Section One: Industry Overview

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*Tables in this report are indicative only and not an exhaustive list of Magnox Ltd suppliers.*

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Nuclear In Wales

With the drive for Net-Zero and carbon reduction the energy system in Wales and the UK is transforming. Nuclear energy is considered by Governments and industry alike as a key mechanism in achieving the drive for Net-Zero.

Wales has always been and continues to be central to the UK nuclear sector, particularly for decommissioning and new build. North Wales forms the west of the North West Nuclear Arc (NWNA); a unique nuclear sector cluster – spanning the North of England and North Wales incorporating all the facilities and capabilities across the whole nuclear lifecycle from fuels, to energy production, management of waste and decommissioning. NWNA is unique in the UK and widely recognised as a world class, self-contained, end to end nuclear system all within a very compact geographical location.

Wales is also currently attracting significant national and international interest and exposure in the nuclear sector, with considerable attention on Wylfa Newydd on Anglesey as a potential development site for large scale nuclear new build, with the site being widely considered the most suitable for large scale new build within the UK. There have also been considerable advancements in Small Modular Reactors (SMR) and Advanced Modular Reactors (AMR), with the Trawsfynydd and Wylfa sites raising attention with technology developers, including for example Rolls Royce.

In addition to new build opportunities, North Wales is also central in the nuclear decommissioning sector with two first generation nuclear sites (known as Magnox sites) now undergoing decommissioning; Trawsfynydd (Gwynedd) and Wylfa (Anglesey). With changes in the Nuclear Decommissioning Authority’s (NDA) Strategy, work at these sites, particularly Trawsfynydd, is expected to increase significantly in coming years. ***In short, Wales, particularly North Wales is rich in supply chain opportunities.***

## Small and medium siZe (SME) Companies and Local Supply Chains

Over the past decade there have been significant developments in the nuclear sector, amongst which has been a determined drive towards utilising more local supply chain involvement, and a concerted effort to increased SME representation in major nuclear programs (especially on the UK Treasury funded NDA estate). In fact, percentage SME spend is now subject to UK Government guidelines and actively encouraged. This has helped ensure that national and international investment is retained in local economies and in the SME community to stimulate those local economies and drive social value.

Nuclear decommissioning, an area that is primarily funded by UK Government investment has seen a particular focus in increasing SME engagement. Recognising the value that SMEs and local supply chains bring to delivery, many commercial tenders now include commercial score weighting for utilising local supply chains and SMEs. As such there have been significant efforts over the past years to reduce SME barriers to entry in the UK nuclear and particularly the nuclear decommissioning market.

# 1.2 Decommissioning

Decommissioning is simply the process of removing nuclear fuel, dismantling plant and restoring a site to a pre-defined end state, to allow for re-use or for it to be delicensed.

The UK has one of the most diverse and complex nuclear legacies in the world; with sites undergoing decommissioning including research establishments, early nuclear power stations and waste treatment facilities. Decommissioning currently accounts for the largest annual spend within the UK nuclear sector, at around £3.3bn, of which the UK Government funds 2/3, while the remainder is raised from commercial operations. When the entire lifetime of decommissioning is considered, future clean-up across the UK is expected to cost around £160 billion spread approximately over the next 120 years. This will present secure long-term opportunities for Wales, wider UK and international businesses. Few other sectors hold such long-term prospects for the supply chain.

## Nuclear decommissioning Authority

Since the Energy Act in 2004, the Nuclear Decommissioning Authority (NDA) has been the UK Government body tasked with the decommissioning of the UK’s ‘nuclear legacy’. The NDA is a non-departmental public body, reporting to the Department of Business, Energy and Industrial Strategy, with six key legal responsibilities:

1. Operation of pre-agreed (designated) nuclear installations pending their decommissioning
2. Decommissioning of designated nuclear installations
3. Cleaning up of designated nuclear sites
4. Operation of facilities for treating, storing, transporting or disposing of material
5. Decommissioning of designated nuclear installations used for decommissioning
6. Undertaking and commissioning research to assist in the decommissioning of its facilities

As a publicly owned organisation, paid for by the British taxpayer, the NDA must ensure a cost effective and transparent service. To achieve this, a bespoke contract structure has been established to enable the NDA to delegate its responsibilities to Site Licence Companies (SLC’s), which are in turn maybe wholly owned by NDA, but separate operating entities, which operate the sites under their control.

