

Sectoral Skills Assessment Engineering

October 2024



Sectoral Skills Assessments

First launched in 2017, Sectoral Skills Assessments (SSAs) provide a robust and consistent evidence base to support partners in strategic skills investment planning. Skills Development Scotland (SDS) has worked with key partners and stakeholders in the production of SSAs to ensure an inclusive approach to their development, dissemination and utilisation.

SSAs include published data sets. Inevitably, when using published data there is a time lag, but the data contained is the most up-to-date available at the time of writing. SSAs also include forecast data that has been commissioned through Oxford Economics. The Technical Note¹ provides full detail on the caveats that must be applied when using forecast data, but broadly, it should be noted that:

- Forecasts are based on what we know now and include past and present trends projected into the future.
- The more disaggregated they become, especially at smaller geographical units, the less reliable they are likely to be.
- Their value is in identifying likely directions of travel rather than predicting exact figures.
- The forecasts do not account for national or sectoral activities, initiatives or investments that are planned.

Industries and occupations used in the SSAs are defined by standard industrial classifications (SIC)² and standard occupational classifications (SOC).³

This SSA report is for the Engineering key sector. The sector encompasses: Manufacturing of Metals, Electrical Products, Machinery/Equipment and Vehicles, Repair and Installation of Machinery/Equipment, Architectural and Engineering activities, and Research. Please see Appendix 1 for the SIC definition used in this report.

Key Sectors are central to our Skills Investment Planning approach. Each Key Sector has a tailored Skills Investment Plan (SIP) which outlines trends in skills and qualification supply and employers' perspectives on the skills issues affecting the sector. Regional SIPs have also been developed and are available alongside SIPs on the SDS website.⁴

The SSAs are part of a suite of Labour Market Insight publications by SDS. Other products in the suite include:



Economy, People and Skills report which provides succinct and up-to-date evidence on Scotland's economy, businesses and people. It is updated monthly.



Regional Skills Assessments provide a coherent, consistent evidence base to inform future investment in skills, built up from existing datasets and forecasts for Regional Outcome Agreement areas, Rural Scotland and all City and Growth Deals regions. They are updated annually.



The **Data Matrix** is an interactive tool, offering more detailed data from a variety of sources in a visually engaging format. It is updated frequently.

Alongside the suite of Labour Market Insight publications, SDS also produces a wide range of reports such as statistics on Modern Apprenticeships and the Annual Participation measure for 16-19 year olds. This includes a wide range of data related to equalities. Further information can be found on the **Publications and Statistics** section of the SDS website.

We value user feedback on the Sectoral Skills Assessments. If you would like to provide feedback, please do so **here**. For any further information or queries on the SSAs or any of our other products, please contact: **RSA@sds.co.uk**



We held a series of webinars to complement the publication of the Sectoral Skills Assessments.



The recording of the Engineering webinar can be found on the SDS YouTube Channel here.

You can also watch the webinars for other key sectors and regions in Scotland **here**.

1. SSA Technical Note (2024).

2. Office for National Statistics UK Standard Industrial Classification (SIC) 2007.

3. Office for National Statistics UK Standard Occupational Classification (SOC) 2010.

4. Skills Development Scotland Skills Investment Plans.

The Context for Scotland's Labour Market

Within the last 10 years, the economy has faced significant disruption due to events such as the pandemic, Brexit, the war in Ukraine, and the cost-of-living crisis. In addition, megatrends around demography, technology, and the environment have continued shaping Scotland's economy and labour market, many of which are interdependent. Below is an overview of the drivers expected to have the greatest influence on Scotland's labour market outlook in the near term, based on a comprehensive analysis of structural and cyclical factors.



The Economy

The economic outlook for Scotland has improved, but growth is still expected to be modest in 2024, after annual GDP figures estimated the Scottish economy (like that of the UK) remained broadly flat throughout 2023. While inflation rates have eased from their peak in October 2022, the effects of rising prices and high interest rates continue to impact Scottish households and businesses. Scotland has experienced a tight labour market in recent years, but there have been signs of this loosening in 2024.



