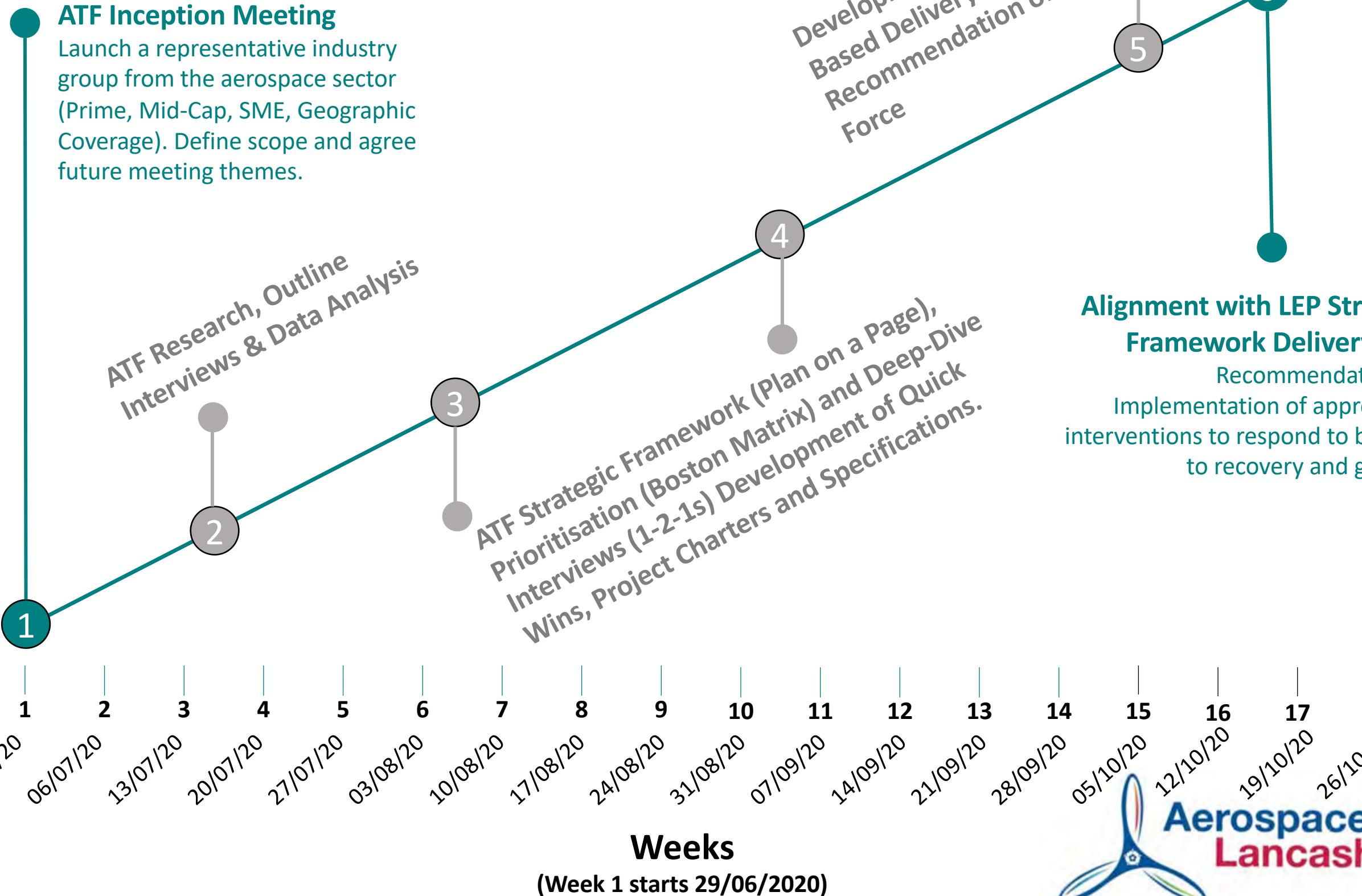
Vision Statement

To support Aerospace and Defence companies in Lancashire to stabilise and recover from the Covid-19 crisis and re-establish as globally competitive businesses, in order to be ready to benefit from the return of growth in the Civil Aerospace market. To position Lancashire as a leading region for the development of low-carbon technology thereby ensuring that Lancashire continues to benefit and grow and prosperity from highly skilled and valuable manufacturing jobs across the next century.





