



# GDF Programme Sustainability



Nuclear Waste  
Services

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# Foreword



The Geological Disposal Facility (GDF) programme is not only one of the UK's most important infrastructure programmes, it is also a critical environmental project. A GDF enables final safe disposal of the UK's existing legacy of highly radioactive waste, thus bringing to an end the otherwise enduring need to store that waste above ground in concrete based containers for hundreds and potentially thousands of years. A GDF will also be essential for disposing of the waste from the further nuclear power generation being planned to meet the UK's climate change commitments.

We take this massive environmental responsibility very seriously. But we also have an ambition for the GDF programme both to be an engine for sustainable development in the local community which hosts it, and to construct it in the most carbon-free way possible. The latter will be a huge challenge, given the complexity of this unique piece of infrastructure. A GDF will be constructed deep underground, where the geology is stable enough to contain the radioactive waste over millennia, protecting humanity and the environment from harm. It will consist of a complex and highly engineered system of vaults and tunnels where the radioactive waste can be disposed of safely, securely and permanently. Our commitment is to work with colleagues in the nuclear and engineering industries, with the supply chain, and with international leaders, to develop and apply carbon net zero science and innovation to our design and construction programme. We know we cannot achieve this alone. We welcome stakeholder and supply chain help on how to best to deliver GDF infrastructure in a sustainable way.

On our other key ambition to be an engine for sustainable development in the community, we are already working closely with communities, in collaboration with the Community Partnerships. Our aim is to ensure that all the work we do through the life of the programme maximises the potential sustainable long-term benefits for those local communities. Our work to assess the suitability of sites for geological disposal such as environmental impact assessments, flood risk reviews, climate change forecasting and emissions footprinting will play a part in guiding our sustainability strategy. We are at the start of this programme of work but this document sets out our commitments and priorities for delivering a sustainable GDF.

**Simon Hughes**

Siting Director, GDF Programme

An illustrative example of a GDF surface facilities



# Introduction

As part of an integrated approach to radioactive waste management the Nuclear Decommissioning Authority (NDA) subsidiary of Nuclear Waste Services is tasked with delivering a GDF. The GDF programme is one of the UK's most important environmental projects, enabling the final disposal of the UK's legacy of radioactive waste, and protecting future generations from having to continue to store and manage that waste in actively managed storage at above-ground sites across the UK. Managing the programme in a sustainable way - for communities and the environment - is also fundamental to its success.

While the programme is in its early stages, and we are starting to work with communities, this document aims to set out how we are tackling this agenda, and what commitments we can make even now. It provides a national picture and is not specific to any region. That work will follow in consultation with local communities.

We have developed our approach first building on the UN Sustainable Development Goals, and considering where we will have the biggest impact on the environment and communities. We have used these to identify some priority areas of focus, under the headings Community, Environment and Supply Chain.

- **The Community** – a GDF must work for the community, both as an infrastructure programme and as a long term operating facility.
- **The Environment** – as a major clean up operation, we want to ensure we minimise the impact on the local environment, and ideally enable the environment and eco-systems to be maintained and supported sustainably.
- **The Supply Chain** - we will ensure that the supply chain we use to deliver a GDF will also follow through on our sustainability commitments to both the community and the environment.

At this stage of the programme, our main focus is to work closely with the communities who are learning more about the possibility of hosting a GDF, and to explore how we could help them achieve their ambitions. Although we don't know what those specific community aims may entail, we anticipate benefits associated with long term, high quality jobs and local skills development, transport infrastructure and associated economic development. As we move through subsequent phases of the programme, into more technical design and development, and then eventually construction, the sustainability focus and priority areas will be updated. Over decades of development, there will be new innovations, technologies and opportunities, but the community and the environment will remain at the heart of our sustainability approach and commitments.

By setting out our approach at this stage, we aim to be clear with communities, stakeholders and our supply chain what we want to aim for, and what we think is important. But this will be the start of a dialogue, and we shall develop our thinking and plans as we get input from all those we work with.

# Our Mission

Our mission is to deliver a permanent solution for the disposal of higher activity radioactive waste through the design, construction, operation and closure of a GDF.

Our goal is to deliver a GDF in a highly sustainable way, performing against some key areas of focus:



**Environment**



**Community Engagement**



**Supply Chain**

A GDF will be built in distinct phases: site characterisation, construction, operation and closure.

We know delivering a GDF will impact people living locally and will always try to do the right thing by minimising impact and reducing disruption as much as we can.

