

NUCLEAR AMRC

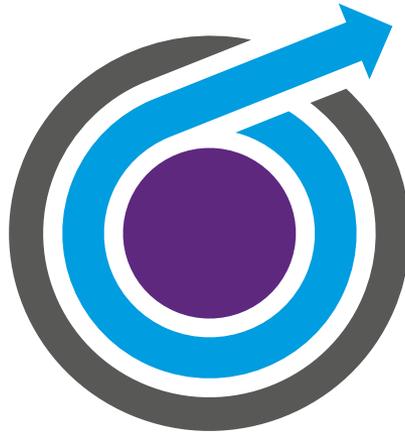
ADVANCED MANUFACTURING RESEARCH CENTRE

Advancing UK manufacturing



Supported by the
Regional Growth Fund





NUCLEAR **AMRC**

Fit for Nuclear
Supplier Development Programme

Nigel Goodrich, Industrial Advisor

10th January 2018



NUCLEAR AMRC

SAFETY MESSAGE

8–12 January 2018

Don't risk a trip.

Always be aware of potential trip hazards, especially if you're working outside or after dark.

Arrange temporary lighting if required. If you can't see where you're treading, don't take the risk.



The UK's nuclear challenge



Hinkley Point C: EDF Energy



UK civil nuclear market

Operations

EDF Energy: 15 reactors at 8 sites around UK.
Supply chain requirements c£600 million a year.

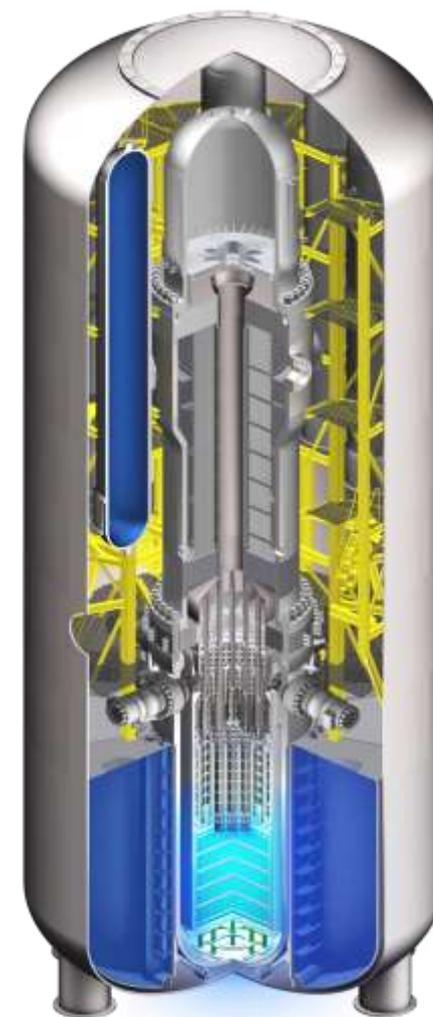
Decommissioning

17 sites managed by Nuclear Decommissioning Authority
via site licence companies.
Supply chain requirements c£1.8 billion a year.

Next generation

Opportunity for UK to regain global lead:

- Small modular reactors.
- Fusion reactors.



Westinghouse SMR



Nuclear AMRC:
a centre of excellence



Our mission

To help UK companies win work in nuclear

- Civil new build, operations and decommissioning, and naval power.
- And in other innovative energy sectors.



Improving capabilities and performance



Manufacturing innovation

- Improving cycle time and quality.
- Reducing lead time, cost and risk.
- Developing innovative techniques and technologies.

Supply chain development

- Raising quality, capability and cost competitiveness.
- Helping companies meet nuclear industry requirements and expectations.

We are open to all UK manufacturers of any size, working with c800 companies of all sizes.



At the heart of advanced manufacturing



World-leading cluster

Purpose-built 8,000m² facility on the Advanced Manufacturing Park, South Yorkshire.

Part of University of Sheffield AMRC:

- AMRC with Boeing
- Castings Technology International
- AMRC Training Centre

Supported by The University of Manchester Dalton Nuclear Institute.



Industrial regeneration



Orgreave in 1994: Start of clean-up from 150 years of mining and coking.
Now: 100 acre Advanced Manufacturing Park & 740 acre Waverley community.



National network of expertise

High Value Manufacturing Catapult

Network of 7 manufacturing R&D centres, backed by Innovate UK.

- Advanced Forming Research Centre
- Centre for Process Innovation
- Nuclear AMRC
- AMRC with Boeing
- Manufacturing Technology Centre
- Warwick Manufacturing Group
- National Composites Centre

