



Profile of the IFATE Engineering, manufacturing, process and control pathway occupations in Cheshire and Warrington - May 2023

DRAFT FINAL

BRENNAN WILSON LTD

South Cheshire Chamber as the lead employer representative body developing the Local Skills Improvement Plan (LSIP) have commissioned this work from Brennan Wilson Ltd. The work takes the qualification pathways that have been developed by the Institute for Apprenticeships and Technical Education, mapping different occupations against them and contextualises them for the Cheshire and Warrington economy.

Contents

Introduction	2
Occupational mapping	2
Occupational Demand	4
Wages	7
Age and gender	9
Automation Risk	10
Industry sectors	11
Job postings	13
Specialised Skills	15
Common Skills	16
Software skills	18
Spatial demand	19

Introduction

The Engineering, manufacturing, process and control pathway is one of three pathways that sit within the Engineering and manufacturing technical education route. There are 15 routes that span the range of technical education in England which have been developed by the Institute for Apprenticeships and Technical Education ([IFATE](#)). This profile¹ draws on work commissioned by IFATE from the Institute of Employment Research (IER) at Warwick University. This IER project maps the 15 routes, and their linked occupational maps, to the Standard Occupational Classification (SOC) at the 4-digit level.

Further work has been undertaken to disaggregate the IER SOC mapping to the IFATE pathways that sit below each route, to provide a 4-digit SOC mapping for each pathway. The group of SOC codes generated for each pathway has been used, in this instance, to generate the profile of the Engineering, manufacturing, process and control pathway below. Data is from the Lightcast Analyst tool.

Profiles for other occupations can be found [here](#).

Occupational mapping

The table below sets out the (4-digit SOC) occupations that are supported in some way by the Engineering, manufacturing, process and control pathway; and the volume of employment in Cheshire and Warrington that is associated with each of these occupations.

Some occupational areas are supported by more than one standard (eg Production and process engineers is a single SOC area supported by six standards); some occupational areas in the table below will encompass jobs for which there are currently no standards or will be no standards (eg various types of mechanical engineers), and some of the roles within the occupational areas identified will, nevertheless, fall out of scope of the Pathway (eg a large number of roles classified as being SOC 3539 Business and related associate professionals n.e.c. will not sit within the Engineering, manufacturing, process and control pathway).

This means that the 2023 employment numbers given in the jobs column below is the maximum possible ceiling of jobs in Cheshire and Warrington that will relate to currently developed IFATE standards in the Engineering, manufacturing, process and control pathway.

On this basis, there are a maximum of c33k jobs in Cheshire and Warrington to which standards in the Engineering, manufacturing, process and control pathway relate. The occupations with more than 1,000 employed in 2023 in Cheshire and Warrington are:

- Production managers and directors in manufacturing
- Managers and proprietors in other services n.e.c.
- Design and development engineers
- Production and process engineers
- Engineering professionals n.e.c.
- Laboratory technicians
- Engineering technicians
- Estimators, valuers and assessors

¹ Commissioned through Cheshire and Warrington LEP to support the LSIP process.

- Business and related associate professionals n.e.c.
- Metal working production and maintenance fitters
- Food, drink and tobacco process operatives
- Chemical and related process operatives
- Routine inspectors and testers

Jobs in Cheshire and Warrington in 2023 supported by standards in the IFATE Engineering, manufacturing, process and control pathway

