STEP PROGRAMME – ECONOMIC AND WIDER IMPACT ASSESSMENT

MARCH 2025

AMION CONSULTING

UK Atomic Energy Authority

Bassetlaw DISTRICT COUNCIL — North Nottinghamshire —

Lincolnshire COUNTY COUNCIL

Nottinghamshire County Council

West Lindsey DISTRICT COUNCIL

STEP

A CATALYST FOR TRANSFORMATIONAL CHANGE

01.

The STEP Programme

AMION Consulting has undertaken an Economic and Wider Impact Assessment of the STEP (Spherical Tokamak[1] for Energy Production) programme for a group of national and local partners[2], which shows that it is expected to be transformational for the local economy through job creation, infrastructure, and increased economic activity, positioning the local area as a key player in the global energy landscape.

The STEP programme is intended to be the first prototype fusion energy plant in the world when operational in the 2040s.

The plant will be located at West Burton in Nottinghamshire, close to the Lincolnshire border, and aims to demonstrate the ability to generate net energy from fusion at scale. It will be delivered by UK Industrial Fusion Solutions (UKIFS), a wholly owned subsidiary of the UK Atomic Energy Authority (UKAEA). Fusion is the process by which two light atomic nuclei combine and release large amounts of energy. This technology has significant potential to deliver safe, sustainable, low carbon energy for future generations.

The 330 hectare West Burton site, which is currently home to the West Burton A coal-fired power station, was selected as the location for STEP in October 2022. The West Burton Campus will accommodate the STEP facility, along with the UKAEA Skills Centre and a business campus.

330
Hectare Site
West Burton former coal fired power station in Nottinghamshire

West Burton site

The vision and design of the West Burton campus is being shaped by four thematic principles:

- inclusive economy
- health & wellbeing
- environmental innovation, climate change resilience, & energy security
- identity & distinctiveness

1 Tokamak, from the Russian acronym, meaning a ring-shaped magnetic chamber.

2 The partners comprised: Bassetlaw District Council, Department for Energy Security and Net Zero (DESNZ), Lincolnshire County Council, the Midlands Observatory, Nottinghamshire County Council, the UK Atomic Energy Authority (UKAEA), and West Lindsey District Council.

02.

Economic Impacts

The STEP programme is forecast to have significant impacts at various spatial levels, although major effects are only forecast to occur after 2030 and there will be peaks and troughs in activity.

For example, in terms of direct on-site effects, once fully operational in the 2040s, the West Burton site is anticipated to accommodate 6,500 full time equivalent (FTE)[3] jobs, with an estimated 1,500 at STEP and 5,000 on the business park. This would equate to 12.5% of the current total workplace jobs[4] in Bassetlaw.

6,500

Full time equivalent jobs
On-site employment once fully developed, equating to 12.5% of total workplace jobs in Bassetlaw

An economic impact (Input Output) model has been created of the STEP programme which is based on a series of assumptions and reports forecast Gross Value Added (GVA)[5] and FTE employment. It distinguishes between three types of effect, as follows:

- **direct effects** - the jobs and incomes that accrue to an economy due to the construction/operation of the facility and related investments and the employment they generate
- **indirect effects** - supply chain activity within an economy arising from the construction/ operation of the facility and related investments. Effects will be greater if such purchases come from within an economy rather than outside
- **induced effects** - the process through which the spending of staff employed (both directly and indirectly) helps to support other businesses in an economy

At the UK level the modelling indicates that the STEP programme is expected to generate £1.5 bn in annual average GVA and support 19,470 annual average job years over the period 2019 – 2065[6]. The key UK level projected impacts by type of activity[7] are as follows:

Construction related

annual average **£513m GVA**
annual average **6,480 jobs**

Development related

annual average **£987m GVA**
annual average **12,990 jobs**

Substantial indirect and induced impacts that are expected to arise from the STEP programme.