CATAPULT
High Value Manufacturing



Membership

Tier 1



Tier 2



January 2018

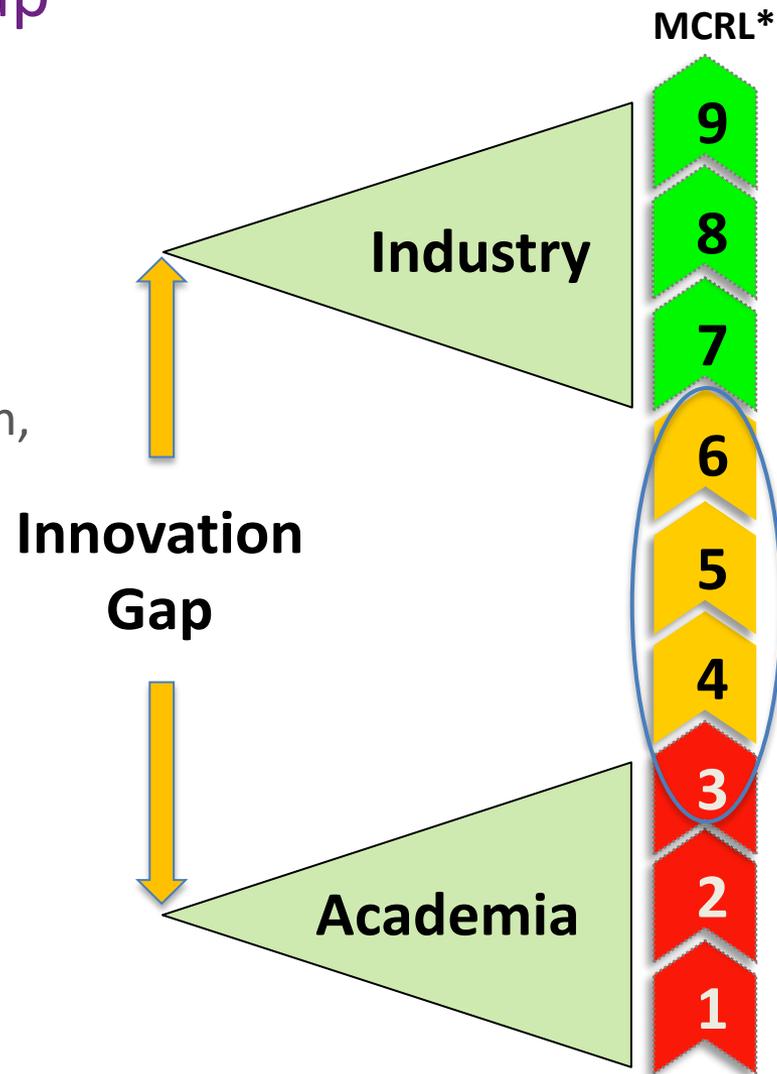
Closing the innovation gap

Advancing manufacturing

Taking technologies from the laboratory to the factory gate.

Focus on large-scale, high-precision, quality-led manufacturing:

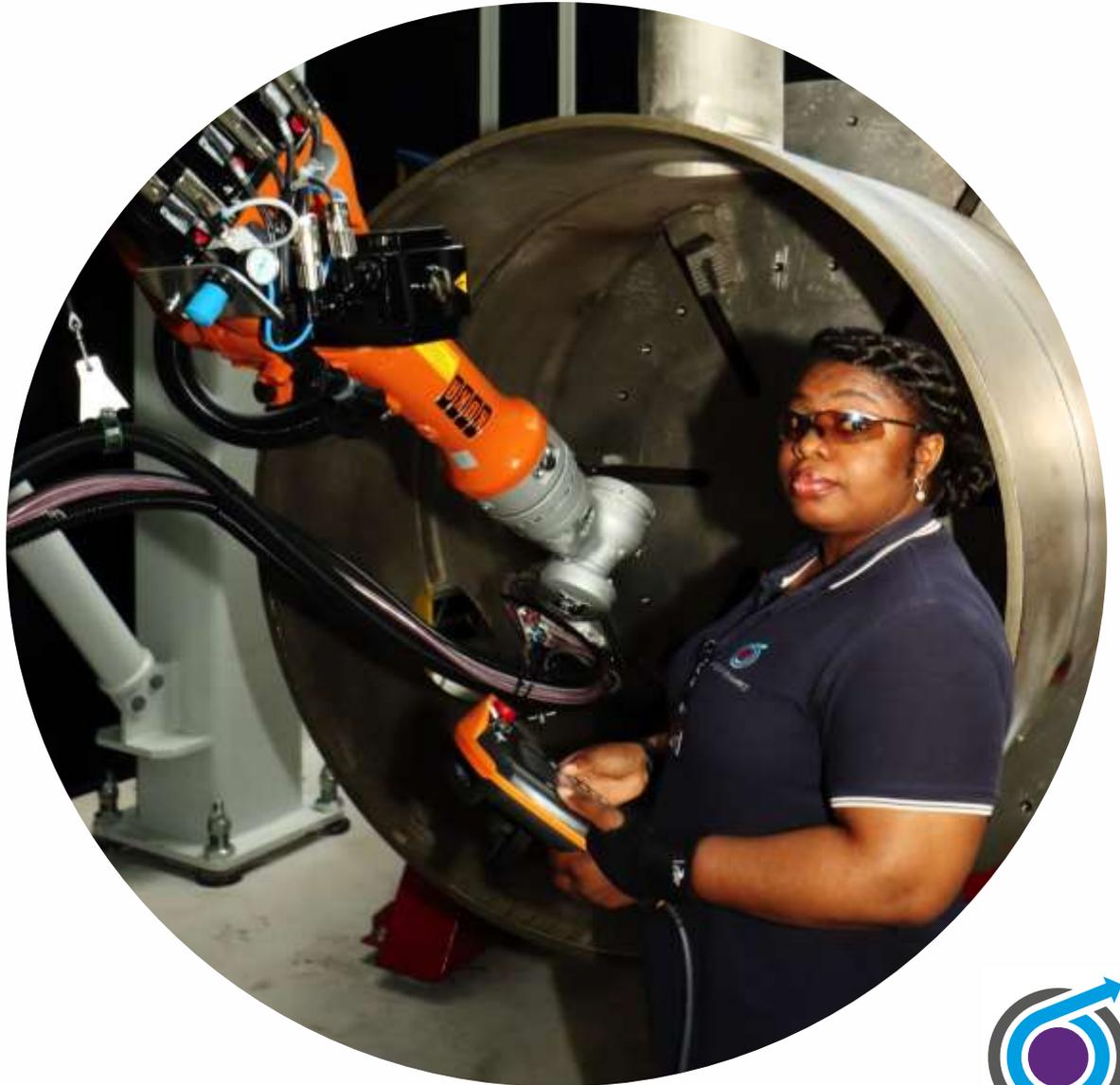
- Machining
- Welding & cladding
- Metrology & inspection
- Visualisation



* 'Manufacturing capability readiness level'



Manufacturing innovation



World-leading equipment and expertise

Research factory

- 5,000m² workshop.
- £35+ million capital equipment.
- Specified for representative-sized nuclear components.