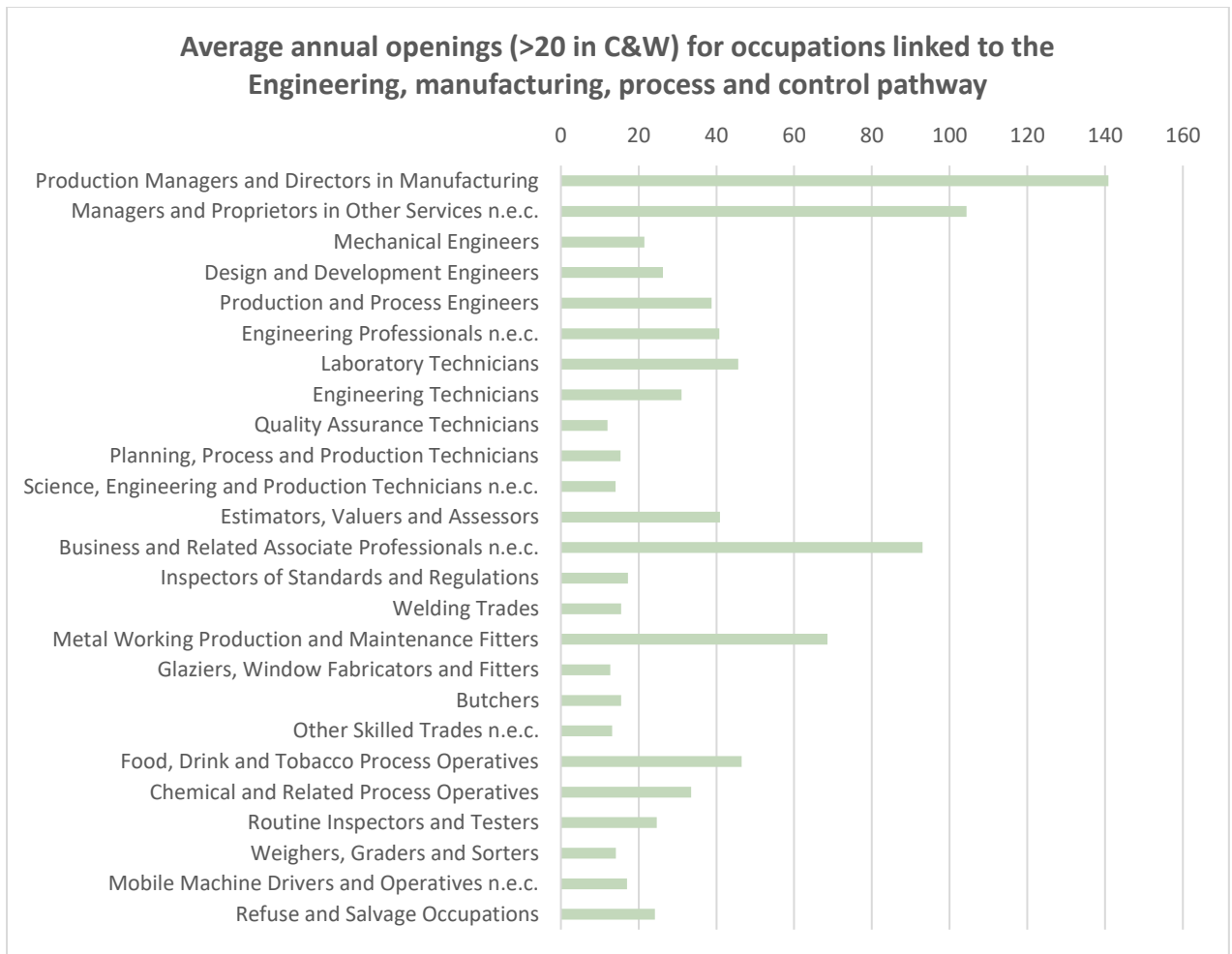
SOC2010 code	SOC2010 description	Jobs	Standard name
1121	Production managers and directors in manufacturing	4272	Through life engineering services specialist (integrated degree)
			Manufacturing manager (integrated degree)
1259	Managers and proprietors in other services n.e.c.	2675	Risk and safety management professional (degree)
2122	Mechanical engineers	902	Food and drink engineer
2126	Design and development engineers	1111	Packaging professional (integrated degree)
2127	Production and process engineers	1398	Process automation engineer (degree)
			Science industry process and plant engineer (degree)
			Non-destructive testing engineer (degree)
			Materials process engineer (degree)
			Process leader
2129	Engineering professionals n.e.c.	1708	Nuclear reactor desk engineer
			Electrical or electronic technical support engineer (degree)
			Nuclear scientist and nuclear engineer (integrated degree)
			Ordnance munitions and explosives specialist (integrated degree)
3111	Engineering technicians	1247	Project controls professional
			Nuclear health physics monitor
			Control technical support engineer
			Manufacturing engineer (degree)
3113	Engineering technicians	1247	Engineering technician
			Non-destructive testing engineering technician
3115	Quality assurance technicians	432	Project controls technician
3116	Planning, process and production technicians	481	Science manufacturing technician
3119	Science, engineering and production technicians n.e.c.	559	Composites technician
			Nuclear technician
			Ordnance munitions explosives technician

			Knitted product manufacturing technician
3531	Estimators, valuers and assessors	1320	Marine surveyor (degree)
3539	Business and related associate professionals n.e.c.	2857	Asset manager
3565	Inspectors of standards and regulations	602	Nuclear welding inspection technician
			Engineer surveyor
5215	Welding Trades	745	General welder (arc processes)
			Plate welder
			Pipe welder
5223	Metal working production and maintenance fitters	3172	Engineering fitter
			Metal fabricator
5316	Glaziers, window fabricators and fitters	395	Fenestration fabricator
5431	Butchers	546	Abattoir worker
5449	Other skilled trades n.e.c.	506	Mineral products technician
			Signage technician
8111	Food, drink and tobacco process operatives	2221	Brewer
			Food and drink technical operator
			Food and drink process operator
8114	Chemical and related process operatives	1179	Science manufacturing process operative
8133	Routine inspectors and testers	1177	Non-destructive testing (NDT) operator
			Mineral and construction product sampling and testing operations
8134	Weighers, graders and sorters	474	Mineral processing weighbridge operator
8229	Mobile machine drivers and operatives n.e.c.	545	Mineral processing mobile and static plant operator
9235	Refuse and salvage occupations	751	Metal recycling general operative
Source: Brennan Wilson Ltd analysis of IER and Lightcast data			

Occupational Demand

In total, there are slightly more than 900 annual openings in these occupations each year, with the highest levels of demand each year being for:

- Production managers and directors in manufacturing
- Managers and proprietors in other services n.e.c.
- Business and related associate professionals n.e.c.