**Table A – NDA Estate (excluding Culham)**

**Table B – Magnox Sites (NB Dounreay will become part of the Magnox Estate)**

**Table C – EDF Generating sites – will transfer to Magnox for decommissioning (NB – with original closure dates and revised closure dates)**

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Section Two: A Guide to Decommissioning Contracting

# 2.1 Procurement Mechanisms

Typically, each SLC has the authority to award independent contracts and frameworks subject to following open, transparent, and fair procurement processes in line with UK Government procurement regulation. An approach based on the contract value is used, with the three following portals used for advertising decommissioning procurement opportunities:

1. Framework Contracts awarded by Crown Commercial Services or other procurement hubs for utilisation by the wider public sector UK **Government Procurement Service** website
2. New procurement opportunities with a cumulative value of over £10,000 **Contracts Finder** website
3. New higher-value procurement opportunities with a cumulative total over the current EU threshold **Tender Electronic Daily** website

# 2.2 Frameworks and Contracts

Depending on contract value, the accessibility of the opportunity and relationships with other organisations, SMEs can either bid alone for work packages, or partner with other organisations to bid for those opportunities. This will typically be a commercial, *capacity and capability* driven decision, to bring together a team with the best prospects of success through having strong technical competence delivered with a cost effective, value for money solution. Subject to overriding safety considerations, innovative solutions are always welcomed.

## Partnering

Typically Tier 1 and Tier 2 supply chain companies are highly responsive to SMEs and local supply chain company engagement. This is particularly true when SME suppliers have niche skillsets or are located locally to the NDA contract delivery location. Dounreay for example, has a very strong ethos and culture of engaging the local supply chain.

For some specific contracts, particularly those larger in scope, value or when entry to a new client market is considered, it may be preferable for SMEs to partner with established and larger nuclear organisations. Typically, the largest framework contracts on the NDA estate sites will be led by major nuclear, engineering and construction service companies and consultancies. However, consortia comprising multiple SMEs working seamlessly together as a ‘single entity’ have also achieved considerable success in recent years competing against larger organisations.

These larger organisations typically include but are not limited to these organisations set out in Table 1.

When looking to partner, SMEs should identify before engagement, the correct likely potential partners:

* Specific opportunity or framework looking to team on
* Potential partners that operate in the specific marketplace
* Potential partners access to the specific opportunity through procurement
* potential partners relationship with client
* Areas of complimentary capability with potential partners

Table 1: Sample List of leading companies in Wales decommissioning (Magnox) and other relevant companies.

|  |  |
| --- | --- |
| **Company** | **Website** |
| Assystem Energy and Infrastructure Ltd | https://www.assystem.com |
| Arup | https://www.arup.com |
| Altrad | https://www.altrad.com |
| Balfour Beatty Civil Engineering Ltd | https://www.balfourbeatty.com |
| Cavendish Nuclear Ltd | https://www.cavendishnuclear.com |
| Costain | https://www.costain.com |
| Doosan Babcock Ltd | https://www.doosanbabcock.com |
| Erith Contractors Ltd | https://www.erith.com |
| Jacobs Ltd | https://www.jacobs.com |
| James Fisher Nuclear | https://www.jfnl.co.uk |
| Mott Macdonald Ltd | https://www.mottmac.com |
| Morgan Sindall | https://www.morgansindallinfrastructure.com |
| Kellogg Brown and Root Limited (KBR) | https://www.kbr.com |
| NSG Environmental | https://www.nsgltd.com |
| Nuvia | https://www.nuvia.com |
| SNC Lavalin/ Atkins Nuclear Inc | https://www.atkinsglobal.com |
| Studsvik Limited | https://www.studsvik.com |
| Urenco Nuclear Stewardship | https://www.urenco.com |
| Veolia Nuclear Solutions | https://www.nuclearsolutions.veolia.com |

A more detailed breakdown of companies operating in the nuclear sector can be found on the Nuclear Industry Association Membership area:

<https://www.niauk.org/membership/our-members/>

SMEs should also look to understand if standards, or accreditations are required to provide their specific product or service to nuclear (ISO, BSE etc). Schemes such as Nuclear AMRC’s Fit for Nuclear can assist (<https://namrc.co.uk/services/f4n/>), and partner organisations may be able to advise. In some circumstances there may also be requirements to hold specific business security certificates (including Cyber Essentials) and also to have staff security vetted.

