

Research: Heathrow Expansion: Steel & Employment

KEY HEADLINES

Heathrow expansion could support up to an average of 400 jobs in the UK directly related to the production, fabrication and installation of steel during the period 2021 to 2026.

Taking into account supply chain effects, the total figure could be up to 700 jobs supported directly and indirectly related to the steel industry during the period 2021 to 2026.

- **Around 370,000 tonnes of steel would be needed to expand Heathrow – nearly 10% of UK steel produced for domestic use in 2015.**

This is roughly the same as would be required for 16 Wembley Stadia, or 30 Shards, or 185 Mittal Orbits.

- **This could support up to 400 jobs in the *production* of steel in the UK, if split across two main contracts (rebar and structural/architectural) in an estimated two years¹.**

These would be spread across the UK depending on the direction of contracts procured – this could support up to 200 steel production jobs in the North of England, over 100 in Wales and around 50 in the Midlands (based on current steel production) during the period that the steel is anticipated to be produced.

- **The rebar and structural steel would need to be *fabricated*. This could support at least 400 jobs during the period that fabrication of the steel is required.**
- Given the significant supply chain required by the steel production and fabrication sectors, the jobs supported directly by Heathrow expansion can be considered to generate ‘knock-on’ effects in the rest of the economy. Based on the latest ONS estimates, the above jobs could support an additional 400 jobs in a number of other sectors while the production and fabrication jobs are being supported.

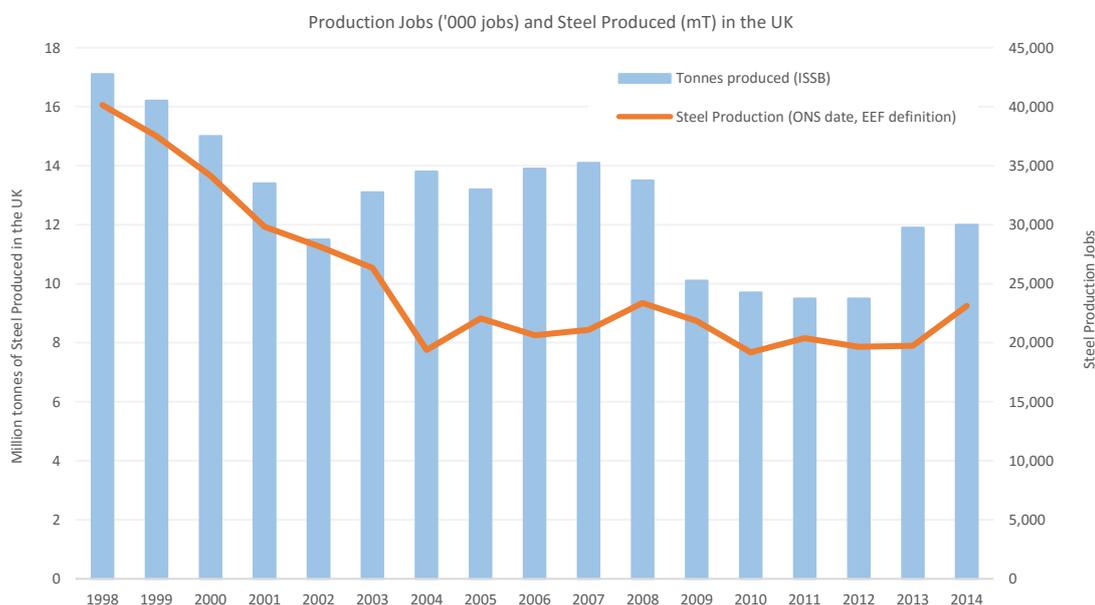
¹ Assumptions have been made about the timescales for production, fabrication and installation of steel required during the construction phase. We have based these figures on a hypothetical timeline with steel produced over two years, and fabricated and installed over three years, in intervals over a total six-year period. The figures in the headline refer to the average across the six years; and the figures in the sub-headings refer to the period for each of the sub-set of jobs created (i.e. production and fabrication).

RESEARCH

- The construction of new terminal buildings (6A and 6B), infrastructure and runway for the proposed expansion of LHR would require a significant amount of steel – structural, architectural and rebar. Current estimates suggest that the entirety of the development could require up to 370,000tn² (equivalent to 10% of steel produced for domestic use) of steel.
 - 150,000 tonnes of structural steel and 20,000 tonnes of architectural steel; and
 - 200,000 tn of rebar (steel for reinforced concrete).
- The steel required for the expansion project would create employment at three broad stages – **production** (i.e. work at the foundry to convert raw materials into steel); **fabrication** (i.e. the cold drawing, pressing, rolling, bending, machining and general post-primary manufacturing and treating of steel – turning it into useable structural segments, items and bars/wires/rods); and the **erection/installation** of the structures and items at the site.

Direct Jobs: Production of Steel

- The UK steel industry produced around 10.9m tonnes of steel in 2015³, of which around 40% was delivered within the UK, and 60% was exported. The manufacturing process for producing steel is labour intensive and output tends to correlate very closely to the number of jobs supported in a given year, as indicated in the chart below.
- Over the last 16 years (length of continuous datasets), as shown in the following chart, on average around 1,962 direct steel production jobs⁴ are supported per million tonnes of steel produced each year.