Demographic Change

Scotland has an ageing population. In 2022, around 20 per cent of Scotland's population was aged 65 years or over, and around 15 per cent were aged under 15 years old. Population growth is also expected to slow in the next decade, and it is anticipated that the country is likely to rely on in-migration for population growth. These demographic changes in Scotland have important implications for the labour market and economy.



Inclusive Growth and Equality

Scotland continues to experience inequality, which can impact individuals' access to labour market opportunities. Cost-of-living pressures have affected different groups disproportionately, particularly in lower-income households. Geographical inequalities also exist across Scottish regions that can affect individuals' access to opportunities. There have been some advances in improving diversity within the workforce and reducing inequality, but challenges remain.



Technology and Automation

Scotland has a strong technology sector, with specific strengths in digital technology, life sciences and financial technology (fintech). The current makeup of the technology sector suggests AI will likely be the most important technological advance for the foreseeable future. It is estimated that 60 per cent of jobs in developed countries will be affected by AI. This could be disruptive within the labour market, creating challenges and opportunities for job roles and businesses.



Climate Change

The Scottish and UK governments have committed to meeting targets for Net Zero carbon emissions. The transition to Net Zero will directly impact jobs, with potential for job growth in Scotland. Upskilling and reskilling will be vital to equip Scotland's workforce with the skills needed to meet the transition. Scotland is well placed to take a lead in the development of new green technologies building on its significant natural resources and strengths in key sectors.



A fuller report on Scotland's Labour Market Drivers can be found [here](#).

Sectoral Insight¹

The previous page provided an overview of the key drivers expected to have the greatest influence on Scotland's labour market. Below we explore how some of these drivers, and others, may influence the sector.

Demographic Change: The Engineering sector has an ageing workforce. A [2018 report](#) by the Engineering Construction Industry Training Board identified that by 2026, approximately 19.5% of the UK engineering workforce will be of retirement age. Of the skilled trades studied in the research, most retirements are anticipated to come from those working in metal working, pipe-fitting and in electrical and electronic skilled trades.

Technology and Automation: The workforce in the Engineering/Manufacturing sector is facing challenges adapting to new technologies and automation. This creates a requirement for upskilling and reskilling the existing workforce and will also create demand for new skills in the future. This includes skills in artificial intelligence and robotics and will drive demand for intermediate and higher-level skills.²

Climate Change: Planned investment and policies to support Scotland's Net Zero transition are likely to create a higher demand for labour in the Engineering sector. This includes developments in ScotWind, Hydrogen, Carbon Capture Storage and Utilisation, and the Green Freeports.³

The Scottish Engineering sector is dynamic and has a number of subsectors such as Aerospace and Space, Advanced Manufacturing, Hydrogen, Shipbuilding, and Energy. The Engineering sector also supports a range of other sectors in Scotland's economy including Construction, Food and Drink Manufacturing, Oil and Gas, and Transportation.

The Engineering Skills Leadership Group (ESLG), meets regularly to discuss the sector's skills requirements and has representation from industry leaders. The ESLG serves as a direct link to the wider Industry Leadership Groups (ILGs) and aims to provide strategic direction on skills issues and opportunities in the Engineering sector.

In 2021, the Scottish Government published a [Recovery Plan for Manufacturing, Making Scotland's Future](#), which proposed a series of actions for industry, public sector, trade unions and academics to contribute to a successful, vibrant and diverse manufacturing sector. As part of this strategy, the Scottish Government is investing a total of £116m until 2026 to help make Scotland a global leader in advanced sustainable manufacturing.

This includes £75m for the [National Manufacturing Institute for Scotland \(NMIS\)](#), an industry-led international centre of expertise. NMIS aims to:

- Increase productivity in the sector through innovation initiatives;

- Grow the economy by attracting investment into Scotland, and the Advanced Manufacturing District Scotland (AMIDS);
- Catalyse job creation through creating and strengthening supply chain links across the country;
- Support Net Zero goals to help boost Scotland's transition to Net Zero by 2045; and
- Inspire and attract talent to build a skilled workforce for Scotland's new and emerging markets including climate technology, artificial intelligence and space.

The Engineering sector is facing labour and skills shortages at all levels and across all subsectors.⁴ The industry attributed this shortage to a variety of factors including the sectors ageing workforce, the loss of EU labour due to Brexit and the impact of the COVID-19 pandemic.

