

# Nuclear Workforce Assessment 2019 Executive Summary

A scenario-based approach to  
nuclear workforce planning



# Planning for our Nuclear Future: Forecasting skills demand and supply in a changing landscape

Since the publication of our last Nuclear Workforce Assessment (NWA) in 2017, the nuclear sector has experienced a series of changes that are set to have a long lasting impact upon the both the nature and makeup of our workforce. The launch of the Nuclear Sector Deal (NSD) in 2018 was a pivotal moment for the industry. It emphasised the importance of our sector's role in delivering key themes of the UK's Industrial Strategy, most notably the 'Grand Challenge' of Clean Growth. A global challenge which sees the sector leading the way in providing the technologies, innovations and services to support the shift to a low carbon future.

This NWA provides us with a crucial evidence base to support this ambition, forecasting skills supply and demand across the nuclear sector in the UK – new build, operations, decommissioning, research and development and defence activities. And the skills required to meet this workforce demand include skills for nuclear such as all-important trade, generic engineering and project management skills, as well as more specialised nuclear skills.

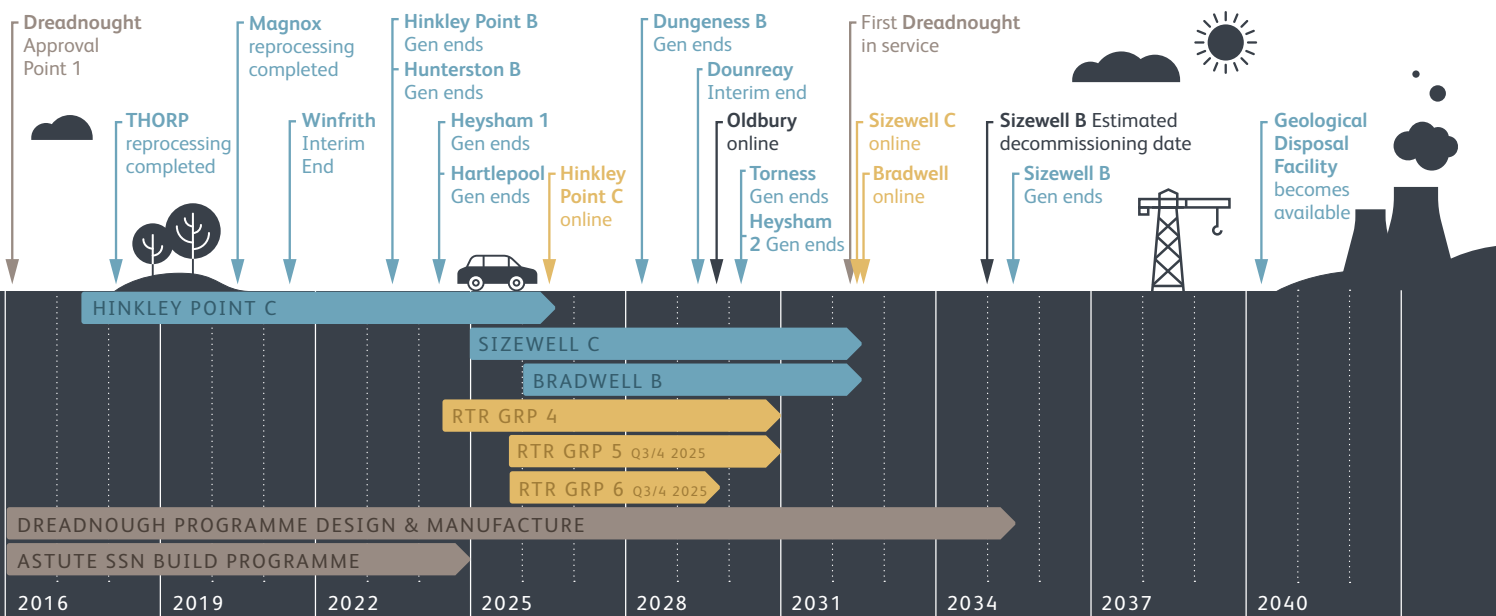
The People and Skills elements of the Nuclear Sector Deal directly support the foundations of the UK Government's Industrial Strategy. Through working with

the sector, and its wider supply chain, we can bring prosperity to our regions through the opportunities that the nuclear sector can bring.

The information contained within this latest NWA will continue to support evidence based planning for future interventions and activities the sector will need to meet its skills needs. The NSSG will facilitate these in a continued alliance with key skills partners.