Aerospace Task Force Roadmap



Alignment with LEP Strategic Framework Delivery Plan
 Recommendation for Implementation of appropriate interventions to respond to barriers to recovery and growth.



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Who is Represented on the Lancashire Aerospace Task Force?





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Lancashire Aerospace Task Force

BAE SYSTEMS

senior

ADDISON

ADVANCED TECHNOLOGIES

**Northwest
Aerospace Alliance**

SAFRAN

KAMAN

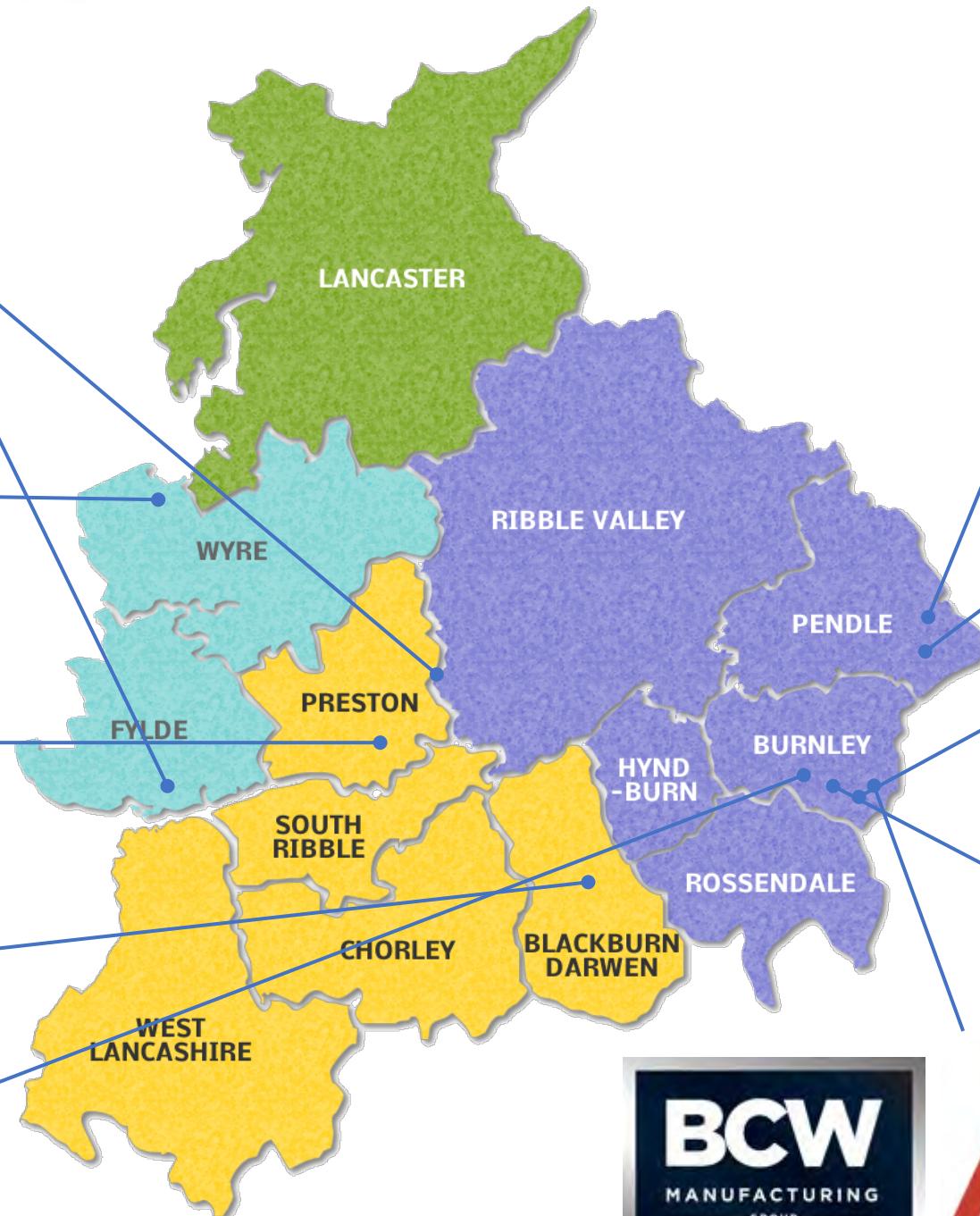
**Paradigm
Precision**

velocity
composites plc

BCW
MANUFACTURING
GROUP

ANSUKA

**Aerospace
Lancashire**



*The Task Force represents a range of business sizes and geographical distribution
There are over 50 aerospace companies in Lancashire*



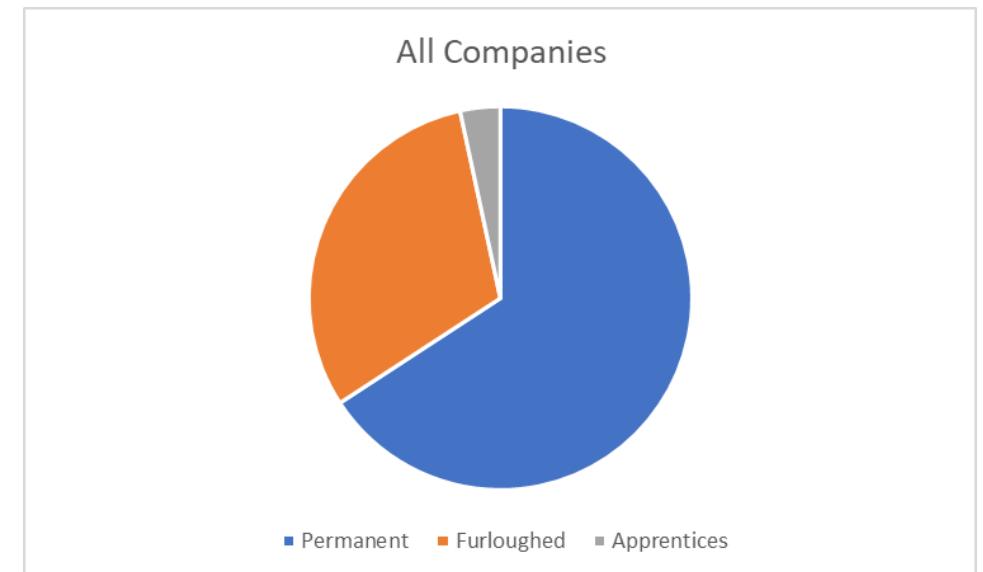
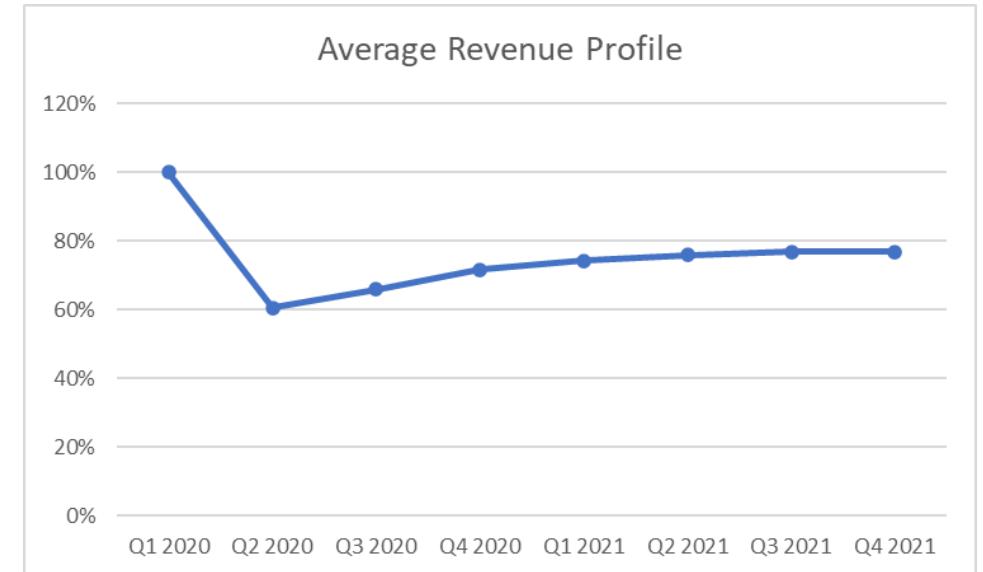
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**Impacts of Covid-19
on Lancashire's
Aerospace Industry.**
Results of the Interviews
with Business Leaders