Engineering expertise

- Over 80 engineers and operators.
- Over 1,000 person-years of manufacturing experience.
- Most have higher degrees or chartered engineer status.



Technology capabilities

Core research themes

- Intelligent machining
- Modularisation
- Laser welding & cladding
- Mechanised arc welding
- Thick section joining
- Large-volume metrology
- Metal powder manufacturing
- Bulk additive manufacturing
- Surface integrity
- Visualisation



Advanced capabilities

- Structural integrity
- Modeling & simulation
- Non-destructive testing
- Assembly
- Design for manufacture
- Integrated manufacturing
- Equipment qualification



Case study

Sellafield Ltd – 3m³ waste container

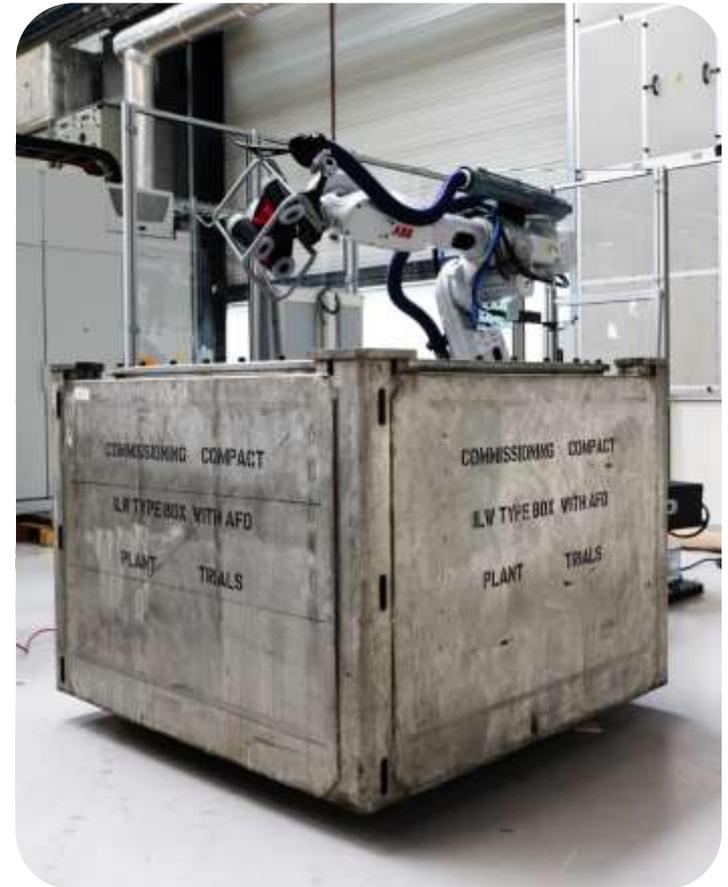
10,000s of boxes required over next 30 years to store intermediate-level waste.

Ongoing R&D to improve manufacturing:

- Automated arc & laser welding.
- Electron beam welding.
- Casting of top flange.
- Automated inspection.

Leading the integrated innovation team for the next generation of containers:

- Design.
- Materials.
- Manufacturing.



Supply chain development



Fit For Nuclear

Test and develop your nuclear readiness

- Free online diagnostic.
- Site visit.
- Expert analysis and action plan.
- Supported by industry top tier.

Delivering real benefits

- Over 600 companies taken initial assessment.
- Over 130 granted F4N.
- Half of participants say they have already experienced business benefits.
- 89% would recommend to other manufacturers.
- 79% would consider working with Nuclear AMRC on manufacturing innovation, or are already.