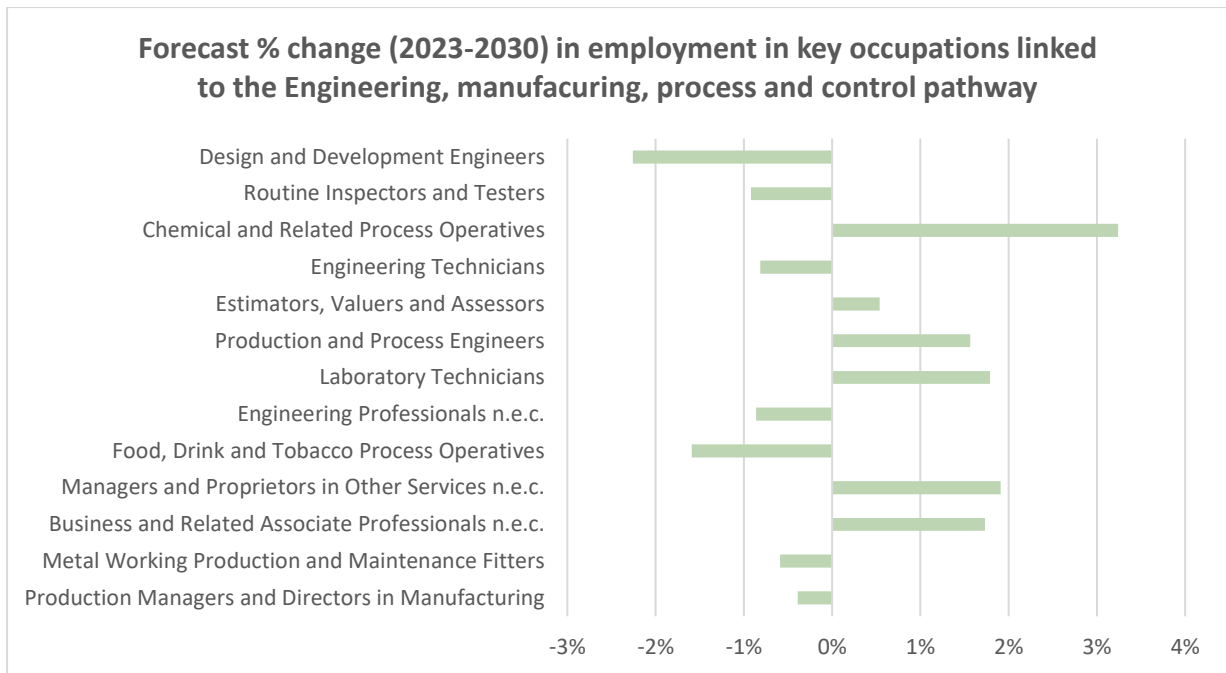


Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Analysis of Location Quotients (LQs) for occupations linked to the Engineering, manufacturing, process and control pathway indicate that employment volumes in Cheshire and Warrington in these occupations reflect what might be expected from national employment levels. The exceptions to this are Chemical and related process operatives SOC which has an LQ of 2.37, Laboratory Technicians (LQ of 1.35) and Production and Process Engineers (LQ 1.94).

LQ of Engineering, manufacturing, process and control pathway occupations (>500 2023 jobs in C&W)		
Description	2023 Jobs	2023 Location Quotient
Production Managers and Directors in Manufacturing	4272	0.98
Metal Working Production and Maintenance Fitters	3172	1.00
Business and Related Associate Professionals n.e.c.	2857	1.00
Managers and Proprietors in Other Services n.e.c.	2675	0.96
Food, Drink and Tobacco Process Operatives	2221	0.77
Engineering Professionals n.e.c.	1708	1.02
Laboratory Technicians	1578	1.35
Production and Process Engineers	1398	1.94
Estimators, Valuers and Assessors	1320	1.21
Engineering Technicians	1247	1.01
Chemical and Related Process Operatives	1179	2.37
Routine Inspectors and Testers	1177	1.01
Design and Development Engineers	1111	1.01
Mechanical Engineers	902	0.90
Refuse and Salvage Occupations	751	0.81
Welding Trades	745	0.90
Inspectors of Standards and Regulations	602	0.91
Science, Engineering and Production Technicians n.e.c.	559	0.92
Butchers	546	0.96
Mobile Machine Drivers and Operatives n.e.c.	545	0.81
Other Skilled Trades n.e.c.	506	1.09
Source: Brennan Wilson Ltd analysis of IER and Lightcast data		

Employment in Cheshire and Warrington in occupations linked to the Engineering, Manufacturing, Process and Control Pathway is forecast to remain relatively stable with all such occupations with any significant volume of employment (ie >1k) being +/- 3% in 2030 compared to 2023 levels.



Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Wages

The median wage in Cheshire and Warrington of the two occupations linked to Engineering, manufacturing, process and control pathway with the highest employment volumes (Production Managers and Directors in Manufacturing – 4272 jobs, and Metal Working Production and Maintenance Fitters - 3172 jobs) have median wages significantly higher than the median wages for all occupations in Cheshire and Warrington, which is £25.8k.

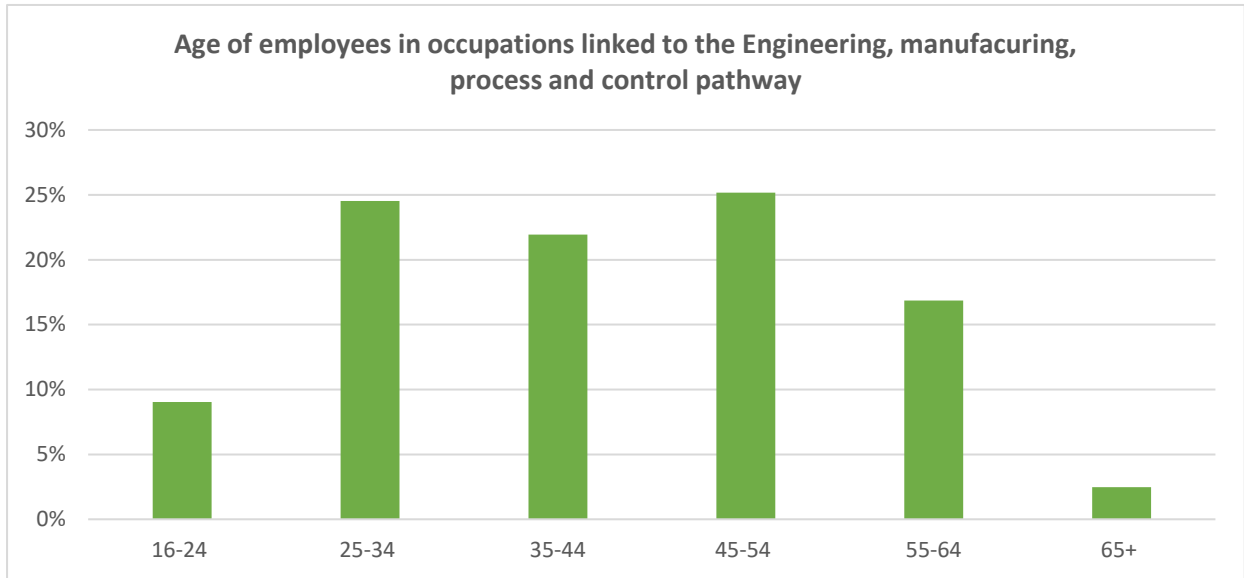
Median wages of occupations linked to the Engineering, manufacturing, process and control pathway.