We apply a UN Sustainable Development Goal (UNSDG) lens to encourage a more impact-orientated approach and ensure we are advancing the global sustainability agenda.

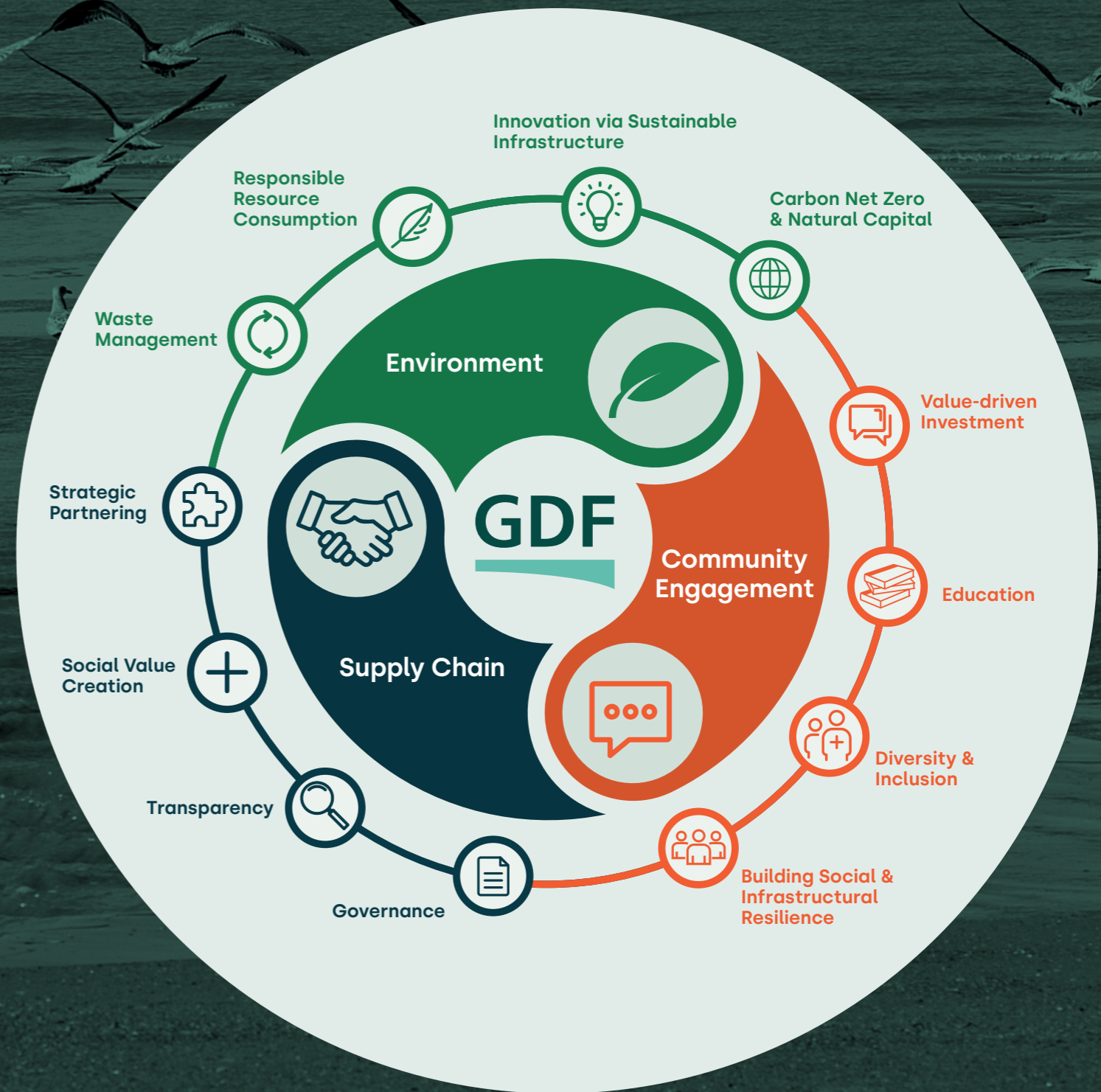
# Drivers for Sustainability

Our nationally important mission has sustainability at its core. The work we do to enable the clean-up and decommissioning of the UK's radioactive waste sites spans more than 100 years.

The United Nations Sustainable Development Goals (UNSDGs) are a collection of 17 interlinked goals designed to act as a blueprint to achieve a better and more sustainable future.