It is important to note that the forecasts used in this Sectoral Skills Assessment are policy and investment neutral.



This means the figures present a baseline outlook that takes into account historical trends and external economic conditions, but the figures do not reflect investment or policy that is unconfirmed or at planning/development stage. Therefore, the forecasts should be used in conjunction with other sources, and readers are encouraged to overlay these with their own local and sectoral knowledge.

1. Insight from the sector gathered via Skills Development Scotland (2024).

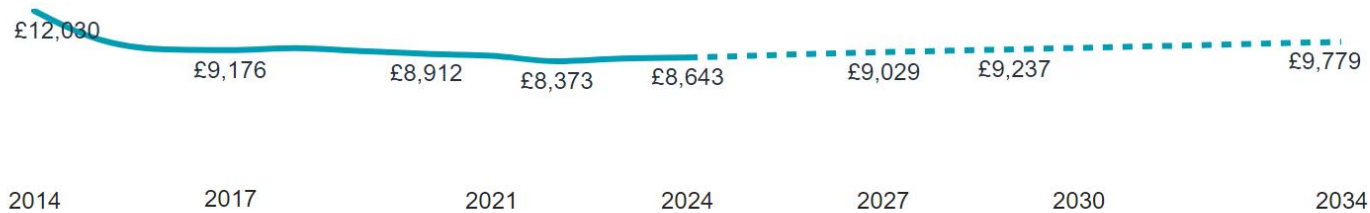
2. Royal Academy of Engineering (2018). [Automation and the future of work](#).

3. SDS (2023). [CESAP Pathfinder Workpackage 1: An evidenced based approach to supporting the transition to net zero](#).

4. Institute of Mechanical Engineers (2023). [Shortfall of 1m engineers](#)

[threatens UK infrastructure projects](#).

Gross Value Added (GVA, £m) (2014-2034)²



In 2024, GVA in the Engineering sector was estimated to be £8,643m, generating 5.9% of Scotland's total economic output. Between 2014 and 2024, GVA in the sector was estimated to have declined by 3.1% on average each year, compared to growth of 0.5% across Scotland over the same period.

Output in the Engineering sector grew by 2.4% in 2023 after four years of consecutive declines. In 2024, GVA growth in the sector was estimated to slow down to 0.8% due to high inflation and interest rates.

Looking ahead, GVA in the Engineering sector is forecast to grow on average 1.2% each year between 2024 and 2034, which is slightly below Scotland's average (1.3%). In 2034, the Engineering sector is forecast to account for 5.9% of Scotland's total economic output.




Engineering forecast GVA in 2027: £9,029m	Engineering forecast GVA in 2034: £9,779m
↑ up 4.5% from 2024	↑ up 8.3% from 2027
Scotland forecast GVA in 2027: £151,968m	Scotland forecast GVA in 2034: £166,273m
↑ up 4.2% from 2024	↑ up 9.4% from 2027

Productivity (GVA per job)³

In this report, we have used Oxford Economics' measure of productivity, which is calculated by dividing total sectoral GVA by total sectoral employment (measured by jobs). Please note, there are different ways of calculating productivity, and caution is needed when interpreting productivity data presented in this report. It must be considered in the context of other data and insight.

In 2024, productivity in the **Engineering** sector was estimated to be **£58,400**. In comparison, the Scottish average was £52,000.





Engineering forecast productivity in 2027: £61,200	Scotland forecast productivity in 2027: £53,000
↑ up 4.8% from 2024	↑ up 1.9% from 2024



Engineering forecast productivity in 2034: £69,900	Scotland forecast productivity in 2034: £57,100
↑ up 14.2% from 2027	↑ up 7.9% from 2027

1. SDS (2024). Oxford Economics Forecasts.

2. GVA is the measure of the value of goods and services produced within the economy and is an indicator of the sector's health. GVA in constant 2019 prices.

3. Productivity is the measure of goods and services produced per unit of labour input. The Oxford Economics forecasts of productivity shown here

have been calculated by dividing total sector GVA by total sector employment (measured by jobs).