Forecast cumulative and annual average direct, indirect and induced impacts (2019-65)

UK	Cumulative GVA (£m)	Annual average GVA (£m)	Cumulative Jobs (Job Years)	Annual Average Jobs per year
Direct	19,569	445	253,792	5,768
Indirect	24,836	564	323,092	7,343
Induced	21,578	490	279,840	6,360
Total	**65,982**	**1,499**	**856,724**	**19,471**

Construction-related activity is forecast to peak in the mid to late 2030s, with operations jobs building up from the mid-2030s.

3 The Office for National Statistics (ONS) defines Full-Time Equivalent (FTE) as a unit that measures the workload of an employed person in a way that makes workloads comparable across various contexts. It is used to convert the hours worked by part-time employees into the equivalent number of full-time hours.

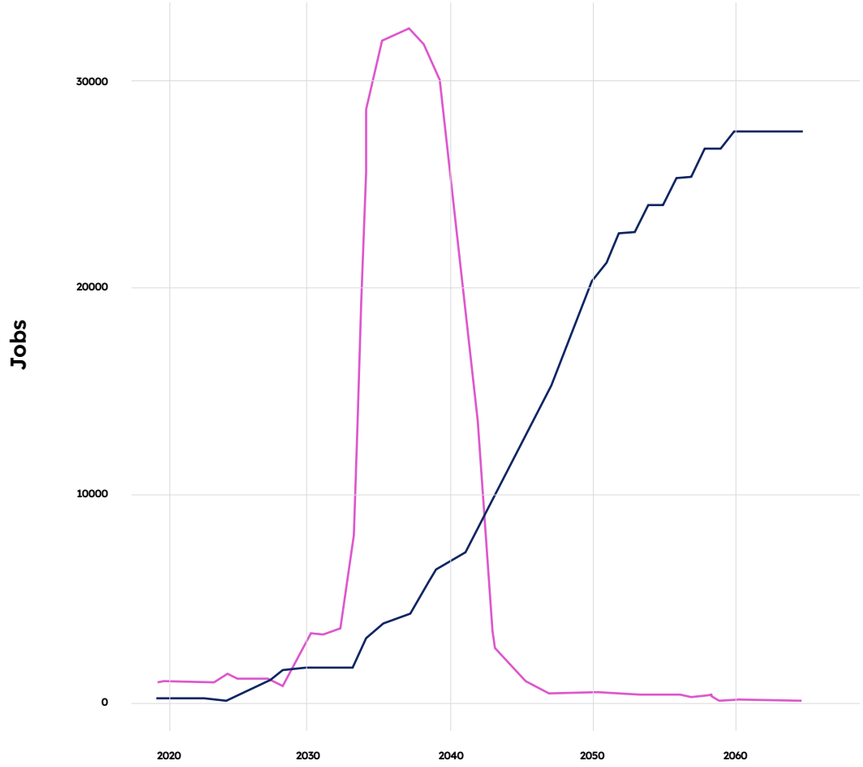
4 Based on the forecast place where the work is performed.

5 Gross Value Added (GVA) is the increase in the value of the economy due to the production of goods and services. It is the value of the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production.

6 The assessment includes an analysis of the forecast STEP programme impacts from 2019 – 2065. However, the East Midlands regional impacts only commence in 2022 when West Burton was selected as the site for STEP.

7 The construction related includes planning, design, and construction activity, which is forecast to take place over the period 2019-48, while the operations related is expected to be predominantly from 2040 onwards.

UK construction/Opex Jobs (2019/65)