The goals were set in 2015 by the United Nations General Assembly, including the UK Government, which has embedded the goals into each government department. We're committed to delivering our mission in line with the UNSDGs and our legacy outcomes have been created to help us to achieve them.

The 17 UNSDGs (below) are matched up to our drivers for sustainability (right) throughout the document.



## The United Nations Sustainable Development Goals



# Environment



## Responsible Resource Consumption

Ensuring we consume resources responsibly, using those with the lowest possible environmental impact, guides our procurement of materials for the siting and construction of a GDF. We also consider other sourcing factors such as quality, logistics and the total embodied footprint and cost.

**UNSDG ALIGNMENT 12, 16** 

## Carbon Net Zero

There are carbon costs associated with all stages of a GDF lifecycle and GDF activities. Addressing the carbon footprint for a GDF and its associated infrastructure is a long-term action. The approach needs to address project requirements, key overall drivers that have a significant bearing on the carbon footprint and the top carbon contributors.

The top areas of focus for significant carbon reductions are set out in the figure on page 12. We will challenge our supply chain to identify solutions and opportunities for support in this area of work.

Sustainability and the interlinked topic of emissions management is captured in many of the legislative processes that a GDF will be governed by. The evolving area of carbon accounting and emissions reduction is hugely important to factor into the development of a GDF.

It is the Government's intention that reporting on climate-related risks and opportunities in line with the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations becomes mandatory by 2025, with public sector companies adopting early (by 2023 for government bodies).

The programme is working with the Nuclear Decommissioning Authority (NDA) to ensure it meets Government's expectations for reporting against TCFD.

**UNSDG ALIGNMENT 13, 15** 



A GDF is one of the UK's largest environmental protection projects. Investing in a GDF now means the costly cycle of reinvestment in storage infrastructure will become redundant. Environmental net gain will be a key area of focus for the entire duration of the programme.

Funding will be immediately available for communities who engage with the GDF programme which can be used to create environmental improvements such as new habitat creation, species protection or wider biodiversity and ecological net gain projects.

## Waste Management

Waste management is at the core of what we do - safeguarding and providing a sustainable disposal solution for radioactive waste (UN Agenda 21 - Chapter 22). We also apply the waste hierarchy to all our other activities.

The construction phase will require the excavation of material. We aim to reuse as much of this on site as possible and apply the waste hierarchy where onsite reuse is not feasible. Again, we will consult on this with local communities.

**UNSDG ALIGNMENT 12, 9, 3** 

**Key GDF carbon considerations**



**Barrier Materials**

- Cementitious backfill materials
- Bentonite and buffer design
- Ethical sourcing and low carbon logistics.



**Construction**

- Surface facilities construction materials
- Surface facilities construction
- Building with decommissioning in mind.



**Operational Power**

- Accessways, shafts and drifts
- Surface facilities
- Common services area.



**Transport**

- Transport of materials and waste to site
- Transport of contractors to / from site
- Removal of excavated spoil from site.

**Natural Capital**

As part of our design process, we are continuously reviewing any environmental impact of the programme and its related activities. In understanding the ecology, we can be more sympathetic to the environment when building a GDF.

On top of our site characterisation and survey work we recognise that operational activities mean there will be an impact on the environment. Our natural capital approach is based on viewing the natural environment as a series of assets that provide services and benefits to businesses and society.

Natural capital includes all the biotic (e.g. biodiversity) and abiotic (e.g. geology) natural resources and processes that underpin all the other capitals (e.g. social, financial etc). These different aspects of natural capital provide benefits called ecosystem services, which, in combination with the other capitals, produce a wide range of benefits to businesses and society. Protecting, improving and ensuring the sustainable use of natural resources is critical to not only

protecting the natural environment and gaining the benefits it provides, but also to support and protect all the other capitals.

**UNSDG ALIGNMENT 13, 15**

**Innovation via Sustainable Infrastructure**

A GDF will not only enable new technologies and facilitate infrastructural innovations including advanced robotics; it is likely to allow the commercialisation of them and provide a platform for them to perform.

All low carbon technologies are required to ensure reaching the group target of net zero by 2050 less risky and more affordable.

The GDF programme can target certain areas in its design to enable innovations as they mature and are proven safe, secure and sustainable in their application.

**UNSDG ALIGNMENT 9, 11**

# Community Engagement

We aim to create real social value throughout the GDF programme, with a focus on building long-term community wealth.