## Industry Bodies

To be successful in securing decommissioning contracts, gathering intelligence and forming alliances with complimentary companies is essential. To this end effective networking is essential. There are a number of good industry bodies that have developed to facilitate this, both in Wales and across the UK nuclear supply chain. The Wales Nuclear Forum was set up to provide cost effective support to members and nationally the Nuclear Industry Association provides an excellent platform too. In the UK industry bodies include but are not limited to:

Table 2: Key Industry Bodies

|  |  |
| --- | --- |
| **Company** | **Website** |
| Nuclear Industry Association | https://www.niauk.org |
| Northern Nuclear Alliance | https://www.nuclearalliance.uk |
| Nuclear AMRC | https://www.namrc.co.uk |
| Snowdonia Enterprise Zone | https://www.businesswales.gov.wales |
| Wales Nuclear Forum | https://www.walesnuclearforum.com |

Section Three: Magnox Wales Opportunities

# 3.1 MAGNOX

Magnox type nuclear reactors, were the first generation of nuclear reactors built in the UK. They were graphite moderated, gas cooled and used natural uranium as a fuel.

In total, 22 Magnox reactors across 10 sites were built between 1959-1971, with each reactor having slightly modified designs. As a result, a standard ‘one size fits all’ approach to decommissioning is not possible across the fleet. Instead, reactors will be decommissioned sequentially, rather than in unison. This allows Magnox Ltd to operate a ‘lessons learned’ approach to decommissioning as projects progress. There has been a transition in decommissioning strategy for the Magnox fleet:

* The previous strategy for decommissioning Magnox reactor sites, known as **Care and Maintenance (C&M)** was developed over 30 years ago and involved deferring reactor decommissioning at all sites for approximately 85 years from reactor shutdown.
* The new Magnox decommissioning strategy is known as **Rolling Program of Decommissioning (RPOD/RPD)**. This is a site-specific strategy and, in some cases, will result in decommissioning brought forward. The intention is that together the site-specific strategies will result in a rolling program of activity as the Magnox fleet is decommissioned. This will maximize the opportunity for sharing lessons learned, developing and implementing new technologies and strengthening wider capability. RPOD will also likely result in an increase in Magnox site expenditure in the medium term. **Trawsfynydd will be the first site in the RPOD program** with planning and concept design work underway, and major decommissioning activities expected from the mid 2020’s.

## Opportunities and the Supply Chain

Decommissioning of Magnox reactors is the second most costly activity on the NDA estate, with an expenditure of around £500m per year. Over the entire lifetime of the Magnox fleet decommissioning is expected to cost around £20b.

Magnox Ltd publishes quarterly procurement plans detailing forthcoming tenders as well as recent awards. Large framework contracts are most common on the Magnox estate, with contract values regularly exceeding £10m. Details of *some* upcoming contracts and opportunities at each Magnox site in Wales and across the UK are summarised in this report. Alternatively, contract details can be found in Magnox Procurement Plans:

<https://www.gov.uk/government/publications/procurement-plan>

There are several key procurement routes that Magnox frameworks are typically tendered through. A list of some of the largest Magnox frameworks is shown in Table 3 below, while some of the key suppliers on the Magnox estate are listed in Table 4.

SMEs may also consider registering for LLWR Business and Technical Marketplace (BATS) as this is a relatively simple to access procurement route increasingly used by Magnox.

Table 3: Example Magnox estate wide frameworks

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| --- | --- |
| **Framework Name** | **Sample of Key Suppliers (not exhaustive)** |
| Retrieval and Processing of ILW | Jacobs, ATK Energy EU Ltd, C. Spencer Ltd, Cavendish, NSG, Nuvia |
| Deplant Demolition and Bulk Asbestos Removal | Doosan, Erith, Squibb, Altrad, KDC |
| Access and Insulation | Actavo Ltd, Hertel, Kaefer Ltd |
| Infrastructure, Construction and Enablers Framework | Balfour Beatty, Balvac, Costain, Kier Construction Ltd, Trant Construction Ltd |
| SNS (Specialist Nuclear Services) | Unlikely to be relevant |

# 3.2 Trawsfynydd (Magnox)

Trawsfynydd is a legacy Magnox-type twin reactor nuclear power station currently undergoing decommissioning. The site is located adjacent to Lake Trawsfynydd, a hydro-electric reservoir, in the Snowdonia National Park and is the UK’s only inland nuclear power station NB – plants need access to water). Trawsfynydd ceased generation in 1991 due to safety concerns related to pressure vessel radiation embrittlement, making it the UK’s shortest operational commercial reactor.