Current Demand¹



Workforce size 2024: **127,800** people

The sector's workforce was estimated to have **declined** by **-14.4%** or **-21,500** people between 2014 and 2024. During this 10 year period, the pandemic had a notable effect on the workforce, as it **declined** by **-8.8%** or **-12,400** people between 2019 and 2021.

This compares to a Scotland wide increase of **3.8%** or **97,300** people between 2014 and 2024.

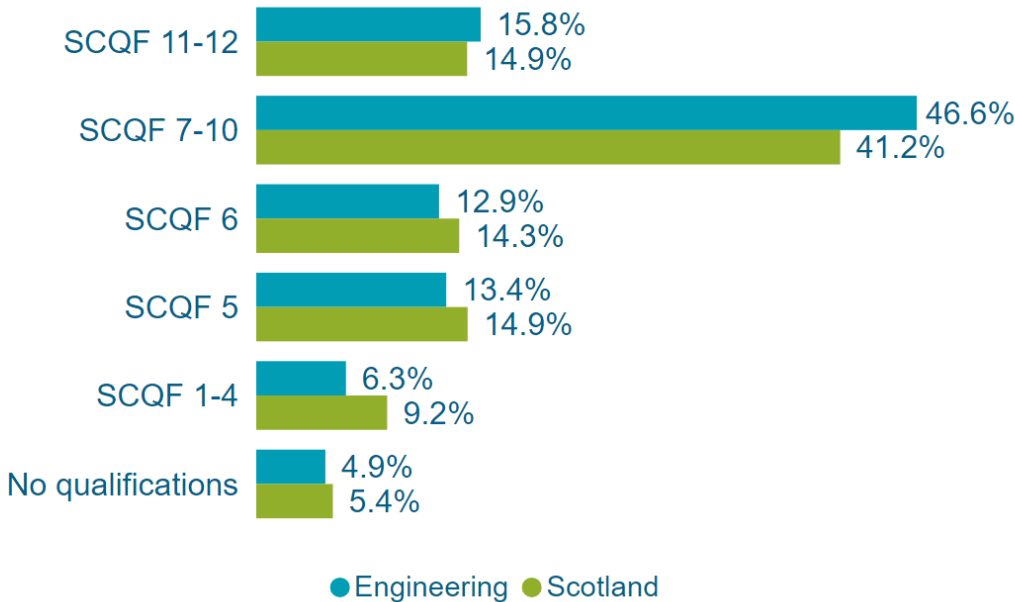
Employment by Region (people), 2024

The greatest number of people employed in **Engineering** were estimated to be in:

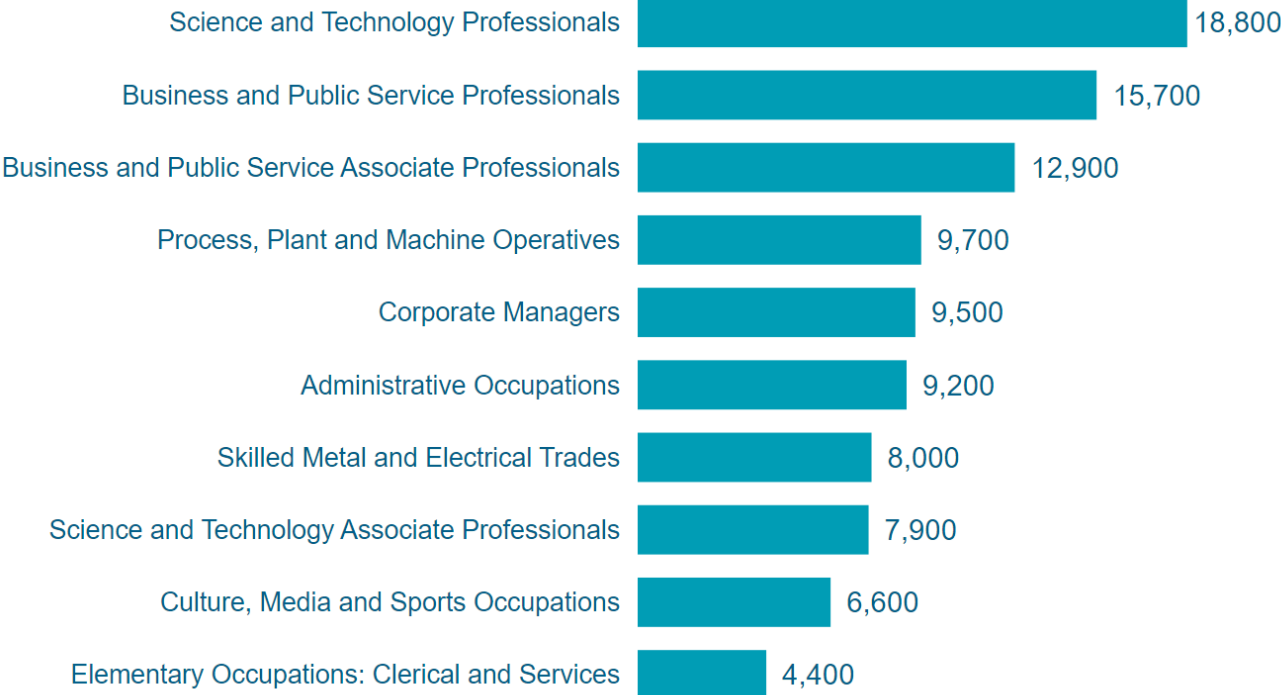
Aberdeen City and Shire	Glasgow College Region *	Edinburgh, East and Midlothian	Lanarkshire
28,200	22,500	14,800	12,700