**Jennie Chapman**  
Head of Nuclear Skills Alliance,  
EDF Energy

## NUCLEAR TIMELINE



The overall demand for nuclear skills is determined by the timeline of key nuclear events including the decommissioning of existing facilities, the development of future technologies, the construction of new civil facilities and defence submarine programmes.

Many of these activities have detailed schedules; however other key developments, for example additional generating capacity, are not so well defined. The forecast data in this summary therefore looks at two scenarios:

**Scenario 1** Hinkley Point C, Sizewell C & Bradwell B (9 GWe)

**Scenario 2** As Scenario 1 plus 3 additional reactor groups 4, 5 & 6 (18 GWe)

This is indicative only, as there are, of course, many possible routes to providing a further 9 GWe capacity using conventional or advanced nuclear technologies. However, these scenarios provide us with a baseline to underpin sector workforce planning.

# Meeting the Diversity Target

Meeting the Nuclear Sector Deal target of a 40% female workforce by 2030 depends on both the balance in recruitment and the turnover of staff. Given an overall attrition rate of 8% (for example through retirement) and no net expansion, recruitment of at least 50% women is required, averaged over the next decade or so.

As can be seen, female participation falls as job skill levels increase, particularly above level 5. It is clear that equality of opportunity requires progression to higher levels to be accessible to all, and that career breaks don't unnecessarily restrict advancement.



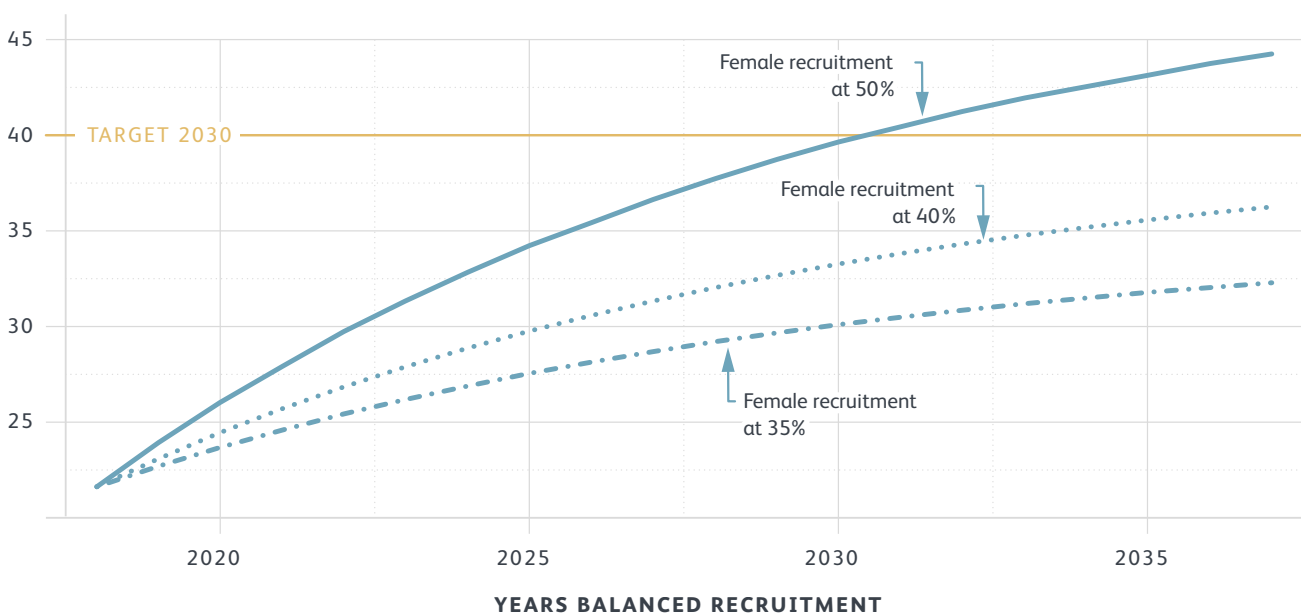
## FEMALE WORKFORCE BY LEVEL

FEMALES WITHIN LEVEL (%)



## RECRUITMENT FORECAST SCENARIOS TO ACHIEVE 40% WORKFORCE BY 2030

FRACTION OF THE WORKFORCE (%)



# Workforce Demand



The overall forecast demand is based on 2 scenarios; to meet both replacement demand and expansion from new projects, an inflow of new workers is required of approximately:

3200 a year for **Scenario 1**  
in the period to 2025

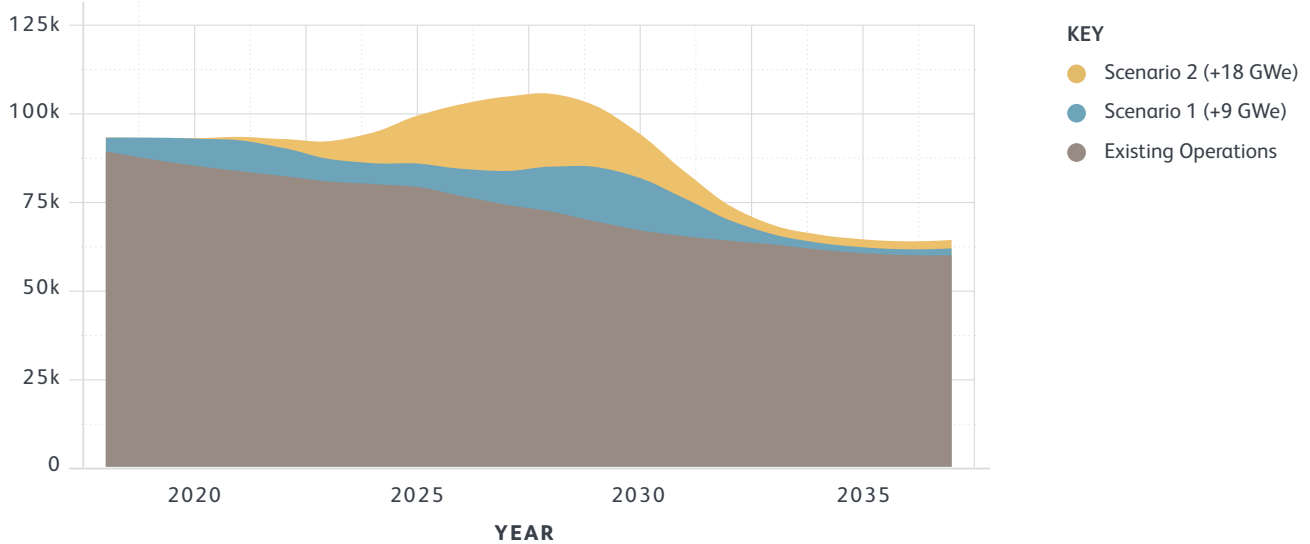
4800 a year for **Scenario 2**  
in the period to 2025

By 2030 around 40,000 full time posts will need to be filled for Scenario 1, and 60,000 for a potential Scenario 2.

As expected, recruitment to meet demand varies with both time and the occupations required to deliver the planned activities. Business and Project Management occur earlier in the cycle, while Engineering and Trades increase in line with the peak in construction.