The NDA has designated Trawsfynydd as a ‘Lead and Learn’ site for accelerated Magnox Decommissioning (RPOD), where a number of new and first-of-a-kind challenges are being addressed. As a result, there is expected to be a significantly increased supply chain spend from 2024, and an intent for the site to utilise local SMEs in the process where possible. The project will offer companies involved the opportunity to develop first of a kind experience, which can then be applied at the other Magnox sites and exported internationally.

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| --- | --- | --- |
| Description | Value Band | Likely Capabilities Required |
| Height Reduction - Capping Roof walls | £500k to £1m | Asbestos, Civil Engineering, Structural Engineering, Architectural Engineering, Electrical, Radiological Protection Controls and Instrumentation, Lifting |
| Ponds Crane Re-inspections | <£100K | Mechanical Engineering, Structural Engineering, Lifting Equipment, Radiological Protection |
| Access & Insulation Support to Ponds Deplant Project | £1m to £5m | Asbestos, Civil Engineering, Structural Engineering, Architectural Engineering, Electrical Controls and Instrumentation, Lifting, Radiological Protection, Decontamination |
| Ponds Complex Demolition - Execution | £5m to £10m | Asbestos, Civil Engineering, Structural Engineering, Architectural Engineering, Electrical Controls and Instrumentation, Lifting, Radiological Protection, Decontamination |
| Rolling Programme of Decommissioning (RPD) Enablers FY 22-23 - Feasibility Study - Off site transport of large waste items | £100k to £500k | Optioneering, Waste Packaging, Waste Transport Regulations, Waste Management |
| Rolling Programme of Decommissioning (RPD) Enablers FY 22-23 - Feasibility Study - Metal Smelting | £100k to £500k | Waste Technologies, Metal Recycling, Process Engineering |
| Rolling Programme of Decommissioning (RPD) Enablers FY 22-23- Feasibility Study -Asbestos Abatement | £100k to £500k | Asbestos, Civil Engineering, Structural Engineering |
| Rolling Programme of Decommissioning (RPD) Enablers FY 21-22 - Digital Engineering Requirements | £100k to £500k | Systems Architecture, System Requirements, Data Management, BIM |
| Rolling Programme of Decommissioning (RPD) Enablers FY 22-23 - Feasibility - Understanding specification for- Near Surface Disposal | £100k to £500k | Waste Management (ILW/LLW), Waste Licensing, Waste Regulations (EA, HSE, ONR), Environmental |

# 3.3 Wylfa (Magnox)

The Wylfa site is located on Anglesey, North Wales and commenced electricity generation in 1971. It was the largest and last Magnox type station built in the UK. As a result, radioactive doses are lower than several other sites, due to design and operational ‘lessons learned’ from previous stations.

Activities are also ongoing at Wylfa, mainly aimed at site hazard reduction, waste facility production and maintenance of existing facilities required for operation.

|  |  |  |
| --- | --- | --- |
| **Description** | **Value Band** | **Major Likely Capabilities** |
| Control and Instrumentation (C&I) Overlay System | £1m to £5m | Electrical Engineering, Controls and Instrumentation, Security Systems |
| WP1 Demolition of Buildings North End of Site at Wylfa (inc CO2 Plant) - Execution Phase of works | £1m to £5m | Asbestos, Civil Engineering, Structural Engineering, Demolition, Lifting, Radiological Protection, Decontamination, Chemical Hazards |
| WP-3 Demolition of Remaining Buildings (incl. T/H) | £25m to £50m | Asbestos, Civil Engineering, Structural Engineering, Demolition, Lifting, Radiological Protection, Decontamination, Chemical Hazards |
| LAW - Haw Facility Build | £1m to £5m | Civil Engineering, Structural Engineering, Architectural Engineering, Electrical, Controls and Instrumentation, Process Engineering, Waste Management |
| MCI Facility | £1m to £5m | Civil Engineering, Structural Engineering, Architectural Engineering, Electrical, Controls and Instrumentation, Process Engineering, Waste Management |
| Cross Site Transport | £1m to £5m | Waste Packaging, Waste Transport Regulations, Waste Management |
| B1 DSC4 Decontamination | £1m to £5m | Waste Management, Decontamination, Asbestos. Wate Processing. |
| DCIC Storage Facility Detailed Design and Build New Store | £1m to £5m | Civil Engineering, Structural Engineering, Architectural Engineering, Electrical, Controls and Instrumentation, Process Engineering, Waste Management |
| Waste Compound Upgrade | <£100K | Asbestos, Civil Engineering, Structural Engineering, Architectural Engineering, Electrical, Controls and Instrumentation, Process Engineering, Waste Management, Waste technology and process |

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