	Median Wages
Engineering Professionals n.e.c.	£42,832
Mechanical Engineers	£42,203
Production Managers and Directors in Manufacturing	£41,611
Design and Development Engineers	£40,756
Production and Process Engineers	£38,098
Planning, Process and Production Technicians	£34,230
Engineering Technicians	£33,694
Mobile Machine Drivers and Operatives n.e.c.	£33,668
Metal Working Production and Maintenance Fitters	£31,388
Chemical and Related Process Operatives	£29,890
Inspectors of Standards and Regulations	£27,641
Other Skilled Trades n.e.c.	£26,997
Estimators, Valuers and Assessors	£26,858
Welding Trades	£26,605
Quality Assurance Technicians	£25,630
Business and Related Associate Professionals n.e.c.	£25,561
Science, Engineering and Production Technicians n.e.c.	£25,323
Butchers	£24,493
Routine Inspectors and Testers	£23,583
Glaziers, Window Fabricators and Fitters	£23,128
Laboratory Technicians	£21,462
Refuse and Salvage Occupations	£21,299
Weighers, Graders and Sorters	£21,106
Managers and Proprietors in Other Services n.e.c.	£20,686
Food, Drink and Tobacco Process Operatives	£20,083

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

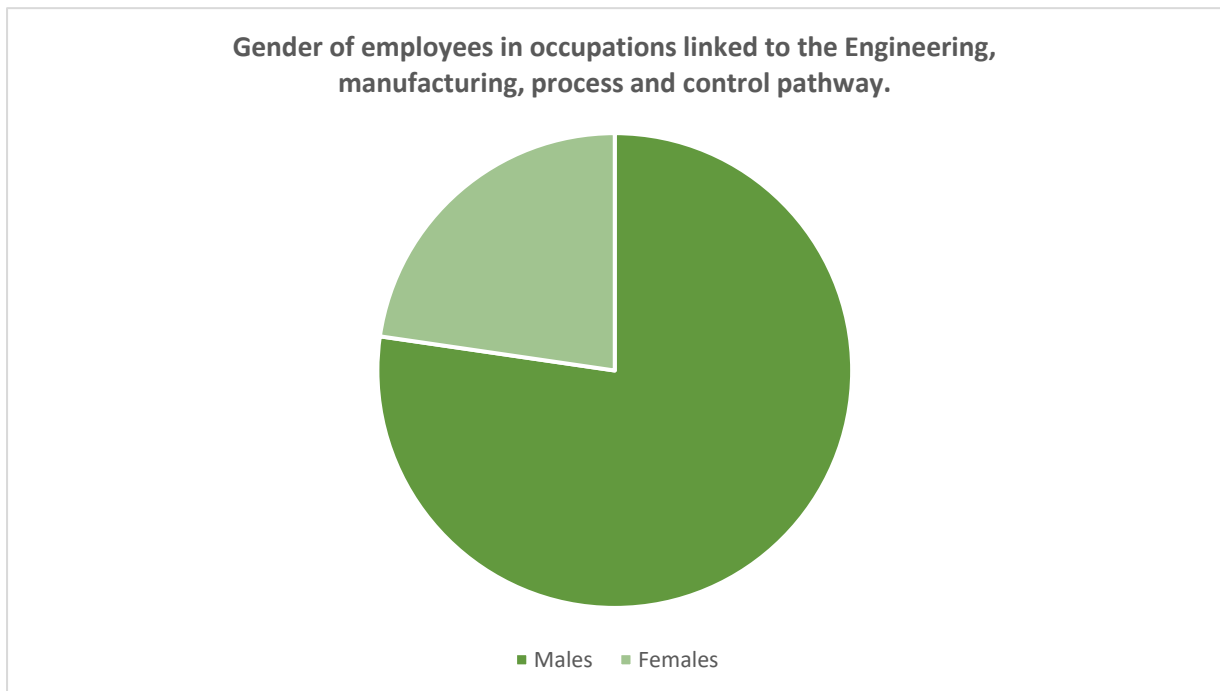
Age and gender

Nationally, less than 35% of those employed in occupations linked to the Engineering, manufacturing, process and control pathway are aged 34 or below, just less than 20% are aged 55 or above.



Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Employment is significantly skewed to males. Nationally, over three quarters (77%) of all employment in occupations linked to the Engineering, manufacturing, process and control Pathway is of males.