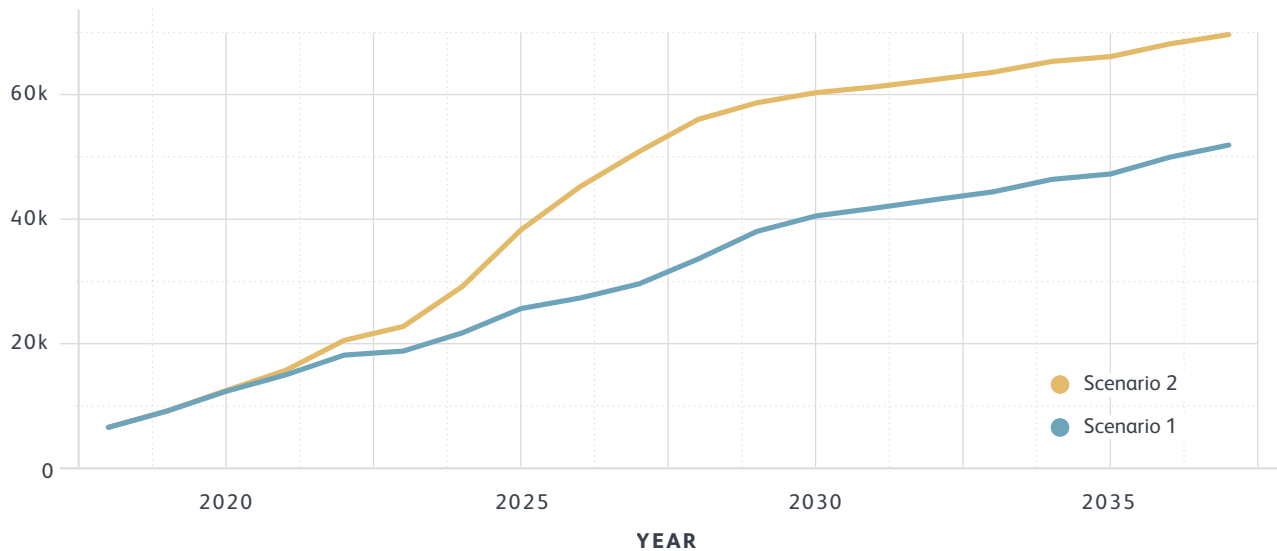
## DEMAND PROFILE FOR SCENARIO 1 & 2

### WORKFORCE / FTEs



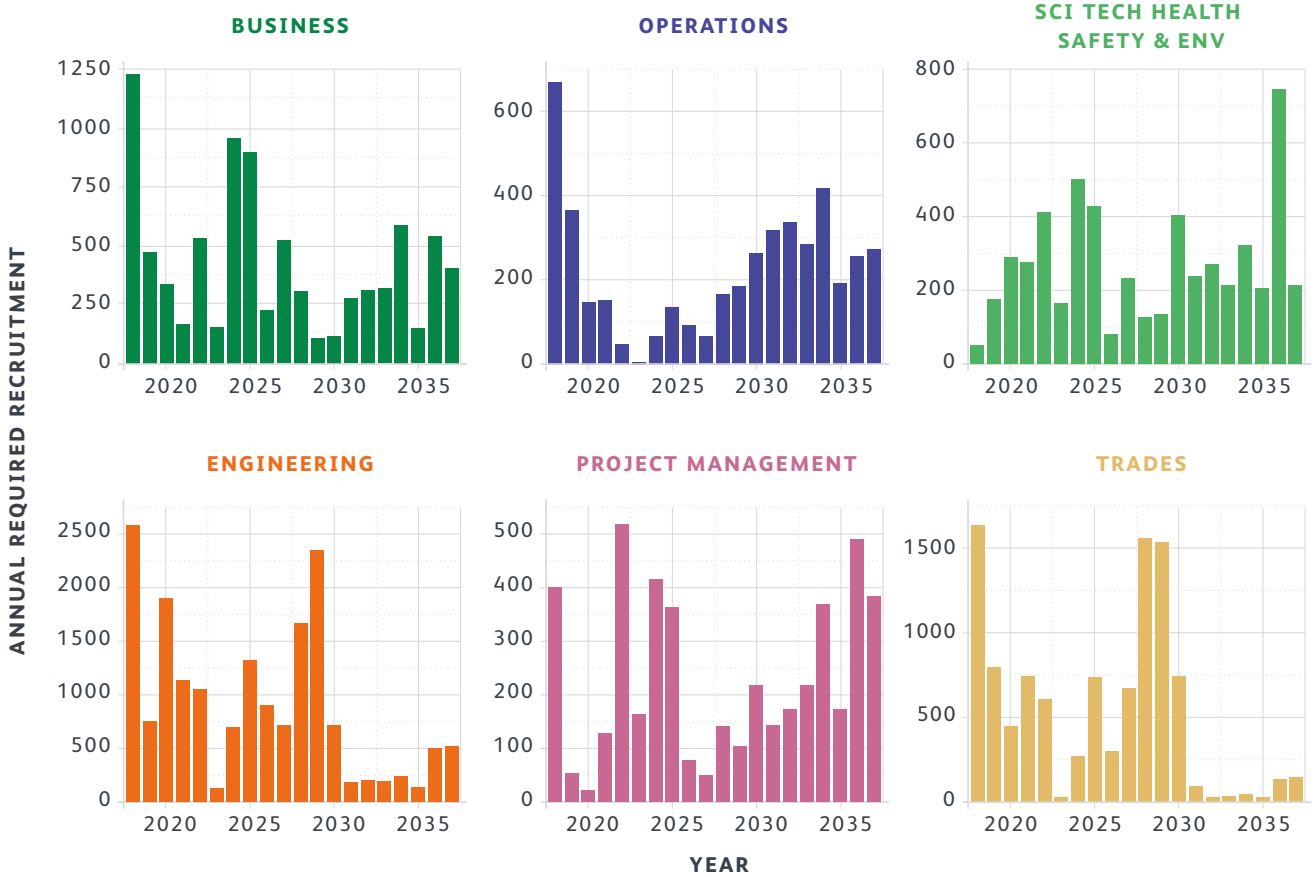
## CUMULATIVE REQUIRED RECRUITMENT FOR SCENARIO 1 & 2