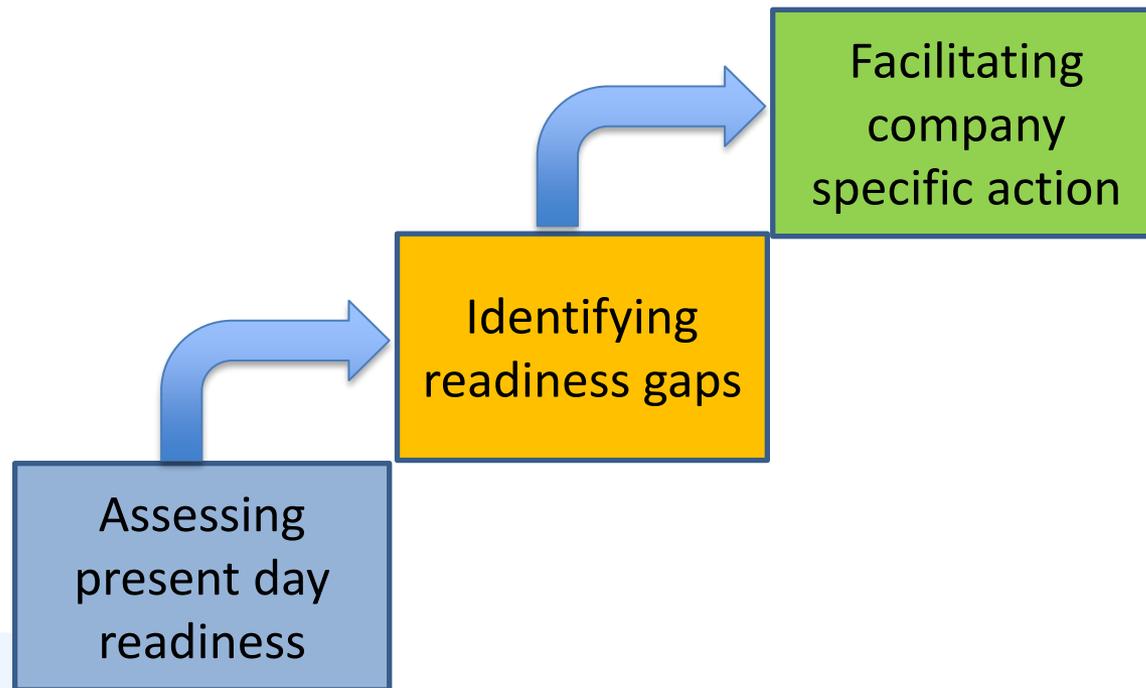
namrc.co.uk/services/f4n



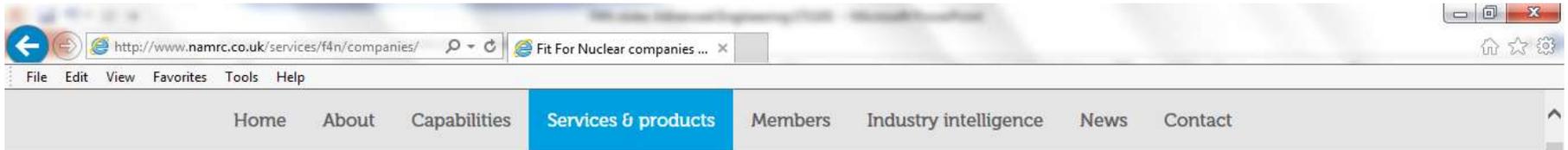
Fit For Nuclear

A focused, free to use, *match-fit* readiness programme, designed for manufacturing supply chain companies wanting to work in nuclear.

Granting of F4N status is a recognition by Nuclear AMRC of capability to work in the sector's supply chains. It is valid for **3 years**, by when a business must be successfully re-assessed to retain status.



Nuclear AMRC website namrc.co.uk/services/f4n/companies



Fit For Nuclear companies

The companies listed below have successfully completed the Nuclear AMRC's **Fit For Nuclear** programme. They have benchmarked their performance against the standards demanded by the civil nuclear industry's top tiers, and driven business improvements through a tailored action plan.



Abbey Forged Products Ltd is one of the UK's leading forgemasters, supplying bespoke high integrity components to the nuclear sector. [Download the case study.](#)



Aerotech provides small to large precision machined components and assemblies to customer specifications, and has been a key supplier to major OEMs within regulated industry sectors for over 20 years.



Alderman Tooling is a bespoke metal fabricator based in Plymouth, offering comprehensive metalwork design and fabrication services to diverse markets. [Download the case study.](#)



F4N connect supply portal – launched late 2017



Available to businesses on achievement of 'F4N granted' status.

Unrestricted access, searchable by product, sector, capability etc.

Businesses can populate their section with:

- Overview – company background - Brief company background & elevator pitch.
- Products & services - Products & services offered, relevant sectors.
- Site facilities - Manufacturing & engineering capability.
- Regional markets - Domestic & export markets the business operates in.
- Recent work - Including photos, awards.
- Case studies
- Endorsements - Customer testimonials



Fit For Nuclear – supplier development programme

Test and develop your nuclear readiness

- Supported by industry top tier
- Launched 2011, continually developed
- Free online self-diagnostic against 6-section, 60-element F4N business excellence model
- Onsite verification assessment visit
- Industrial Advisor report & analysis
- Action plan drafting, reporting & feedback
- Ongoing support



The F4N journey: namrc.co.uk/services/f4n

- Typically takes 12–18 months
- Support through every step, but F4N demands commitment and drive from senior management



Fundamentals

- Business Excellence model matching sector customer expectations, content agreed by nuclear sector leaders.
- Not an audit, a reality-based assessment of capability against defined criteria.
- Requires input of entire management team, not an individual view.
- Business willingness to use findings & recommendations key.
- Business must commit to & resource its action plan, maintain progress & deliver plan to completion – then maintain.
- No set timescale or fixed period for plan delivery.



Engagement journey

Company
self-assessment

NAMRC Industrial
Advisor visit & report

Working towards
F4N granting

Capability
questionnaire
& eligibility

Online self-
diagnostic

Review.
Suitability
Y/N.

On-site
verification
assessment

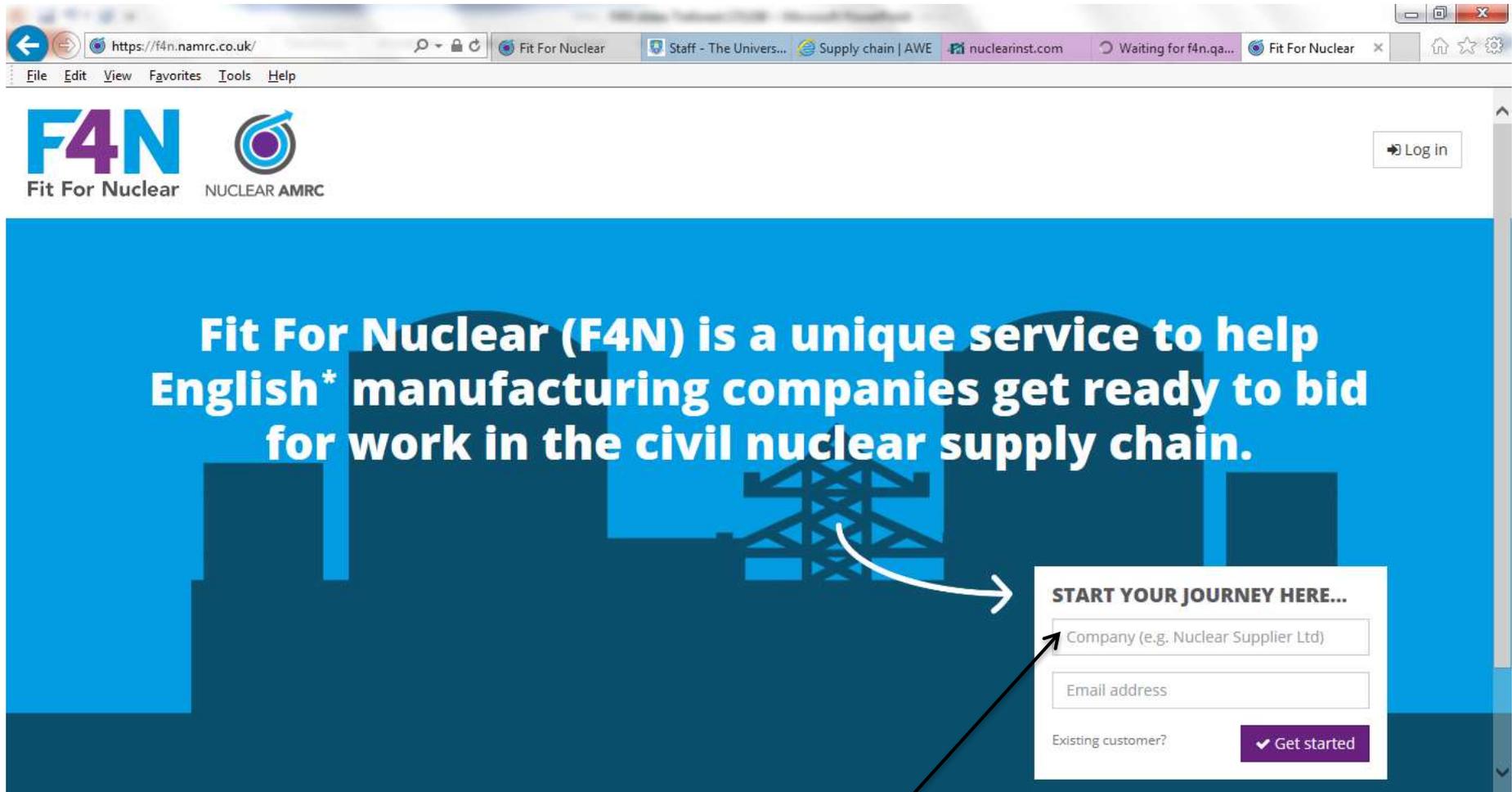
Business
Excellence
action plan
generation &
delivery.