² Based on experience at Terminal 2 and Terminal 5, and intelligence from HAL's procurement team

³ <http://www.eef.org.uk/uksteel/About-the-industry/Steel-facts/Output-UK.htm>

⁴ Based on Engineering Employers Federation (EEF) definition of steel industry production jobs (employees engaged on European Coal and Steel Community (ECSC) steel industry activities, NACE/SIC code 2410 - Manufacture of basic iron and steel and of ferro-alloys), applied to ONS National Statistic (BRES/ABI) time-series data for this sector.

5. On this basis, **the requirement for 370,000 tonnes of steel would support around 725 direct jobs** in the EEF's definition of the steel production sector, if the steel were manufactured in a single year (also known as 'employment years'). This is equivalent to over 4% of steel industry jobs supported in the UK in 2015.
6. The steel requirements for the expansion project have been estimated by HAL's procurement team as follows:
 - Rebar will be needed for installation on-site between 2022 and 2025 during the main element of the civils works; and
 - Structural steel (main structures T6a and T6b) will be needed for installation on-site between 2024 and 2026.
7. Production jobs are likely to be concentrated regionally given the distribution of steelworks in the UK. These jobs tend to be concentrated in small areas with large steel mills – predominantly in Wales, Yorkshire and the North East and North West of England. Based on the distribution of basic metal production jobs and their output (productivity) by region in the UK (BRES, 2014), this would suggest that
 - Around 400 employment years would be supported in the North of England;
 - Around 200 in Wales;
 - Around 50 in the Midlands; and
 - Remaining 75 elsewhere in the UK.
8. However, given the nature of the large and specific contracts likely to be required, the actual breakdown of jobs supported will be likely reflect the distribution of major contractors and their suppliers, and will be subject to the commercial and economic environment at the time and Heathrow's preference for procurement.
9. At Terminal 2, for example, a significant amount of contract value was procured with Tier 1 suppliers in Yorkshire and the North West.

Fabrication and Installation of Steel

10. A substantial proportion of the steel produced for use at LHR will need to be fabricated. This includes any process by which the steel is altered, shaped or cut and joined to form structural materials or items ready for installation.
11. In the basic metals industry as a whole, one job supported in the *production*⁵ of basic metal is proportionate to roughly 4.2 jobs in the *post-manufacture, machining, fabrication and treatment*⁶ of those metals for the construction industry based on manufacturing jobs in the UK's economy in 2014 (BRES, 2014).
12. This ratio can be applied, at least, to the fabrication-intensive sectors (structural and architectural steel). This would suggest that the direct jobs supported in the manufacture of structural and architectural steel for LHR would support at least an additional 1,400 employment years in the fabrication of that metal, if the entirety of the fabrication were undertaken in one year and if steel fabrication reflects the average ratio of production to fabrication of all metals. In practice it is likely that fabrication costs are lower in rebar manufacture than structural steel.

⁵ Selected SIC Code 24 (Manufacture of Basic Metals)

⁶ Selected SIC Code 25 (Manufacture of fabricated metal products, except machinery and equipment) – except for 4-digit SIC codes 2540 (Manufacture of weapons and ammunition); 2573 (Manufacture of tools); and 2592 (Manufacture of light metal packaging)

13. Information provided by HAL suggests that structural steel **fabrication work would be required over a three-year period between 2024 and 2026, supporting an average of over 400 job roles per year over that period.**
14. These jobs are likely to be split across the UK for some activities (e.g. cold forming of rods for rebar, production of bars and joists, and manufacturing of doors, windows and other items); and close to the site for some final preparation activities (treating, galvanising and large-scale welding of component parts).
15. Installation of steel structures on-site is likely to result in short-term construction employment as- and when required. It is not possible to estimate the exact requirement for or duration of job roles at the site, but a macro-scale (in the UK economy as a whole), for every 10 jobs supported in the manufacture of structural metal products, one worker exists with steel erection occupational skills⁷.
16. The construction industry is fluid and responsive – so this may not reflect the entirety of workers with the requisite skills to deliver the structural installation, but applied to the 6-year period, this activity would support an average of up to 50 jobs per year. These are likely to be compressed into short periods of activity.

Multiplier Effect: Jobs in the Supply Chain

17. ONS additionality assessments provide information, at a national scale, of the effect that one job in a sector has on that sector's supply chain, and the knock-on (indirect) jobs it supports.
18. A review of the national 'supply and use' tables for the *production of basic iron and steel* confirms that this sector spends a significant amount in its supply chain and supporting services, for example (but not limited to):
 - Raw materials;
 - Transportation;
 - Machinery and equipment; and
 - Repair and maintenance.
19. The latest ONS figures suggest that the *fabrication* sector has an 'employment multiplier' of around 1.41. This includes jobs upstream in the production element already accounted for.
20. Applied to the above figure, this suggests that the GVA generated by the 1,400 fabrication jobs would **indirectly support up to an additional 1,950 employment years in other sectors**. These roles can be pro-rated over the fabrication period in-line with direct jobs.

⁷ 2011 Census – Detailed Industry and Occupation