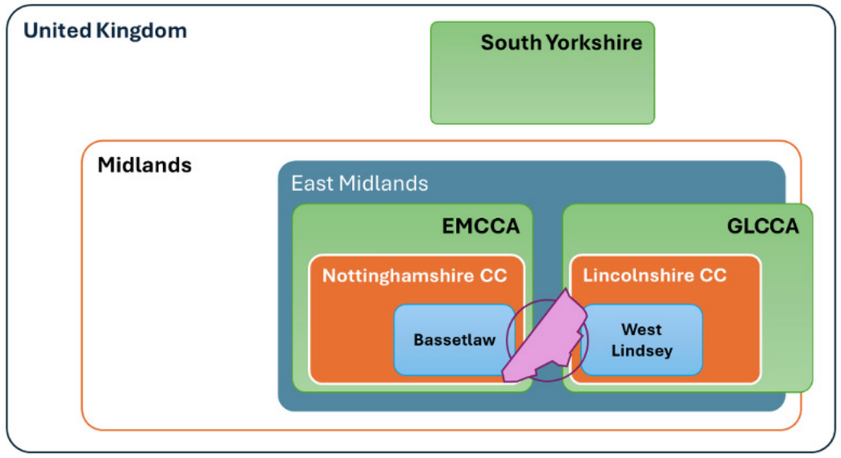


The economic and wider impacts of STEP have been assessed at the following spatial levels:

- **West Burton site**
- **Local authority districts** - Bassetlaw District Council and West Lindsey District Council. STEP will be located in Bassetlaw, but very close to the boundary with West Lindsey
- **Local authority County Councils** - Nottinghamshire County Council and Lincolnshire County Council
- **Combined authorities** - East Midlands Combined County Authority (EMCCA), Greater Lincolnshire Combined County Authority (GLCCA), and South Yorkshire Mayoral Combined Authority (SYCA or South Yorkshire)
- **East Midlands**
- **Midlands level (East and West Midlands)**
- **National (UK)**

Allowance has been made for overlaps between areas – thus Bassetlaw's impacts are included within those estimated for Nottinghamshire County Council which in turn are within those of the EMCCA area and so forth.

Spatial areas of analysis



Once fully operational, STEP is forecast to account for 8% of current residence-based job[7] in Bassetlaw and 6% in West Lindsey.

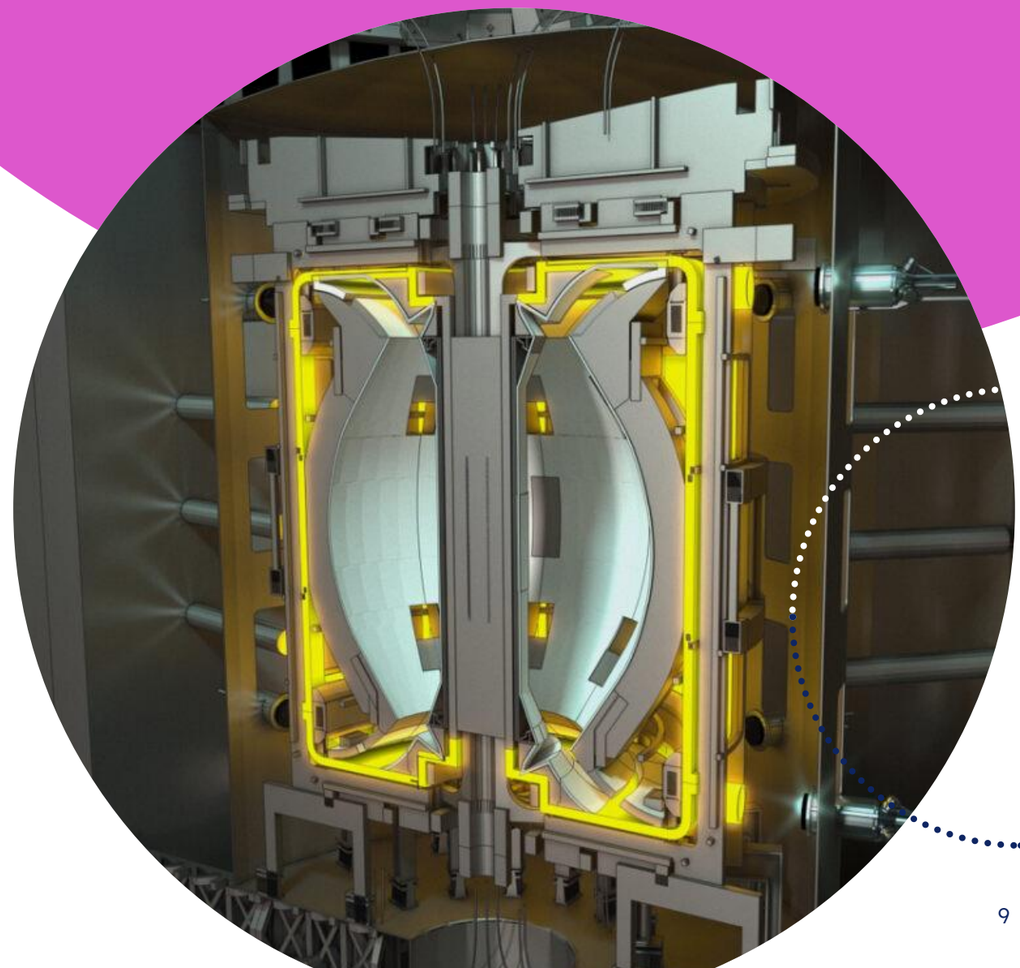
Forecast Annual average GVA and jobs impacts (2019-65)