Workforce Qualifications, 2024

It was estimated that workers in the **Engineering** sector had higher qualifications than the Scottish average, with 62% qualified to SCQF Level 7 and above in 2024.²



Top 10 Employing Occupations (people), 2024



1. SDS (2024). Oxford Economics Forecasts.
2. See [SCQF Framework](#) for further information on SCQF qualification levels.

*Glasgow College Region covers East Dunbartonshire, East Renfrewshire and Glasgow City local authorities.

Current Demand¹

The proportion of Local Authorities' workforce employed in Engineering, 2024²

In 2024, the **Engineering** sector was estimated to account for **4.9%** of Scottish employment.

Scottish local authorities have sectoral strengths that make them unique. This means that the **Engineering** sector may be more important to some local economies, as a higher proportion of the local workforce is employed in the sector.

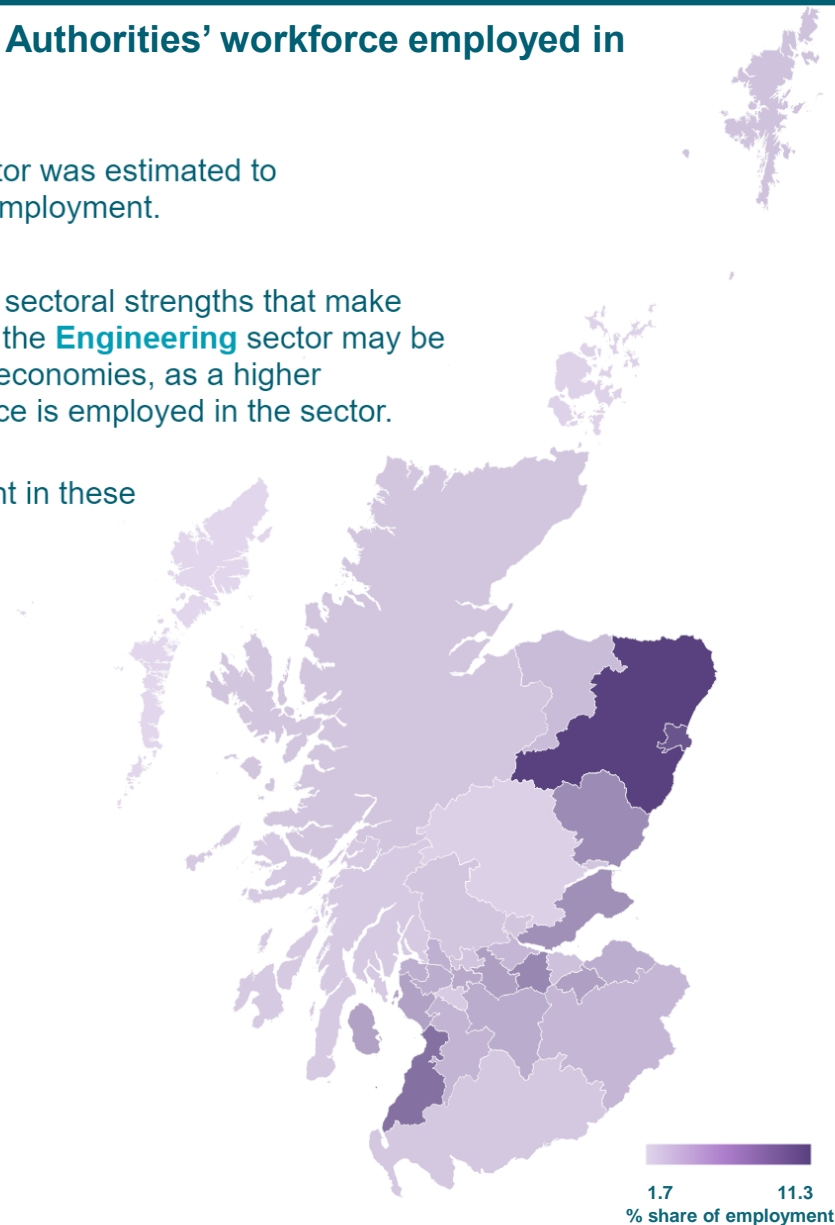
The sector was most prominent in these local authorities:

Aberdeenshire
11.3%

Aberdeen City
10.1%

South Ayrshire
8.2%

West Lothian
6.8%



Real Living Wage and Gender Pay Gap³

Individuals earning Real Living Wage or more:

In April 2023, the real living wage rate for employees who did not work in London was £10.90.



Manufacturing

2022: **90.6%** 2023: **90.6%**

All sectors

2022: **90.6%** 2023: **89.9%**

Professional, Scientific and Technical Activities

2022: **94.6%** 2023: **94.4%**

Gender Pay Gap for median full-time hourly earnings:



Manufacturing

2022: **16.6%** 2023: **13.9%**

Scotland

2022: **3.0%** 2023: **1.7 %**

Professional, Scientific and Technical Activities

2022: **24.5%** 2023: **25.2%**

Due to data availability, a 'best fit SIC code approach' has been used, so sectors definitions here may not fully match key sector definitions.

Modern Apprenticeships⁴



MAs starts for Engineering & Energy Related*:

Q4 2022/23: **1,853** Q4 2023/24: **2,042** Q1 2024/25: **107**



MAs in training for Engineering & Energy Related*:

Q4 2022/23: **4,875** Q4 2023/24: **5,299** Q1 2024/25: **5,083**

* Based on [SDS Occupational Groupings](#).

For data on FAs and GAs please see the Publications section of our [website](#). For data on colleges and universities please see [Scottish Funding Council](#) and [Higher Education Statistics Agency](#).

1. SDS (2024). Oxford Economics Forecasts.

2. The proportion of the workforce in the Local Authority employed in the sector is calculated by dividing the sectoral employment in the area by total employment in the area.

3. Scottish Government (2023). Annual Survey of Hours and Earnings: 2023. Due to data availability, a 'best fit [SIC code](#) approach' has been used, so the sectoral definitions and totals in this section may vary from those we have used elsewhere.

4. SDS (2024). Modern Apprenticeship Statistics, Quarter 1, 2024/25.



Spotlight on... Mechanical Engineers³

Between July 2023 and June 2024, there were **5,600 job postings**. The number of job postings increased by 0.2% compared to the period between July 2022 and June 2023, compared to a decrease of 21% across all occupations. The number of job postings for Mechanical Engineers remains above the pre-pandemic level.

Top Locations between July 2023 and June 2024 were:



The largest growth in job postings between July 2022 - June 2023 and July 2023 - June 2024 was in Edinburgh City (+168), and Highland (+70).