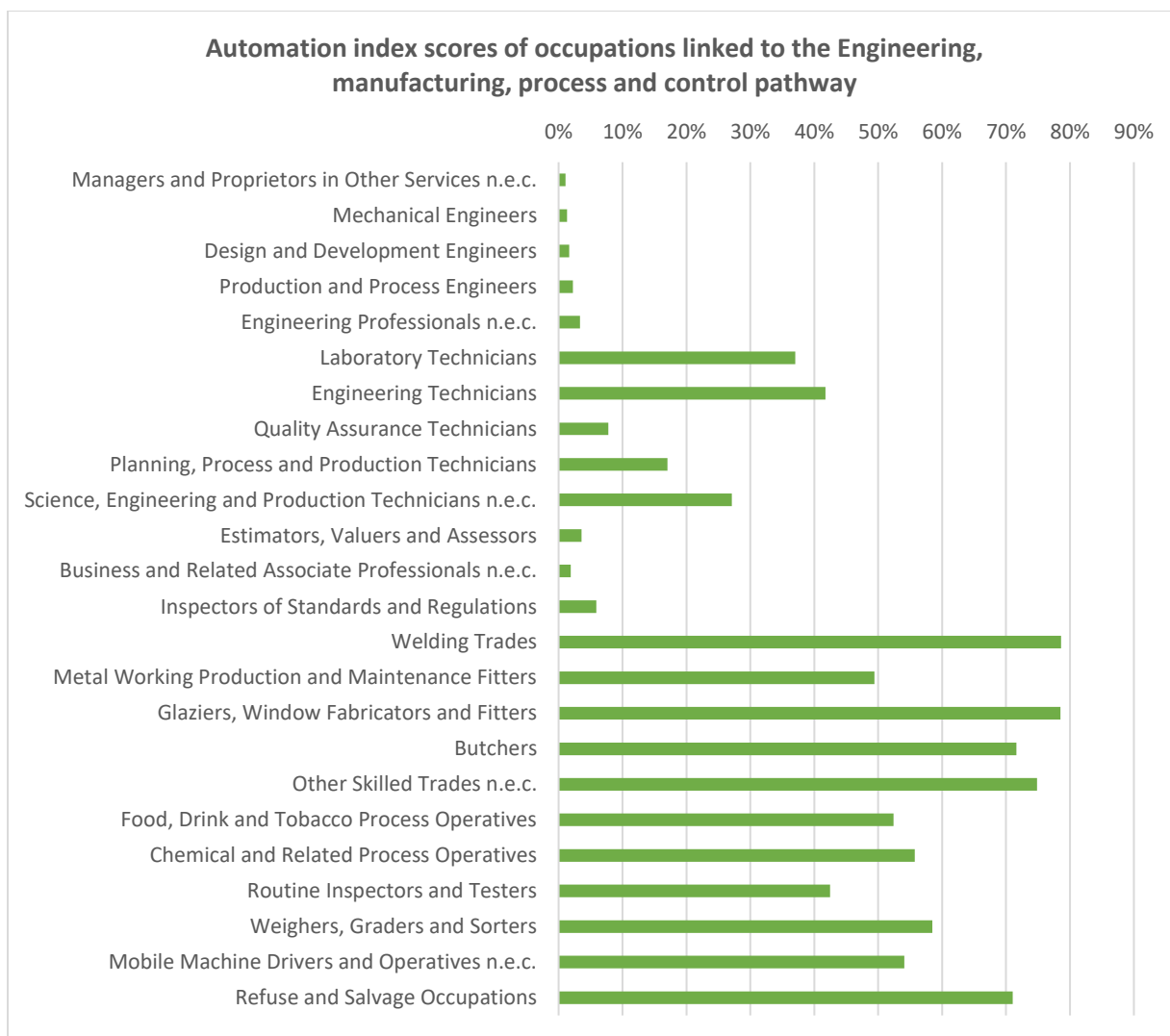
Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Automation Risk

The Lightcast UK Automation Index uses data from different sources to assess the proportion of working time spent in each occupation performing tasks which are at “high risk” of disruption through automation and other technological change anticipated over the next 20 to 30 years. Estimates of how much time is spent performing those tasks are constructed using the frequencies for different Work Activities in the US ONET database, and mapped across to UK SOC. The relationship between different 38 task categories and Frey and Osborne’s estimates of the “probability of computerisation” is used to classify each task category as high, middle, or low risk, depending on the significance and direction of that relationship.

The index is directly applicable as the amount of working time which could be disrupted by technological change; it ranges between 0% (no working time spent performing tasks at high risk) to 100% (all working time spent performing tasks at high risk).

The Automation Index scores for occupations linked to the Engineering, manufacturing, process and control pathway are set out in the chart below. Whilst most of the high volume employment occupations in this group in Cheshire and Warrington (Production managers and directors in manufacturing, Managers and proprietors in other services n.e.c., Design and development engineers, Production and process engineers, Engineering professionals n.e.c., Estimators, valuers and assessors, Business and related associate professionals n.ec.) have low exposure to the risk of automation (less than 10%), this is not the case for Engineering technicians; Metal working production and maintenance fitters; Food, drink and tobacco process operatives; and Chemical and related process operatives; all of which have Automation index scores over 40%.



Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Industry sectors

Almost two thirds (65%) of jobs in the occupations linked to the Engineering, manufacturing, process and control pathway are in three industrial sectors:

- Manufacturing
- Professional, Scientific and Technical Activities
- Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles

More than 1 in 5 of the jobs in the following sectors are in the occupations linked to the Engineering, manufacturing, process and control pathway:

- Manufacturing
- Water Supply; Sewerage, Waste Management and Remediation Activities
- Electricity, Gas, Steam and Air Conditioning Supply

Cheshire and Warrington employment of occupations linked to the Engineering, manufacturing, process and control pathway, by industrial sector (2021)