Action plan
delivery,
nuclear
checklist self-
assessment,
business
progresses to
'pre-
granting'.

Timeline to suit business needs, priorities & resources.
Requires in-company commitment for full benefit realisation.



Register at <https://f4n.namrc.co.uk>



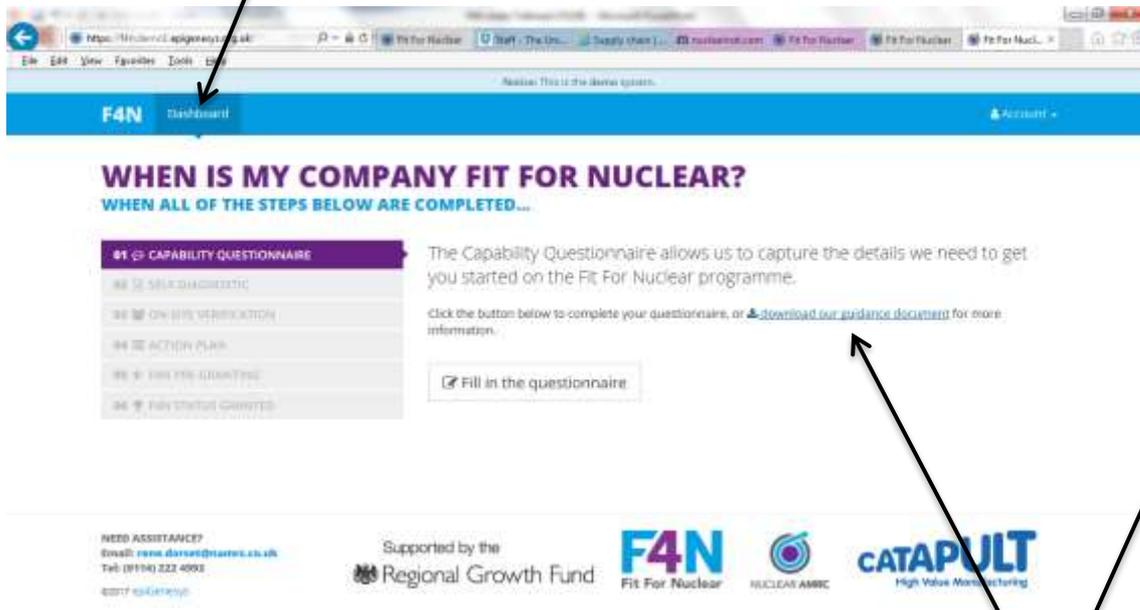
The screenshot shows the F4N website registration page. At the top left is the F4N logo and the Nuclear AMRC logo. A 'Log in' button is at the top right. The main heading reads: 'Fit For Nuclear (F4N) is a unique service to help English* manufacturing companies get ready to bid for work in the civil nuclear supply chain.' Below this is a registration form titled 'START YOUR JOURNEY HERE...'. The form contains three input fields: 'Company (e.g. Nuclear Supplier Ltd)', 'Email address', and 'Existing customer?'. A purple 'Get started' button is at the bottom right of the form. A white arrow points from the 'Company' field to the first step of the list below, and a black arrow points from the 'Email address' field to the second step.

1. Company name
2. Lead contact email address



Download the Guidance Document

Hit 'dashboard' tab at any stage



Guidance for both Capability Questionnaire & Self-diagnostic



Capability Questionnaire

- Companies House registration number, VAT no.
- Address, telephone no, website.
- Nuclear sector experience (if any)
- Relevant LEP (Local Enterprise Partnership)
- Lead contact details.
- Business annual turnover & headcount (split direct/indirect employees).
- Confirm business is or is not SME status.