Area	Annual Average GVA (£m)			Annual Average Jobs				
	Construction	Operations	Total	Construction	Operations	Total	Operations Peak	Operations peak jobs as % of current residence-based jobs
Local Authorities								
Bassetlaw	40.1	110.9	150.9	506	1,460	1,966	4,502	7.67%
W. Lindsey	47.9	55.0	102.9	605	724	1,329	2,100	5.51%
County Councils								
Nott CC	85.7	209.6	295.3	1,083	2,760	3,843	6,519	1.62%
Lincs CC	76.3	121.4	197.8	965	1,598	2,563	3,775	1.08%
Combined Authorities								
GLCCA	84.6	141.6	226.3	1,069	1,865	2,934	4,332	0.83%
EMCCA	117.1	285.4	402.5	1,479	3,758	5,237	8,392	1.06%
SYCA	58	89.5	147.5	734	1,177	1,911	2,497	0.38%
Regions								
EM	235.6	489.2	724.7	2,976	6440	9,416	13,938	0.59%
Midlands	311.9	596.9	908.8	3,941	7,858	11,799	16,661	0.17%
UK								
UK	512.7	986.9	1,499.6	6,478	12,993	19,471	27,660	0.08%

7 Based on the forecast place of residence of the worker

The public sector partners can intervene to help maximise the local impacts of the STEP programme through:

- **construction and operations phase training** – equipping local people and others with the necessary skills to compete for the job opportunities
- **local recruitment** – promoting opportunities to local people
- **supply chain development and opportunities** – promoting and providing support for local enterprises to access supply chain opportunities
- **sector/cluster development** – supporting the development of the UK fusion sector and facilitating the creation of a local cluster of clean energy related businesses
- **inward investment** – attracting investment in particular from overseas
- **local homes, sites/premises, and services** – ensuring the local supply of suitable accommodation and services



03.

Wider Impacts

As well as the directly related economic impacts, the STEP programme is also forecast to generate substantial wider impacts.

(i) Labour, Skills and Training Induced development

Induced development

The STEP programme, together with other initiatives such as the East Midlands Investment Zone[8] and East Midlands Freeport[9], will provide the basis for developing a broader clean energy and related sectors cluster across the East Midlands through inducing further development.

In order to explore the potential for this form of cluster development, the local partners commissioned Areli to lead a study to look at the regional impacts arising from the emerging proposals for the development of three former coal fired power stations in Bassetlaw – Cottam and High Marnham, as well as West Burton – referred to as the Trent Clean Energy Supercluster.

The preliminary assessment of the emerging Trent Clean Energy Supercluster vision identifies potential for up to 35,000 job years of construction employment to be supported over the full delivery period on the Cottam and High Marnham sites. The estimated gross, on-site, direct operational employment across the two sites ranges from 5,550 to 8,850 FTE jobs, which could be realised over a period of 15-20 years as major infrastructure schemes are implemented. These are in addition to the forecast jobs created through the STEP programme.