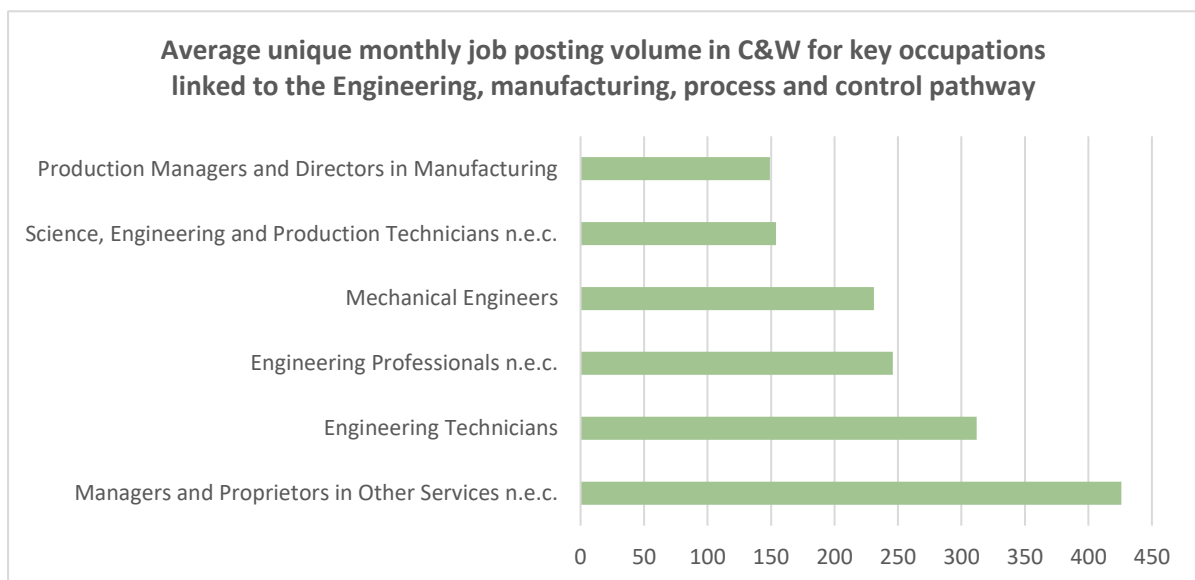
Industry	Linked occupations by industry	% of linked occupations in Industry	% of Total Jobs in Industry
Manufacturing	12724	39%	30%
Professional, Scientific and Technical Activities	4766	15%	7%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	3745	11%	5%
Administrative and Support Service Activities	2099	6%	4%
Construction	1916	6%	10%
Water Supply; Sewerage, Waste Management and Remediation Activities	1536	5%	37%
Transportation and Storage	985	3%	4%
Financial and Insurance Activities	909	3%	4%
Human Health and Social Work Activities	729	2%	1%
Education	656	2%	2%
Public Administration and Defence; Compulsory Social Security	573	2%	4%
Information and Communication	506	2%	3%
Arts, Entertainment and Recreation	390	1%	4%
Electricity, Gas, Steam and Air Conditioning Supply	367	1%	20%
Other Service Activities	276	1%	4%
Real Estate Activities	253	1%	3%
Accommodation and Food Service Activities	207	1%	1%
Agriculture, Forestry and Fishing	126	0%	4%
Mining and Quarrying	50	0%	13%

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Job postings

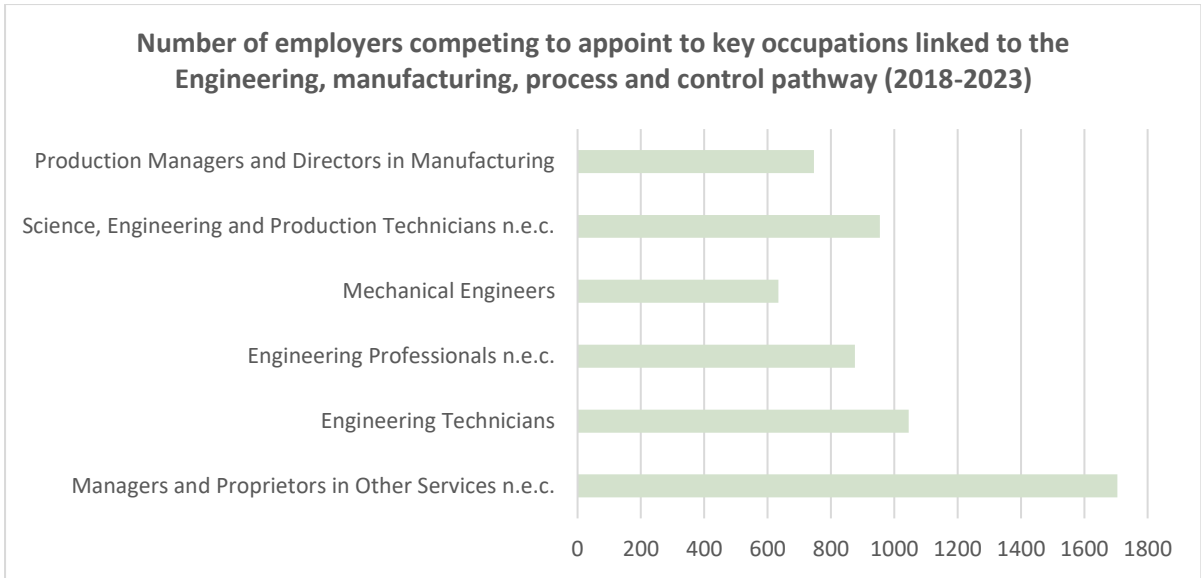
There were six occupations linked to the Engineering, manufacturing, process and control pathway that averaged more than 100 unique job postings per month in Cheshire and Warrington in the five years to March 2023. These were:

- Managers and Proprietors in Other Services n.e.c.
- Engineering Technicians
- Engineering Professionals n.e.c.
- Mechanical Engineers
- Science, Engineering and Production Technicians n.e.c.
- Production Managers and Directors in Manufacturing