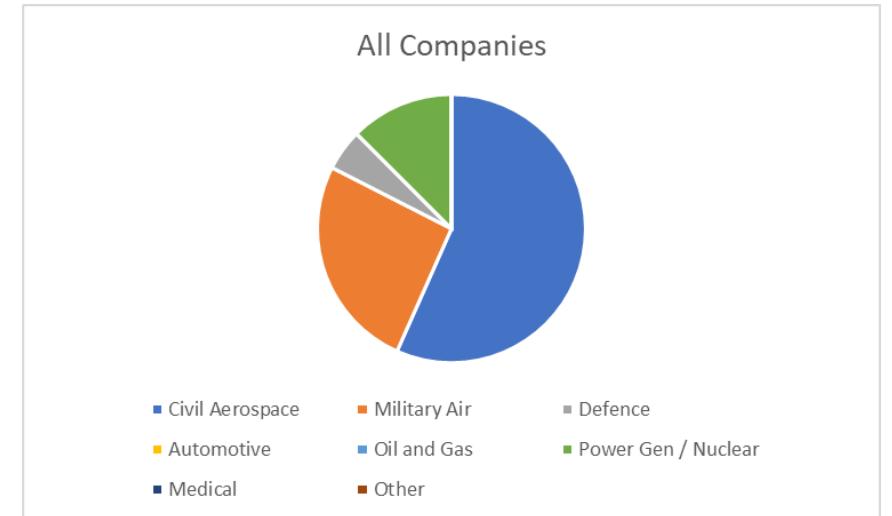
Revenue & Employment

- 📄 85% of companies reported a position of stable or steady growth prior to the crisis.
- 📄 The Civil Aerospace Sector has seen a 40 – 50% cut in orders and lots of schedule instability
- 📄 On average, companies have lost 40% of 2019 revenues in Q2 and expect to recover to 77% through 2021.
- 📄 85% of the companies interviewed were using the Job Retention Scheme. Companies have also taken advantage of Government support including CBILS, Tax and VAT deferment.
- 📄 On average 40% of employees were furloughed in July. This number peaked at 80% for those with high levels of Civil Aerospace Work.
- 📄 There is a view that cash flow will be impacted more in the next 6 months than in the preceding 6 months.



Market Share and Opportunities

- ✚ Civil Aerospace accounts for over 55% of the work in the companies interviewed. Military Air accounts for another 26%, while Power Generation (Industrial Gas and Steam Turbines) accounts for 13% of all work.
- ✚ Individual supply chain companies indicate that it is only Civil Aerospace work that has been affected, in some sectors there have been increases in work.
- ✚ Most organisations are considering diversification – but there is a recognition that we have to understand:
 - ✚ Alignment of core capabilities
 - ✚ Competitiveness and cost base (aerospace cost base tends to be higher than other industries)
 - ✚ Regulations / Approvals / Accreditations which can take 12-24 months to achieve
- ✚ Rail, Medical and Nuclear were by far the most popular sectors for diversification.



Skills and Training

- ✚ There is a trend for companies to want to move towards more robust manufacturing processes and a lower-skilled workforce. However, there is also a trend to move to fewer but higher-skilled workers using far more machines.
- ✚ The most difficult positions to recruit are without doubt Manufacturing Engineers and good operational Team Leaders.
- ✚ Team Leaders are the focus for upskilling in Leadership, Lean, Production Planning (ERP/MRP2 Systems).
- ✚ Tailored approaches to minimise downtime are the most favoured approaches to increasing upskilling at this time – and possibly virtual training.
- ✚ Companies were generally satisfied with training provision in Lancashire and especially apprentice training.