### CUMULATIVE REQUIRED RECRUITMENT / FTEs

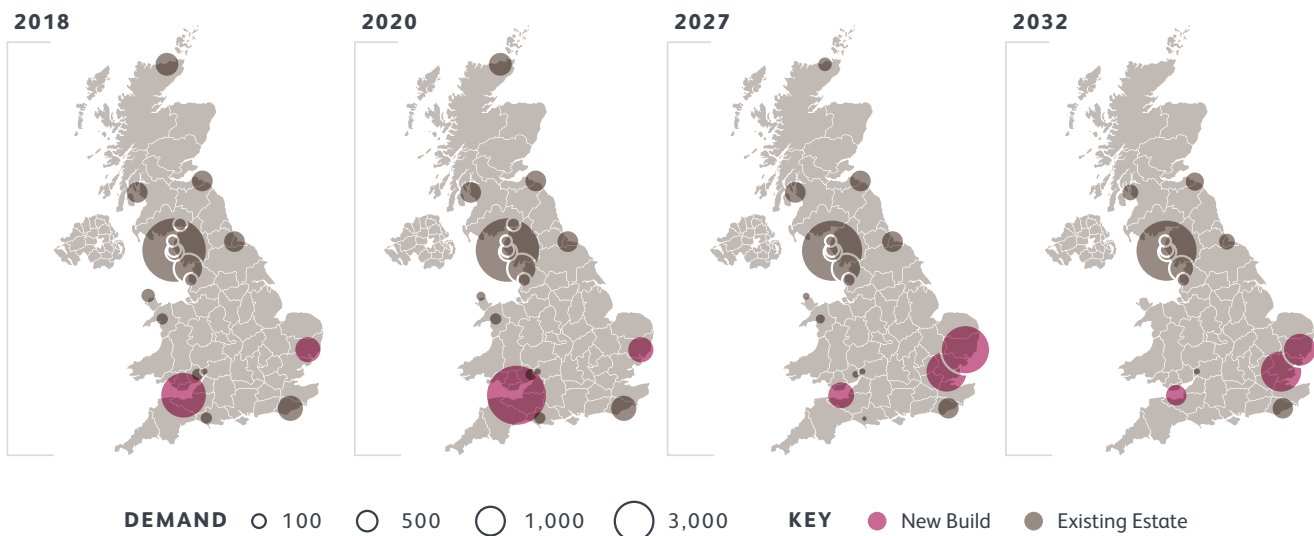


Below is the inflow analysis applied exclusively to Scenario 1.

### ANNUAL REQUIRED RECRUITMENT SCENARIO 1



### GEOGRAPHICAL DEMAND FOR SKILLS



As the maps show, today's nuclear workforce is dispersed across sites around the UK, but with a heavy concentration in the northwest of England. Construction of Hinkley Point C, Sizewell C, and Bradwell B will cause further growth, initially in the Southwest of England (2020) and later in the Southeast (2027).



# Meeting the Demand

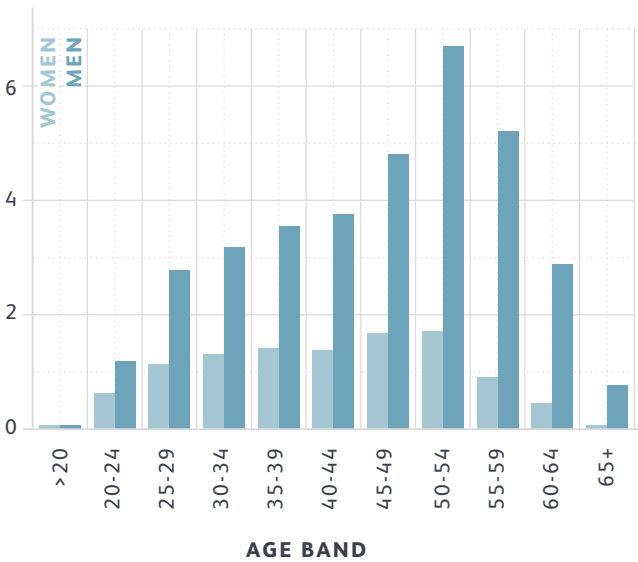


This latest Nuclear Workforce Assessment (NWA) confirms a maturing nuclear workforce; overall one fifth of the workforce is 55 or older. Female participation in the workforce is 20% and women are also under-represented in STEM roles. The pipeline to replenish the workforce consists of both the flow of experienced workers from other industries, and new trainees. Trainees represent an important opportunity to increase the participation of women; the female trainee participation rate is currently 24% and highest among Civil apprentices at 30%. Women in training are still under-represented at the higher levels and in Engineering and allied areas.