Capability Questionnaire

- Business performance data. Existing, current in-house KPI report data on profitability, safety, quality, on-time delivery, people (e.g. absentee %). Multiple reporting possible. ***PLEASE TAKE TIME TO OBTAIN & REPORT A FULL DATA SET.***
- Suppliers
- Business products & services/capabilities & sectors serviced. Multiple selections possible.
- Customers
- Standards/certifications achieved & maintained (e.g. ISO9001, ASME, EN1090)
- De Minimis aid
- Agree or decline data sharing, declaration of accuracy
- ***You can save progress & return later at any stage until you 'submit' the questionnaire, the data is then locked.***



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Business
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Further
meeting,
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checklist
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delivery.
Ongoing BE
action plan
delivery

Timeline to suit business needs, priorities & resources.
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Excellence Model & development areas



Self & verification assessment exercises

Business Excellence model

- 6 sections, 10 elements & a 'statement of excellence' in each.
- Each element offers 4 alternative business status statements.
- Assessment process selects that statement best describing current business status. Example –

5. Health and safety culture

5.1 Policy and strategy:

1. (Scores 0/10) No formal H&S policy exists.
 2. (Scores 2/10) H&S activities take place but there is no formal policy.
 3. (Scores 7/10) There is a H&S policy and established management system in place. The Organisation is working towards a formal accreditation (OHSAS 18001).
 4. (Scores 10/10) There is an accredited H&S policy and management system in place (OHSAS 18001).
- **Where business is assessed at 1st, 2nd or 3rd statement, the follow-up action plan is expected to include items moving it towards the 4th statement.**



Engagement journey

Company self-assessment

NAMRC Industrial Advisor visit & report

Working towards F4N granting

Capability questionnaire & eligibility Y/N

Online self-assessment

Review. Suitability Y/N.

On-site verification assessment

Business Excellence action plan generation & delivery.

Further meeting, nuclear checklist action planning & delivery. Ongoing BE action plan delivery

Timeline to suit business needs, priorities & resources.
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Onsite verification assessment

| Time | Activity | Information to review | Who |
|-------|-----------------------------------|--|--|
| 09:00 | Meet and Introductions | Meet over coffee and plan for the day. | Directors & Senior Management |
| 09:30 | Review of Strategy and Leadership | Vision, Values, Strategic Plan & deployment paperwork, Review of Leadership & development. | Directors & Senior Management |
| 10:15 | Tour of Manufacturing Facilities | Walk through the Manufacturing processes. | One of Senior Management team to escort. |
| 11:00 | Design and Project Management | The Project management system and status of projects | Technical Director (or equivalent) |
| 11.45 | Process Excellence Strategy | Lean Manufacturing strategy Values stream analysis and Lean improvement activity plans. | Quality manager / Senior Management |
| 12.30 | Lunch | Working Lunch and morning reflection | |
| 13.00 | People Excellence | Employee involvement programmes, employee development and training activities. | Senior Management/HR |
| 13.45 | Quality Management | Quality Management system | Quality Manager |
| 14:15 | Health & Safety Culture | H&S management system | Senior Management / H&S Management |
| 14:45 | Initial feedback. | Summary scoring & early action plan recommendations. | Directors |
| | Next Steps | Who/what/when next steps. | |
| 15:00 | Finish | | |



Onsite verification assessment guide

| Strategy & Leadership | | |
|---|--|---|
| This section is to establish if the Company has a strategic vision & deployed strategic plan. We also wish to assess the Leadership engagement in any change programme. | | |
| | Requirement | Evidence |
| COMPANY VISION & STRATEGIC PLAN | We are looking for companies to have a fully developed strategic plan that has identified Nuclear as a key growth requirement. | Strategic plan available for discussion |
| STRATEGIC AWARENESS | We are looking to identify that the senior management have the experience to develop a formal business strategy. | The extent to which senior management have the skill & been involved in the strategic planning process. We will discuss this during the assessment. |
| STRATEGY DEPLOYMENT | We are looking for the extent that your strategic deployment process engages people in the organisation. | We would like to see a copy of the deployment documents & for you to explain how this is deployed & reviewed. |
| STRATEGIC REVIEWS | We are looking at how the strategy is reviewed, who's involved & the frequency | We will discuss the process & would like to see any supporting documents. |
| LEADING CHANGE | We are looking to establish the extent to which Leadership involve employees in change programmes | We wish to see who is involved in leading improvement programme & how their programmes the link to the business strategic goals. |
| VISIBLE LEADERSHIP | In support of leading change we are looking at the leadership capability & impact they have through coaching of their staff to achieve goals & objectives. | To establish how leaders have been developed & how the plans & activities are currently being undertaken. |
| ROLES & RESPONSIBILITIES | We are looking to assess how well the roles & responsibilities are defined throughout the business. | Examples of written documents. |
| LEADERSHIP DEVELOPMENT | We are looking at the leadership development process & how leaders are appraised & developed & whether there are any skills gaps & weaknesses. | We would like to see development plans & appraisal documents to support the submission. |
| COMMUNICATION | We are looking at how the business communicates key business information to its staff & how engaged employees are. | We would like to review the communication process & its effectiveness & establish how employees contribute & feedback. |



Onsite assessment report

- Sent initially in *DRAFT* format, business encouraged to challenge errors or inconsistencies.
- Typically 30-35 pages.
- Business-specific observations & recommendations.
- Accessed via the F4N portal but can be downloaded as pdf.
- Scoring & subsequent action plan suggestions line-by-line against each of the 60 excellence model lines.
- Once any issues addressed business hits 'accept report' & moves on to **ACTION PLAN** stage.



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Timeline to suit business needs, priorities & resources.
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Action Plan creation & reporting

- Done online on the F4N portal
- Portal offers generic hints & tips, but prime reference material is your Onsite Assessment report, especially the '**Recommendations**' section.
- Structured as the 60-point excellence model, standard action plan reporting (what, who & by when)
- Businesses may target 4th phrase (score 10) or 3rd phrase (score 7), **BUT**
- The portal will not accept draft action plans that target below F4N 'Granting' criteria, i.e.
 - 85% score overall
 - 85% in Health & Safety Culture section
- Once action plan submitted & accepted business asked to update regularly (ideally monthly). IA feedback provided on original plan & each update.
- Updates to report % completion, timelines & specific actions taken.