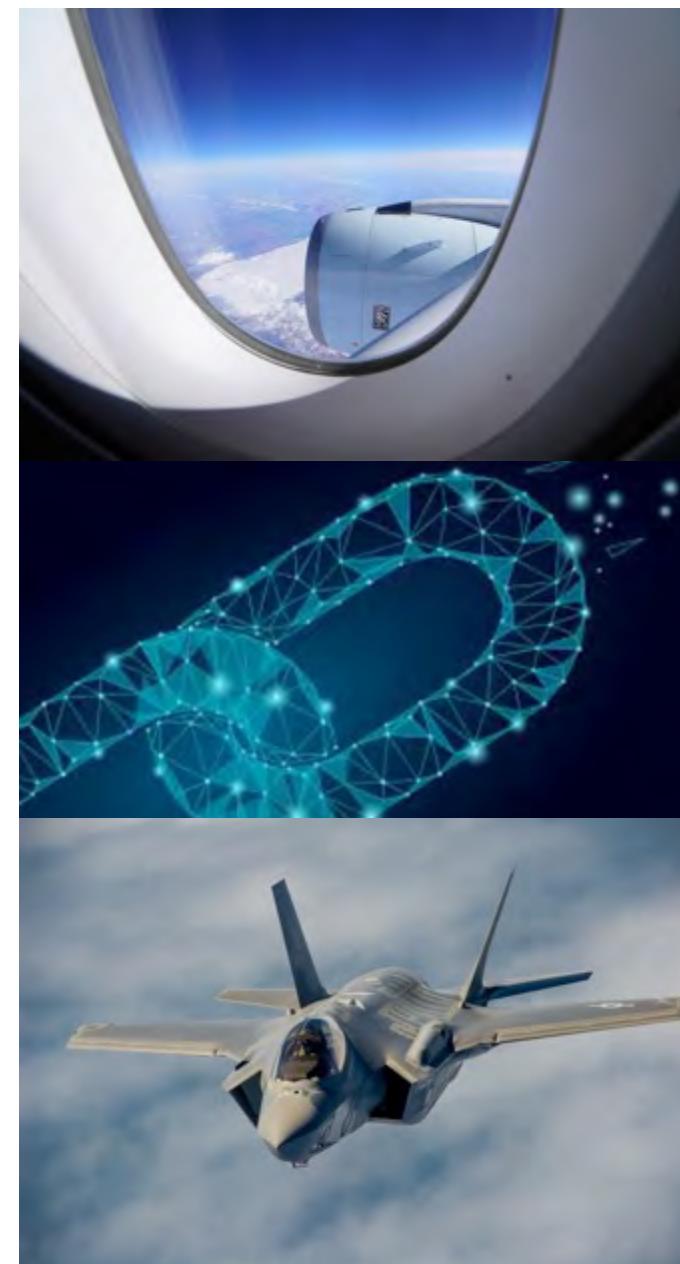
Business Group Satisfaction with Training Provision





Task Force Quotes

-  *“The UK needs to influence procurement decisions such that UK supply chain has a chance - and then we have to be competitive.”*
-  *“If customers are looking for suppliers to invest (in skills and equipment) then longer term contracts (5-10 years) need to be placed to provide the confidence to invest.”*
-  *“We need to become more like the automotive sector in our performance. There is more work out there and there are opportunities for re-shoring if we can be competitive.”*
-  *“Success will be our ability to compete internationally for global work.”*





Task Force Quotes

- “The same local companies are generating the "same" experience base - we sometimes need new experience and new thinking. We need help to bring new skills into Lancashire.”
- “We are having to let some very experienced people go, this is a great opportunity for other companies to access some highly skilled workers.”
- “We have to minimise downtime in the future – and move towards virtual training out of normal working hours.”
- “We need to become more effective and efficient so we continue to recognise the importance of developing and training our people to continuously improve.”





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The Lancashire Aerospace Task Force “Plan on a Page” and Prioritisation of 15 Interventions