8 The East Midlands Freeport was approved by UK Government and has been operational since 2023. It is the UK's only inland Freeport, which will drive economic regeneration across the East Midlands focused on creating tens of thousands of jobs, boosting skills and accelerating the region's commitment to decarbonisation and Net Zero through low carbon energy investments.

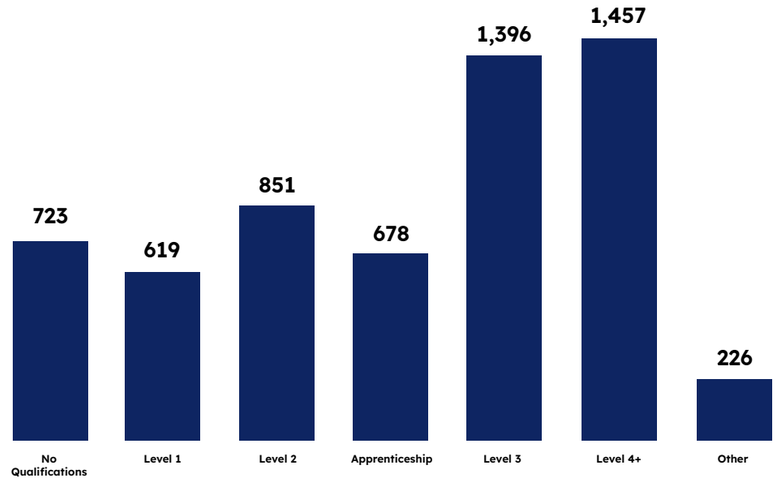
9 The government has approved the designation of the East Midlands Investment Zone, which will create jobs and drive growth in the advanced manufacturing and clean energy sectors. Key locations include Infinity Park in Derby, Explore Park in Worksop, and Hartington Staveley in Chesterfield.

Skills & Training Construction

Construction

Almost 50% of the forecast STEP Campus construction jobs are expected to require Level 3+ qualifications[10]. The requirement for construction workers is expected to put pressure on the local construction labour force.

Peak construction employment by qualification level



Source: ONS Census 2021 Workplace population by industry and qualification analysis (2024), BRES 2018-22 (2024), AMION Analysis

10 There are nine qualification levels – entry level to Level 8. Level 3 includes A level and advanced apprenticeships.

The Whole Plant Partners (WPPs), who will be appointed by UKIFS to help deliver STEP are expected to provide significant related training including apprenticeships, and the major construction contractors are also expected to provide significant construction related training, including apprenticeships. Given the smaller scale of STEP compared with Hinkley Point C nuclear power station, it is estimated that the construction of STEP may generate:

1,200 people trained in skilled areas such as welding, electrical and mechanical work and **330 apprenticeships** during the construction phase