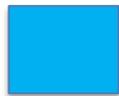
Nuclear Checklist

The Nuclear Delta

- 49 elements across 12 sections.
- Includes nuclear-specific.
- Business self-rates status. Example –

Health Safety & Environmental

Health safety & environmental briefing to visitors & contractors is undertaken on arrival.



Class leading performance demonstrated



Plan delivery at advanced stage of completion



Further improvements required with committed plan in place



Important improvements required



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Pre-granting & granting

- Business considered for 'pre-granting' status when action plan updates report
 - 85% score overall
 - 85% in Health & Safety Culture section
 - 85% overall completion of action plan delivery
 - A 'Nuclear Checklist' self-rating exercise is reported on the portal and a checklist action plan has been created (IA will assist with reference material).
- IA arranges visit to collect evidence of action plan delivery & confirm business is genuinely at reported scoring level.
- IA completes recommendation form, submits with evidence (ideally photographic) to Nuclear AMRC F4N Granting Panel.
- F4N status granting or referral.



UK nuclear market – key statistics

- ❑ **New build:** c £16bn to £24bn per plant across 8-10 years+
- ❑ **Operational support:** c £0.6bn for existing fleet and lifetime extensions
- ❑ **Decom & waste:** c £1.6bn (of £3.0bn+) p.a. spend in supply chain
- ❑ **Naval & defence:** Submarine build-cost c £1bn ea. With through-life operational and fleet support equates to c £5bn p.a.



Companies to consider for NDA estate opportunities



These include : **Sellafield Ltd** and their framework & key T1/2/3/4 supply chain partners, such as:

| | | | | | | |
|--------------------|----------------------|--------------|--------------------|-----------------------------|----------------------|---------------------|
| Wood | Jacobs | Assystem | Mott McDonald | Cavendish Nuclear | URS | Morgan Sindall |
| Arup | Nuvia | Jacobs | Hertel | Studvik | Doosan Energy | Shepley Engineering |
| React | James Fisher Nuclear | Westinghouse | Areva | National Nuclear Laboratory | Westlake Engineering | Nuken Technologies |
| NSG Environmental | Nuclear Technologies | Eriks | Ansaldo NES Ltd | Atkins | Energy Solutions | Thomas Graham |
| Graham Engineering | NIS Ltd | Keir | Oldham Engineering | Bendall Engineering | | |

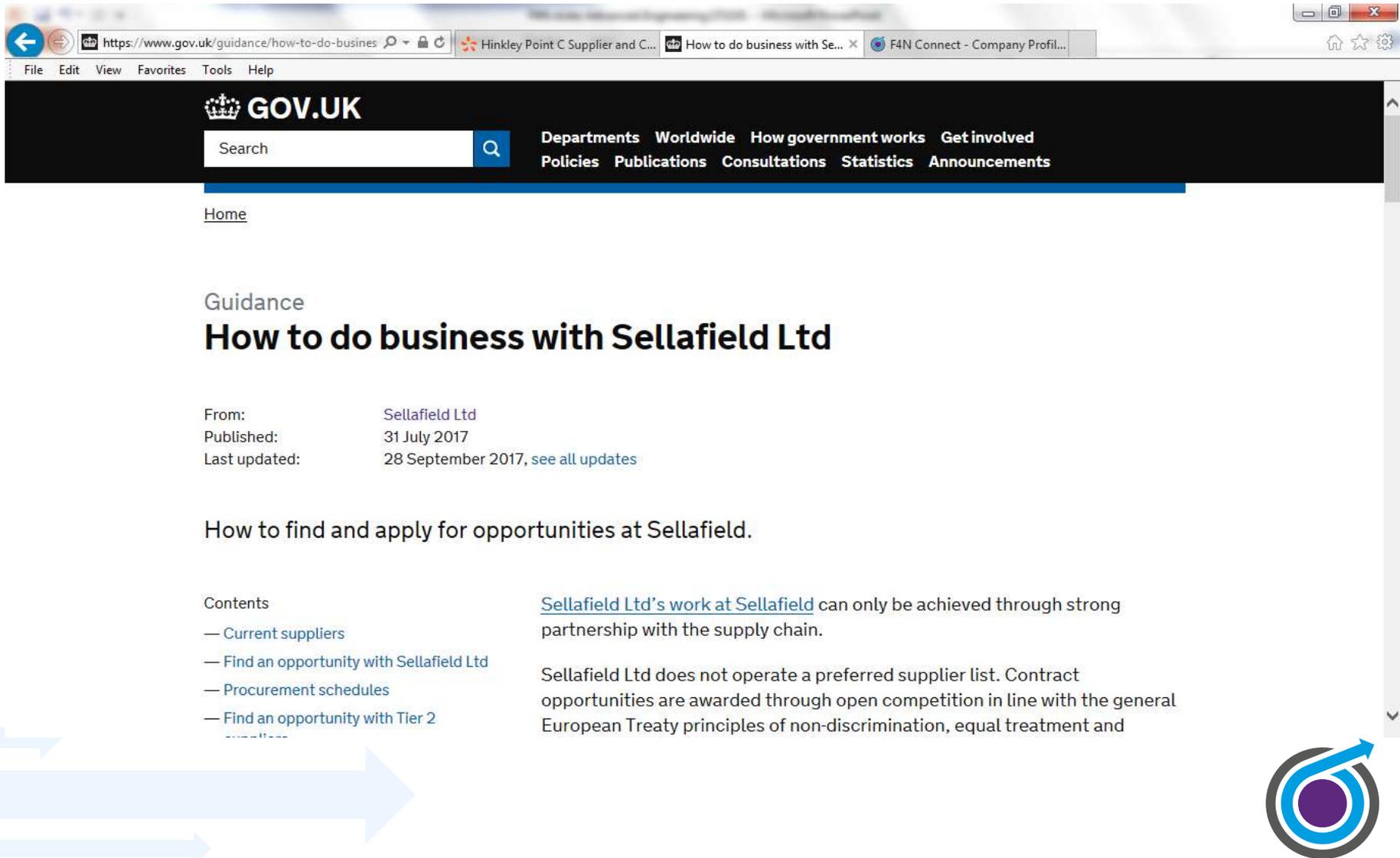


Doing business with Sellafield

- ❑ www.gov.uk/guidance/how-to-do-business-with-sellafield-ltd
- ❑ Familiarity with www.gov.uk/government/organisations/sellafield-ltd
- ❑ For opportunities get familiar with content of '*How to do business with us*' page
 - Current suppliers information
 - Identify opportunities through **Complete Tender Management** system
 - Procurement schedules
 - Details of Sellafield's Tier 2 suppliers
 - How to register