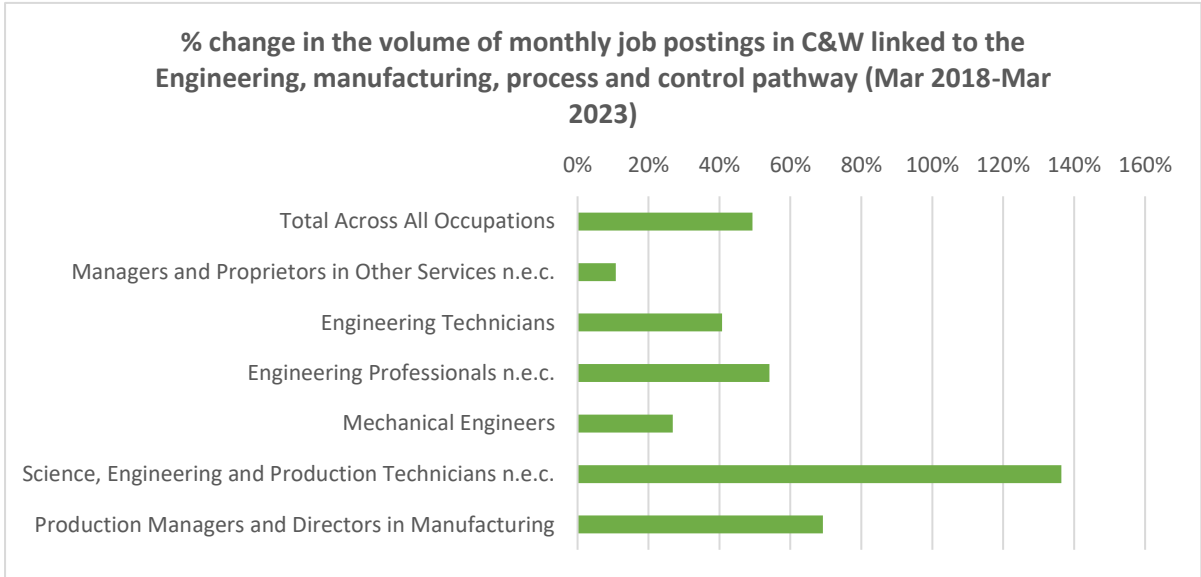
Source: Brennan Wilson Ltd analysis of IER and Lightcast data

The number of employers in Cheshire and Warrington competing to appoint to these key occupations over this time ranged from 1705 for Managers and proprietors in other services to 634 for Mechanical engineers.



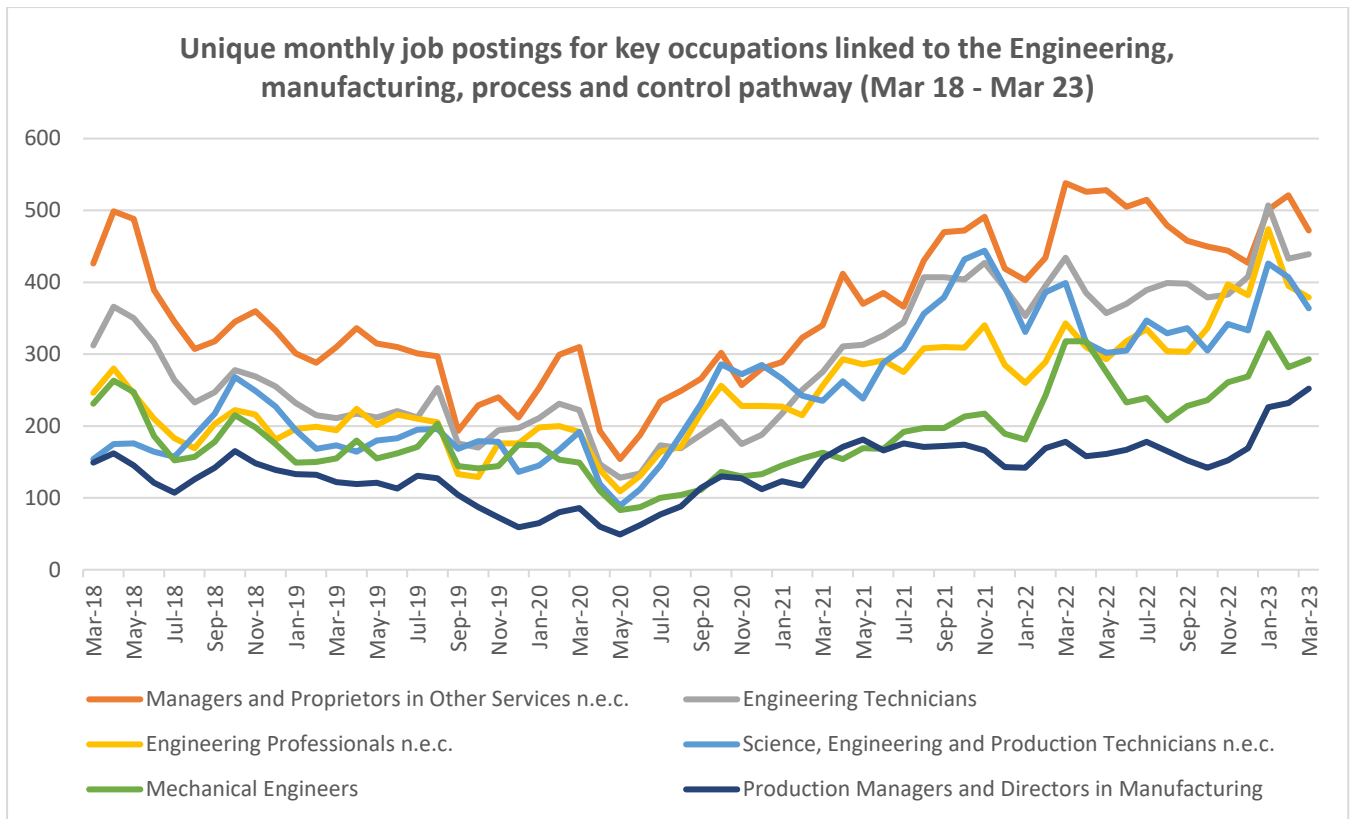
Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Overall there was an increase of 49% in the postings for occupations linked to the Engineering, manufacturing, process and control pathway over 5 years. Almost every linked occupation saw an increase over this time, Of the linked occupations with the highest employment volumes in Cheshire and Warrington, Science, Engineering and Production technicians saw the highest increase with demand from employers more than doubling in this time.



Source: Brennan Wilson Ltd analysis of IER and Lightcast data

The trend chart below shows a steady increase in demand for key occupations linked to the Engineering, manufacturing, process and control pathway following the pandemic.



Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Specialised Skills

The table below shows the top specialised skills sought by employers in job postings for occupations linked to the Engineering, manufacturing, process and control pathway. The two most sought after specialised skills were:-

- Mechanical Engineering
- Machinery

There was a significantly higher demand in Cheshire and Warrington than nationally for the following specialised skills:

- Mechanical Engineering
- Engineering Design Process
- Supply Chain
- Environment Health And Safety
- Pharmaceuticals

Top Specialised Skills sought in job postings in C&W for key occupations linked to the Engineering, manufacturing, process and control pathway

	C&W Postings	National Average	LQ
Mechanical Engineering	4145	3102	1.34
Machinery	3557	3120	1.14
Key Performance Indicators (KPIs)	2798	2428	1.15
Maintenance Engineering	2451	2353	1.04
Auditing	2235	2205	1.01
Risk Analysis	2025	1702	1.19
Operations Management	2011	2160	0.93
Project Management	1922	2176	0.88
Engineering Design Process	1686	718	2.35
Warehousing	1655	1321	1.25
Marketing	1629	1950	0.84
Supply Chain	1612	1145	1.41
Environment Health And Safety	1538	1135	1.36
Procurement	1497	1356	1.10
Electrical Engineering	1454	1137	1.28
Automation	1418	1160	1.22
Pharmaceuticals	1348	860	1.57
Housekeeping	1267	1052	1.20
Construction	1242	1108	1.12
Finance	1216	1665	0.73

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Common Skills

The table below shows the top common skills sought by employers in job postings for occupations linked to the Engineering, manufacturing, process and control pathway. The three most sought after common skills were:-

- Communications
- Management
- Operations

There was a higher demand in Cheshire and Warrington than nationally for the following common skills: Mathematics; Computer Literacy; and Coaching.

Top Common Skills sought in job postings in C&W for key occupations linked to the Engineering, manufacturing, process and control pathway			
	C&W Postings	National Average	LQ
Communications	12971	12743	1.02
Management	10860	11100	0.98
Operations	6198	5949	1.04
Customer Service	6096	5764	1.06
Planning	5746	5653	1.02
Leadership	4605	4577	1.01
Problem Solving	4198	3996	1.05
Detail Oriented	4113	4201	0.98
Sales	3533	3833	0.92
Self-Motivation	3291	2967	1.11
Innovation	2277	2160	1.05
Organizational Skills	2172	2092	1.04
Interpersonal Communications	2094	1929	1.09
Influencing Skills	1998	1868	1.07
Microsoft Excel	1967	1955	1.01
Mathematics	1903	1511	1.26
Microsoft Office	1882	1792	1.05
Computer Literacy	1721	1506	1.14
Time Management	1670	1553	1.08
Coaching	1619	1374	1.18

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Software skills

The table below shows the top software skills sought by employers in job postings for occupations linked to the Engineering, manufacturing, process and control pathway. The three most sought after software skills were Microsoft Excel; Microsoft Office; and AutoCAD.

There was a higher demand in Cheshire and Warrington than nationally for the following software skills: AutoCAD; SAP Applications; Autodesk Revit; and Primavera (Software).

Top Software Skills sought in job postings in C&W for key occupations linked to the Engineering, manufacturing, process and control pathway			
	Unique Postings	National Average	LQ
Microsoft Excel	1967	1955	1.01
Microsoft Office	1882	1792	1.05
AutoCAD	1197	821	1.46
Microsoft Outlook	894	880	1.02
Microsoft PowerPoint	820	921	0.89
SAP Applications	819	676	1.21
SolidWorks (CAD)	577	719	0.80
Microsoft Word	484	466	1.04
Amazon Web Services	293	380	0.77
SQL (Programming Language)	290	389	0.75
Python (Programming Language)	281	477	0.59
Spreadsheets	276	249	1.11
Application Programming Interface (API)	274	322	0.85
Microsoft Project	272	307	0.89
Autodesk Revit	264	204	1.29
Information Technology Infrastructure Library	234	221	1.06
Primavera (Software)	228	151	1.51
Microsoft SharePoint	225	202	1.12
Microsoft Azure	215	363	0.59
Java (Programming Language)	208	274	0.76

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

Spatial demand

The table below sets out the volume of job postings in Cheshire and Warrington between March 2018 and March 2023, by place, for occupations linked to the Engineering, manufacturing, process and control pathway. Warrington, Chester, and Crewe all saw in excess of 5,000 unique postings for these types of occupation.

Places with the highest volume of job postings for occupations linked to the Engineering, manufacturing process and control pathway 2018-2023			
	Total Postings	Unique Postings	Median Posting Duration
Warrington	45621	17904	31 days
Chester, Cheshire West and Chester	25311	10106	32 days
Crewe, Cheshire East	14029	5914	30 days
Macclesfield, Cheshire East	7202	3141	31 days
Ellesmere Port, Cheshire West and Chester	6103	2847	32 days
Knutsford, Cheshire East	5867	2251	31 days
Northwich, Cheshire West and Chester	3879	1620	31 days
Winsford, Cheshire West and Chester	4114	1566	32 days
Wilmslow, Cheshire East	2161	1058	31 days
Congleton, Cheshire East	2598	1005	35 days
Nantwich, Cheshire East	2016	935	30 days
Sandbach, Cheshire East	1518	606	32 days
Middlewich, Cheshire East	1308	544	32 days
Alderley Edge, Cheshire East	608	319	28 days
Frodsham, Cheshire West and Chester	600	268	32 days
Poynton, Cheshire East	370	187	31 days
Neston, Cheshire West and Chester	250	144	33 days
Lymm, Warrington	255	135	31 days
Tarporley, Cheshire West and Chester	276	132	22 days
Great Sankey, Warrington	190	92	38 days
Malpas, Cheshire West and Chester	107	72	31 days

Source: Brennan Wilson Ltd analysis of IER and Lightcast data