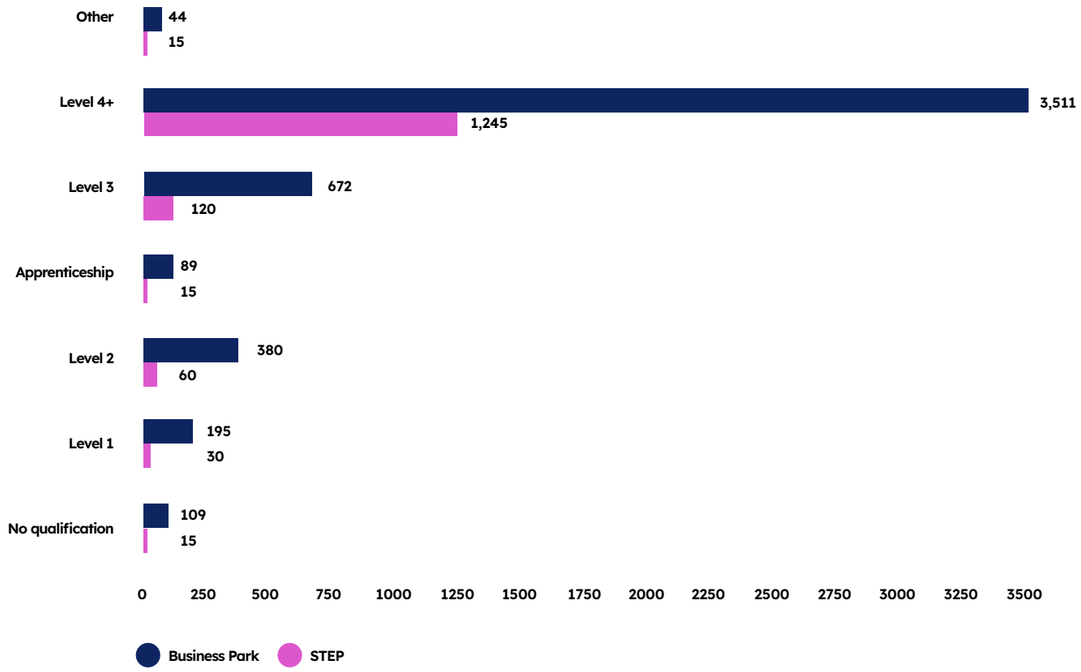
Operations

Many of the STEP facility jobs are expected to be within the scientific research and development (R&D) sub-sector, which requires a particularly well qualified workforce. Over 80% of staff within the scientific R&D sub-sector[11] nationally hold higher level qualifications (Level 4 and above[12]). This proportion is greatly above typical jobs in the economy – for example, 32% of workers in Bassetlaw and 43% of workers nationally hold higher level qualifications.

The businesses attracted to the STEP business park will also require a skilled workforce – many within the professional, technical, and scientific sector. Around 70% of workers in this sector are qualified to Level 4+.

It is estimated that 4,756 of the 6,500 (73%) of on-site jobs on the STEP Campus are expected to require individuals with Level 4+ qualifications. Given the nature of the cutting-edge research within STEP, many will need to be Master's and/or Doctorate level with fusion and physics related degrees.

Peak on-site employment by residency & qualification level



11 How qualified are the people in my industry? - Office for National Statistics (ons.gov.uk) – The input-output modelling has categorised the employment as 'Testing/Scientific/Technical'. The most appropriate two-digit SIC code where data is available is 'Scientific Research and Development'. Our future projections analysis has also included the five-digit SIC code for 'Technical Testing and Analysis'.

12 Level 4 qualifications include higher apprenticeships and Certificates of Higher Education. Degree level qualifications are Level 6, Master's degrees are Level 7, and Doctorates are Level 8.

Many of the jobs on the STEP Campus are likely to require specific skills and currently only a limited number of local residents will have the necessary relevant qualifications and experience. However, a Skills Centre will be created on the site and work is already underway to develop fusion skills, along with post-graduate courses offered by higher education institutions such as the University of Manchester and the University of Sheffield.

(ii) Development, Investment and Housing

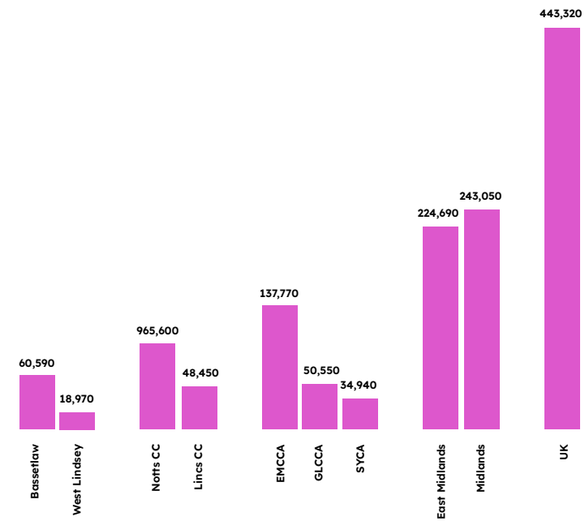
Commercial development

The West Burton Campus is forecast to accommodate circa 180,000 sqm of office, laboratory/research and ancillary space. In addition, a further 81,000 sqm of off-site space directly associated with STEP-related inward investment is also expected to be required.