Specialised skills and knowledge requested (July 2023 - June 2024) included:



Project Management



Machinery



Mechanical Design



Mechanical and Maintenance Engineering



Median real-time advertised salary July 2023 – July 2024:
£40,600



Spotlight on... Engineering Project Managers and Project Engineers⁴

Between July 2023 and June 2024, there were **480 job postings**. Job postings were high in 2023, and as a result the number of job postings has decreased by 18.8% compared to the period between July 2022 and June 2023 (21% decline across all occupations comparatively). Despite the decline, the number of job postings remained above the pre-pandemic level for Engineering Project Managers and Project Engineers.

Top Locations between July 2023 and June 2024 were:



The largest growth in job postings between July 2022 - June 2023 and July 2023 - June 2024 was in East Lothian (+17) and Highland (+14).

Specialised skills and knowledge requested (July 2023 - June 2024) included:



Project Engineering



Primavera Software



Systems Development Life Cycle



Project Management and Planning



Median real-time advertised salary July 2023 – July 2024:
£56,700

1. Lightcast 2024. Online job postings data provides a useful barometer for the health of the jobs market. It is important to note that the data does not capture all activity, so it should be considered as an estimate of activity.
2. Job postings are rounded to the nearest 10.

3. Data is based on SOC 2122 for the whole of Scotland. Median salary based on 42% of job postings.
4. Data is based on SOC 2127 for the whole of Scotland. Median salary based on 38% of job postings.

Future Demand: Mid-term (2024-2027)¹

In the mid-term (2024-2027), **the number of people in employment is forecast to decline by 0.6% (-800 people)** in the **Engineering** sector. This contrasts with the growth that is forecast overall across Scotland where employment is predicted to rise by 1.9% (49,800 people).

In 2027, the top employing regions in the sector are forecast to be **Aberdeen City and Shire** and **Glasgow College Region**, the same as in 2024. Similar to 2024, **the largest proportion of the workforce** is forecast to be educated to **SCQF 7-10**. The top employing occupation is forecast to be **Science and Technology Professionals**.

Forecasts for the mid-term (2024-2027) suggest there could be demand for **4,300 people in the sector**, as a result of the need to replace workers leaving the labour market. Whilst positive, caution is needed as a wide range of factors may impact the future labour market.

Workforce (people), 2027



Workforce size 2027: **127,000** people



The sector's workforce is expected to **decline** by **-0.6%** or **-800** people between 2024 and 2027