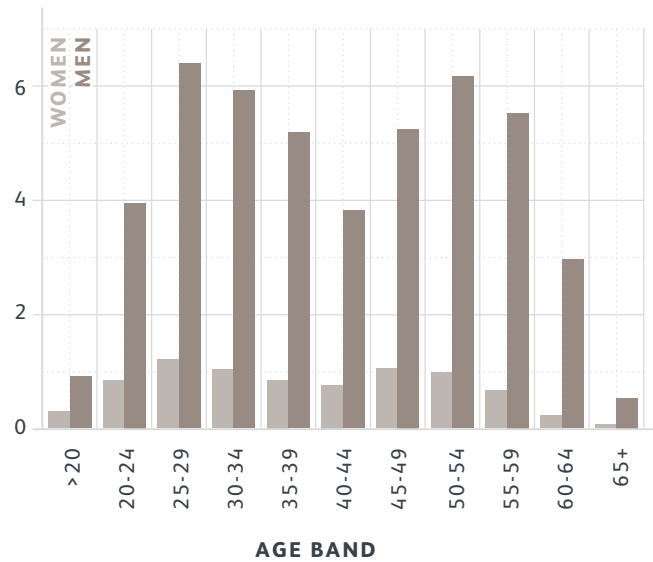
Recruitment into the sector includes both experienced workers from inside and outside of the nuclear industry, and apprentices and graduates beginning careers in the industry. Of the three quarters of experienced recruits in the civil sector who had transferred from similar occupations, 60% were from outside of the nuclear industry. Of the 25% who were trainees, two thirds were apprentices and the remainder graduates.

## AGE & GENDER ACROSS CIVIL AND DEFENCE SECTORS

CIVIL WORKFORCE (%)

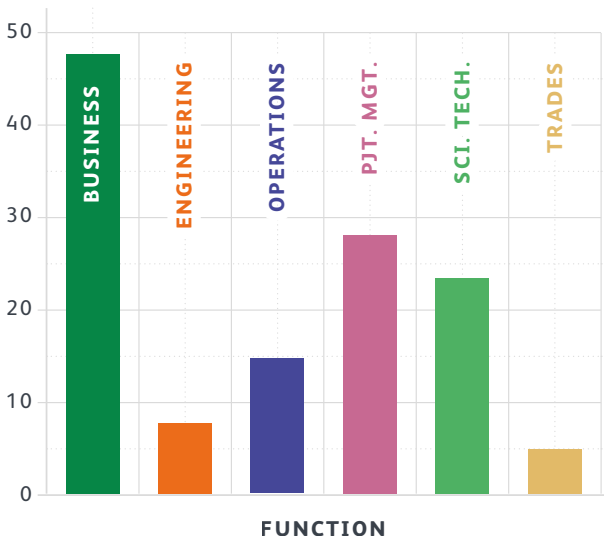


DEFENCE WORKFORCE (%)

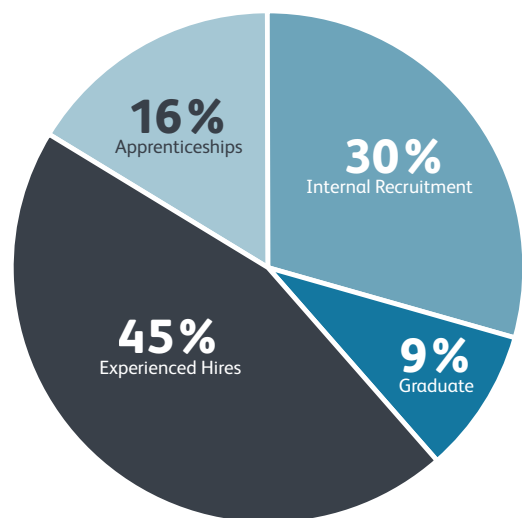


## % FEMALE IN EXISTING WORKFORCE

FEMALES (%)