Doing business with Sellafield



The screenshot shows a web browser window with the URL <https://www.gov.uk/guidance/how-to-do-business>. The browser tabs include 'Hinkley Point C Supplier and C...', 'How to do business with Se...', and 'F4N Connect - Company Profil...'. The GOV.UK header features a search bar and navigation links: 'Departments', 'Worldwide', 'How government works', 'Get involved', 'Policies', 'Publications', 'Consultations', 'Statistics', and 'Announcements'. The main content area is titled 'Guidance' and 'How to do business with Sellafield Ltd'. It includes metadata: 'From: Sellafield Ltd', 'Published: 31 July 2017', and 'Last updated: 28 September 2017, see all updates'. The main text reads: 'How to find and apply for opportunities at Sellafield.' Below this, there is a 'Contents' section with links: '— Current suppliers', '— Find an opportunity with Sellafield Ltd', '— Procurement schedules', and '— Find an opportunity with Tier 2...'. A paragraph of text follows: 'Sellafield Ltd's work at Sellafield can only be achieved through strong partnership with the supply chain.' Another paragraph states: 'Sellafield Ltd does not operate a preferred supplier list. Contract opportunities are awarded through open competition in line with the general European Treaty principles of non-discrimination, equal treatment and...'. A large blue arrow graphic is at the bottom left, and a circular logo with a blue and purple swirl is at the bottom right.

From: Sellafield Ltd
Published: 31 July 2017
Last updated: 28 September 2017, [see all updates](#)

How to find and apply for opportunities at Sellafield.

Contents

- [Current suppliers](#)
- [Find an opportunity with Sellafield Ltd](#)
- [Procurement schedules](#)
- [Find an opportunity with Tier 2...](#)

[Sellafield Ltd's work at Sellafield](#) can only be achieved through strong partnership with the supply chain.

Sellafield Ltd does not operate a preferred supplier list. Contract opportunities are awarded through open competition in line with the general European Treaty principles of non-discrimination, equal treatment and

Companies to consider for NNB opportunities



These include :

| | Nuclear Steam System Supply | Turbine Hall | Marine Works | Main Civil Works | Heating & Ventilation | Electrical & Cabling Instal'n | BNI mechanical pipework & eqpt installation | Earthworks |
|--------------------------|-----------------------------|--------------|--------------|---|--|-------------------------------|---|-----------------|
| Primary Partners & Scope | Framatome (Areva NP) | GE Power | Costain | <u>BYLOR</u> <u>Bouygues</u> <u>TP & Laing</u> <u>O'Rourke</u> | <u>ACTAN</u> <u>Cofely</u> <u>Axima / Doosan / Tunzini</u> | Balfour Beatty Bailey | Cavendish Bocard Nuclear | Keir BAM Nuttal |

- See www.edfenergy.com/content/supply-chain-infomation for breakdown of contract-specific information. 164 contracts at end Oct 17.



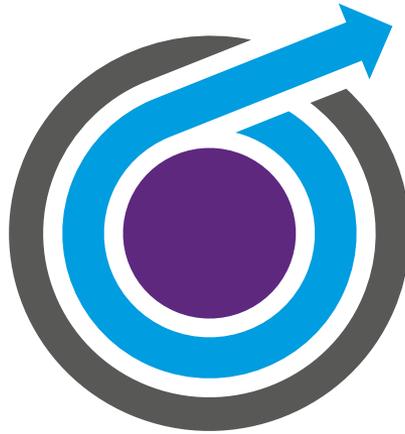
Further companies to consider for NNB opportunities



These include :

| | | | | | | | | |
|------------------------------|---------------------------|---|--------------------|---------------------------|-------------------------------|---------------------------|------------------------------|-------------------------------------|
| Potential / Preferred T1-2-3 | Large Cooling Water Pumps | Main Feed Water System Pump & Cooling Water Pumps | Power Transmission | Temp. Jetty constr. | Heat exchanger sub-assemblies | Waste Treatment Systems | Reinforcing Steels 200,000te | Fuel Pool Liners - manuf & installn |
| | Weir Pumps | SPX Clyde Union | ABB UK | Dean & Dyball Civil Eng'g | Rolls-Royce | Rolls-Royce & Nuvia | Express Reinforcement | Darchem & Efinor (Fr) |
| | | | | | Intake Filtration Systems | Medium Voltage Switchgear | | |
| | | | | | Ovivo Water | Schneider Electric UK | | |





NUCLEAR AMRC

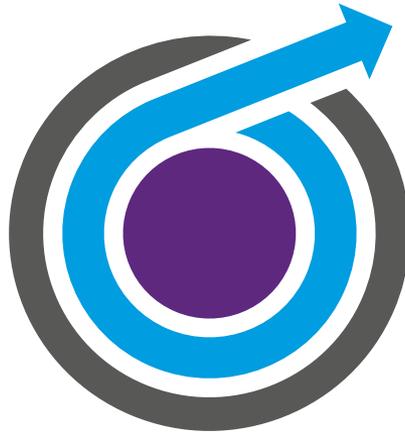
ADVANCED MANUFACTURING RESEARCH CENTRE

Advancing UK manufacturing



Supported by the
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