Compared to a Scotland wide increase of **1.9%** or **49,800** people

Total Requirement*



=



+



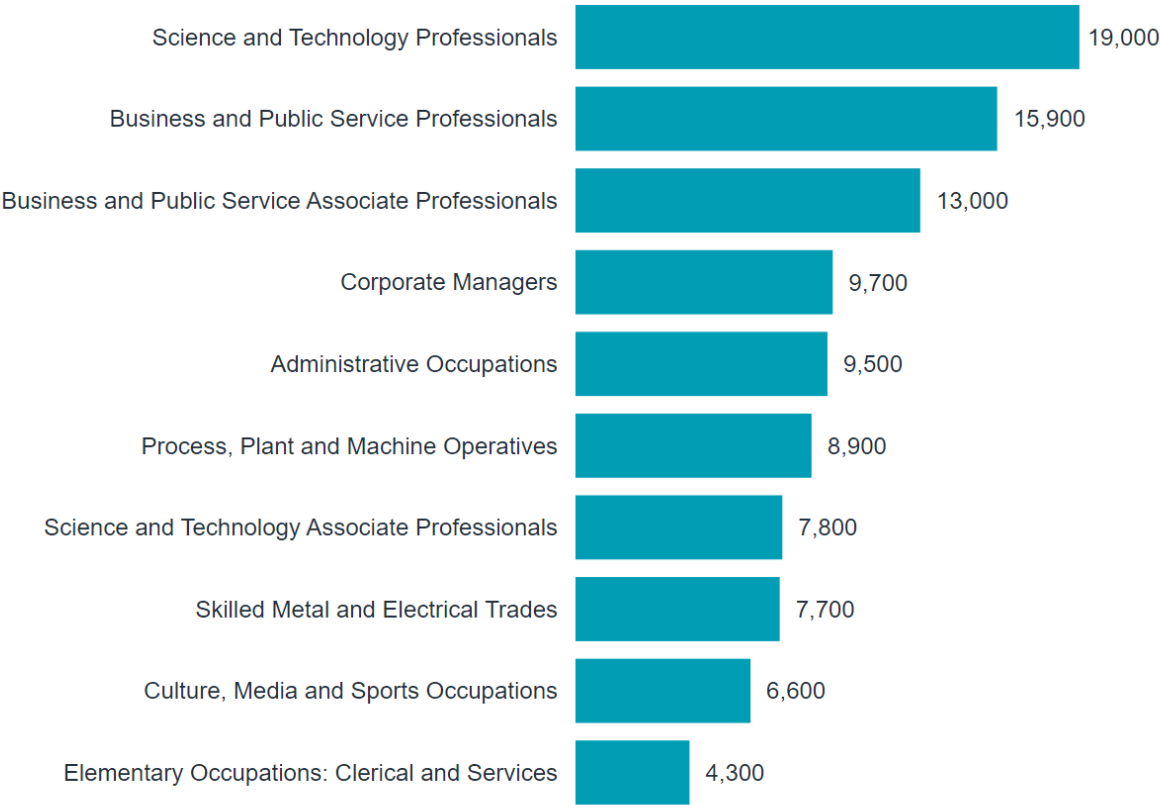
Total requirement:
4,300 people

Replacement demand:
5,000 people

Expansion demand:
-800 people

Engineering is forecast to account for **1.2%** of Scotland's total requirement for people in the mid-term (2024-2027)

Top 10 Employing Occupations (people), 2027



1. SDS (2024). Oxford Economics Forecasts.

* Total requirement for people is made up of expansion and replacement demand.

The expansion demand is the number of people required as a result of economic growth or contraction.

The replacement demand is the number of people required to replace workers leaving the labour market (i.e. those who retire, move away or change jobs). Please note, figures are rounded to the nearest 100 and as a result totals may not equal the sum of the constituent parts.

Future Demand: Long-term (2027-2034)¹

Continued automation and improvements in productivity in the Engineering sector are forecast to result in **employment contraction, with a decline of 5.8% (-7,400 people)** in the long-term (2027-2034). This contrasts with the growth that is forecast overall across Scotland where employment is predicted to rise by 1.2% (32,000 people).

In 2034, **Aberdeen City and Shire** and **Glasgow College Region** are forecast to remain the top-employing regions in the sector. The largest proportion of the workforce employed in the sector is **forecast to be educated to SCQF 7-10** and **Science and Technology Professionals** is forecast to remain the most in-demand occupation within the sector.

It is also expected that there **could be an ongoing requirement for skilled people to fill opportunities created by people leaving the labour market**. This feature of the labour market is known as the replacement requirement. Forecasts for the long-term (2027-2034) estimate that **2,800 people** could be required in the sector.

Workforce (people), 2034



Workforce size 2034: **119,600** people



The sector's workforce is expected to **decline** by **-5.8%** or **-7,400** people between 2027 and 2034



Compared to a Scotland wide increase of **1.2%** or **32,000** people

Total Requirement*



=



+



Total requirement:
2,800 people

Replacement demand:
10,200 people

Expansion demand:
-7,400 people

Engineering is forecast to account for **0.4%** of Scotland's total requirement for people in the long-term (2027-2034)

Top 10 Employing Occupations (people), 2034



1. SDS (2024). Oxford Economics Forecasts.

* Total requirement for people is made up of expansion and replacement demand.

The expansion demand is the number of people required as a result of economic growth or contraction.

The replacement demand is the number of people required to replace workers leaving the labour market (i.e. those who retire, move away or change jobs). Please note, figures are rounded to the nearest 100 and as a result totals may not equal the sum of the constituent parts.

Appendix 1: Engineering Sector Definition (SIC 2007)

SIC	Name
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
33	Repair and installation of machinery and equipment
71	Architectural and engineering activities; technical testing and analysis
72.19	Other research and experimental development on natural sciences and engineering
13.94	Manufacture of cordage, rope, twine and netting
38.31	Dismantling of wrecks

For further information or queries on the SSAs or any of our other products, please contact: [**RSA@sds.co.uk**](mailto:RSA@sds.co.uk)