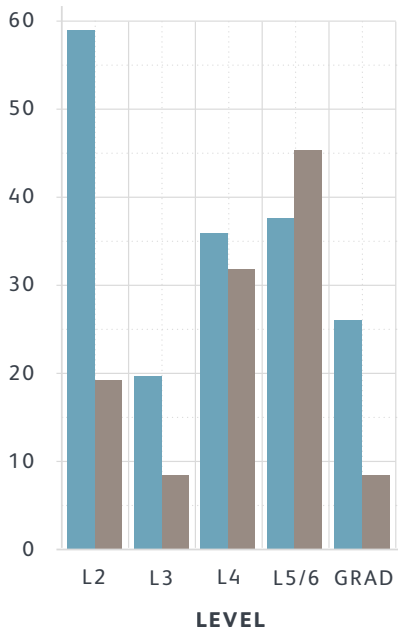


## RECRUITMENT INTO THE CIVIL SECTOR (2018)

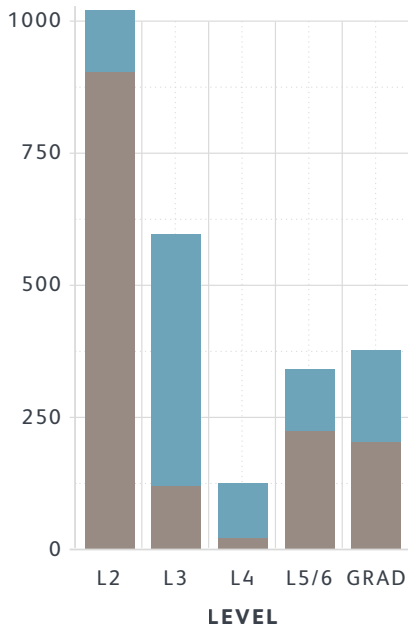


## FEMALE TRAINEES BY LEVEL ACROSS NUCLEAR WORKFORCE

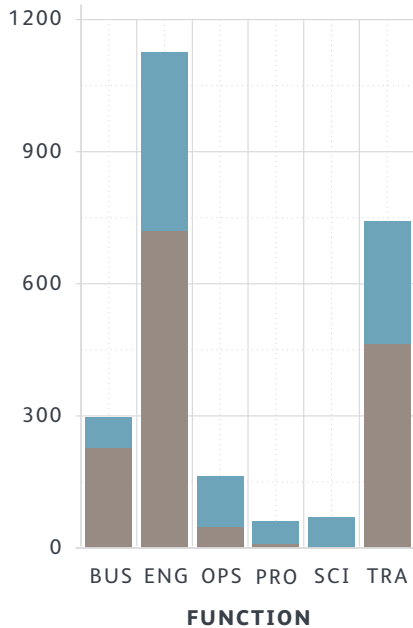
FEMALES BY LEVEL (%)



ALL TRAINEES BY LEVEL (ABS)



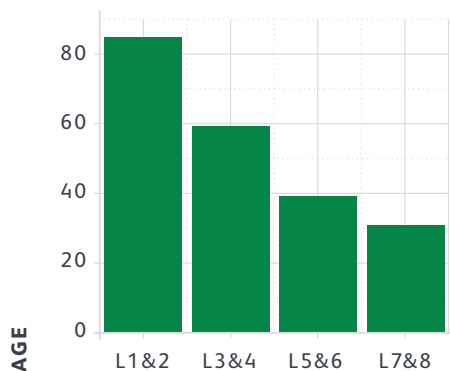
ALL TRAINEES BY FUNCTION (ABS)