Indirect effects on development

At the UK level over 440,000 sqm of commercial floorspace is estimated to be needed to accommodate the indirect activity generated by the STEP programme. The majority of the demand for new space is expected to arise in the operational phase post 2040.

Supply Chain Commercial Floorspace Demand 2019-65(sqm)



Additional local effects

At the local level, the development of the STEP Programme has, as noted above, the potential to play a catalytic role in supporting the development of other strategic sites within the Trent Clean Energy Supercluster. In total, it is estimated that the sites at Cottam and High Marnham could support up to 500,000 sqm of floorspace to accommodate a range of activities linked to energy, food and agritech, and data related activities.

Housing

The STEP programme is also forecast to result in additional housing demand over the period to 2065, including:

Over 2,800 homes in the immediate geography (with over 600 up to 2039 and over 2,200 between 2040-65)

(iii) Knowledge/Technology Transfer

The STEP programme could lead to 250 new patents between 2019 and 2065[13]. In total, it will potentially result in 117 new spinout businesses over the period to 2065 accommodating some 1,570 jobs.

However, since there are no directly comparable programmes to STEP, the level of R&D activity could be lower than estimated since STEP is a demonstration production plant and not a research facility.

(iv) Productivity

The new jobs created through the scheme are in sectors that have higher productivity than the national average. Due to this, there will be economic benefits from the transfer of labour into more productive roles. Once fully occupied and at peak employment, the STEP employment is expected to lead to gross wage premium (above the average wage) benefits of £65m per annum and the business park employment is expected to lead to wage premium benefits of £26m per annum.

13 Based on recent evidence collected by UK Research and Innovation (UKRI) in respect of the support for commercialisation of research and technologies from the Science and Technology Facilities Council (STFC).

(v) Non-monetised impacts

The successful delivery of the STEP programme is expected to have a large beneficial impact in terms of: the environment, pride of place, regeneration, accessibility/transport, image, and soft power/ international relations.

STEP - Non-monetised impacts	
Benefit	**Assessed Impact**
Environment	Large Beneficial
Pride of place	Large Beneficial
Regeneration	Large Beneficial
Social Value	Moderate Beneficial
Health	Slight Beneficial
Accessibility/transport	Large Beneficial
Image	Large Beneficial
Soft power/international relations	Large Beneficial

assessed based on a seven-point scale from large adverse to large beneficial

04.

Conclusions

The STEP programme is forecast to have substantial economic and wider benefits at a national and local level.

The local area is expected to become a global hub for fusion R&D, with STEP helping to create a high value-added economy focused on advanced energy solutions. It will promote national growth, high-tech innovation, and help regenerate local communities.

330
hectare
West Burton
site in
Nottinghamshire

STEP Campus will accommodate the **STEP fusion facility, the UKAEA Skills Centre** and **a business park.**

+

West Burton site once developed will accommodate **6,500 full time equivalent (FTE) jobs - 12.5%** of the current total workplace jobs in Bassetlaw.

UK level - **£1.5 bn in annual average** GVA and **19,470 annual average job years** over the period 2019 – 2065

+

Catalyst for a broader clean energy cluster across the East Midlands – **Trent Clean Energy Supercluster** could support between **5,550 to 8,850 direct, on-site FTE jobs**

Construction phase

1,200 people trained in skilled areas such as welding, electrical and mechanical work and **330 apprenticeships**

Operations phase

over 70% of workers
on the STEP Campus are
expected to require
Level 4+ qualifications

At the UK level over
440,000 sqm of commercial floorspace is
estimated to be needed to accommodate the
indirect activity generated by the STEP programme.

STEP programme will result in additional housing demand of over **2,800 homes** in the immediate geography

250
new patents over
the period to **2065**

117
new spinouts creating
over 1,500 jobs

Large beneficial impact on the
environment, pride of place, regeneration, accessibility/transport, image, and soft power/ international relations