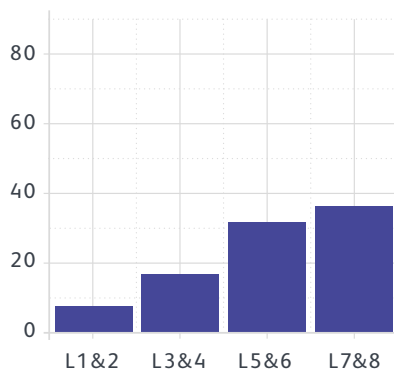
KEY Civil Defence

## FEMALE CIVIL RECRUITMENT 2018 (SAMPLE)

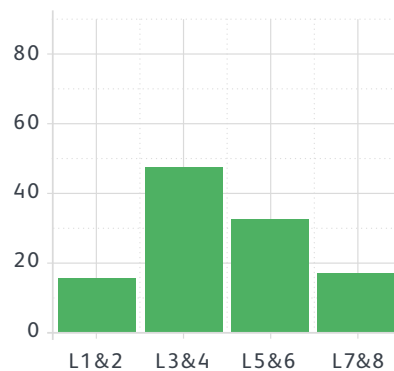
BUSINESS



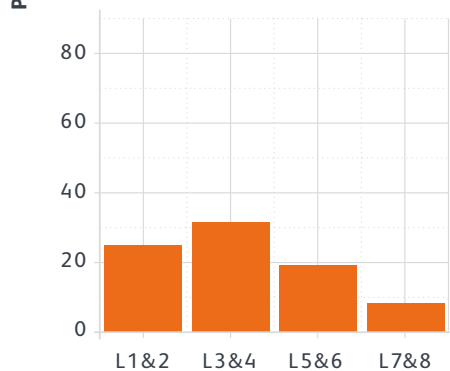
OPERATIONS



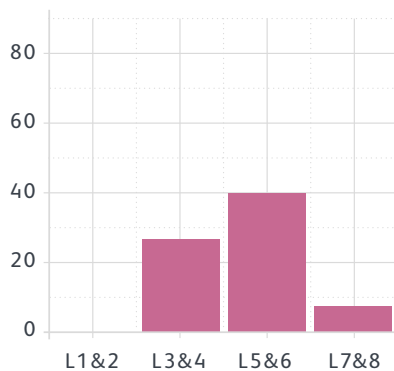
SCI TECH HEALTH  
SAFETY & ENV



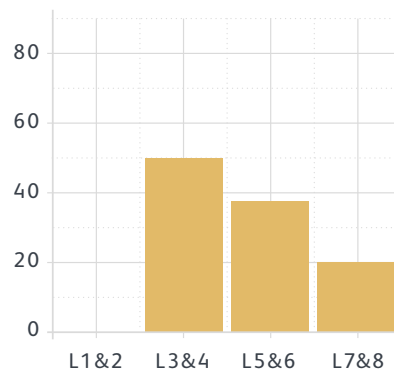
ENGINEERING



PROJECT MANAGEMENT



TRADES



LEVEL

PERCENTAGE

# Key messages, skills challenges & opportunities

There is evidence of some good progress since the 2017 Nuclear Workforce Assessment. The defence nuclear sector is reporting better progress in gender diversity, increasing the representation of women from 12% in 2017 to 16% in 2019, compared to a reported fall within the civil nuclear sector (26% - 22%). However, with the sector's overall figure falling from 22% to 20%, it is clear that significant progress needs to be made at all levels and in all disciplines to achieve the target of 40% women in nuclear by 2030.

Below is a summary of key points from this report:

## ENHANCED SKILLS LEADERSHIP & DIVERSITY



- Evolving civil new build programmes and timescales have changed the demand profile leading to a flatter, more sustainable demand picture.
- There is a need to replace the expertise of an ageing workforce – one fifth of the workforce is over 54 – this poses a great opportunity to get young, diverse and innovative thoughts into the sector over the next decade.
- At least 50% of new recruits into the sector need to be women to meet the sector deal target of 40% women in nuclear by 2030.
- Competition will remain with other infrastructure programmes for multi-disciplinary skills expertise. Development programmes for transferees could help overcome barriers to entry, and support their longer-term retention.

## LOCAL APPRENTICESHIPS



- There has been a 25% decrease in reported apprenticeships since 2017. These currently provide the greatest opportunity to diversify the workforce at a trainee level.
- There is a need to increase gender diversity in new starts in apprenticeships from 43% to at least 50% by 2021, as well as balancing female participation in different types of apprenticeships.
- Lack of certainty over new build programmes has and will continue to lead to an unwillingness to invest in apprenticeships.

## SECTOR TRANSFERABILITY



- Transferability is key to meeting inflow demand as well as diversifying thought – increased effort is needed to ensure talent is attracted from other sectors. Currently, 60% of new recruits are from outside of the sector.
- For every additional new build programme, there are efficiencies to be obtained through the transfer of workforce from one project to another, leading to a greater justification for investment in skills.

## STAYING AT THE CUTTING EDGE



- Higher Level Skills are particularly affected by the ageing workforce. A continued supply of PhD's from Centres for Doctoral Training (CDTs) and Level 8 apprenticeships will help to develop the future supply of subject matter experts.
- There is a need to reskill and create a workforce to develop and implement new Advanced Nuclear Technologies, which require different skillsets from conventional reactor technology.

Please follow this link for the full Nuclear Workforce Assessment 2019  
[www.nssguk.com/resources/nssg-publications/](http://www.nssguk.com/resources/nssg-publications/)

Version 2

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