Over the coming years we will look to build expertise:

- acquiring capabilities and skills required for the benefit of the community
- engaging with local businesses and organisations that could deliver goods and/or services for the programme and achieve an impact in the community
- bringing other windows of opportunity to the local area in addition to building direct expertise.

## Value Driven Engagement

We are investing in communities as well as helping build capacity amongst those who wish to engage with us.

This helps ensure local people can enjoy immediate, tangible benefits from participating in discussions about the potential for them to host a GDF.



Community Investment Funding is available for communities that form a Community Partnership. Up to £1 million a year in funding is available for projects that provide economic development opportunities, enhance the natural and built environment, or improve community well-being. This funding will increase to £2.5m per year if deep borehole drilling investigations are undertaken.

UNSDG ALIGNMENT 11, 8 





## Education

The early phases of community engagement and outreach will focus on answering questions relating to the GDF programme and explaining what we do.

Part of our role is to help increase knowledge around geological disposal and enhance the maturity of the underpinning science. We have established the Research Support Office (RSO) at The University of Manchester and in collaboration with The University of Sheffield to harness UK university capabilities through a collaborative, long-term relationship of funding and PhD mentoring.

We recognise the role education can play to enhance the employability prospects of the

communities we engage with and can stimulate learning and skills development through the community investment funding process.

However, our vision for the project is to secure as many jobs locally as possible. This will require another piece of long-term engagement with communities as we plan with education and employment in mind. The number of jobs created by the GDF programme will be significant, both directly and through the supply chain.

We have representatives at the Nuclear Institute Young Generation Network (YGN) and The Young Nuclear Professionals Forum (YNPF). We are corporate members of the National Skills Academy for Nuclear (NSAN) and work with a number of other learned societies.

A number of our staff are Science, Technology, Engineering and Maths (STEM) Ambassadors and work with young people across the country by being inspirational role models.

We assist both the education and careers aspirations of students by supporting programmes.

**UNSDG ALIGNMENT 4, 11** 



## Diversity and Inclusion

We invest in diversity financially and culturally, and embrace the unique places and people we collaborate with.

The community engagement process will involve long-term partnerships to help us achieve our commitment to support local communities and our mission to deliver a GDF.

The early part of community engagement and outreach will focus on answering questions relating to the GDF programme.

We aim to answer questions relating to the GDF programme in a way that allows all those who want information to gain access to it in several different ways, including face-to-face.

Community engagement is a collaborative process. We aim to foster a culture of transparency, understanding and two-way communication. Providing information to communities about the GDF programme is just as important to us as understanding what communities want and is the greatest value to them.

**UNSDG ALIGNMENT 10** 



## Building Social and Infrastructural Resilience

The GDF programme has the potential to bring positive, measurable and transformational change to the communities in which we operate. This goal is centred around enabling social and infrastructural resilience as we go. This starts firstly by understanding what skills, expertise and resources lie in the community and how we can work together to build capacity and capability for individuals, organisations and whole communities.

At that point our focus will turn to enabling the creation of the maximum number of opportunities for local businesses. To what extent we achieve this will be one of our key success indicators.

**UNSDG ALIGNMENT 10** 

# Supply Chain

The GDF programme will reach far beyond 2050. It has the opportunity to respond to the current needs of the sector while maintaining a unique adaptability and ability to employ a new wave of technologies expected to develop at pace over the next 30 years.

A significant proportion of our activity will be through the supply chain. We will use the financial instruments and legislation available to us in order to lever extra support and investment for the communities where we work. Examples include suppliers providing consultancy for charities and careers support for schools.

## Governance

We know that having governance in place at different organisational levels will help us deliver our ambition and ensure a coordinated approach to sustainability. The structure we currently have in place ensures we address our risks and issues and take maximum advantage of our opportunities to deliver on environmental, social and economic sustainability.

We will do this by developing our policies, strategies and toolkits to incorporate sustainable procurement standards and work with our supplier base to ensure sustainable practices are being adhered to and maintained throughout our contracts.

**UNSDG ALIGNMENT 16, 17** 

## Transparency

Being open and transparent allows us to build trust over the course of the programme. Our communications team provide regular updates via formal channels and informal face-to-face events with Q&A sessions are now commonplace following the return of safe, in-person meetings post-pandemic.

**UNSDG ALIGNMENT 16, 17** 

## Social Value Creation

We have a huge variety of existing suppliers. As we progress the programme we will invest in and rely heavily on our supply chain. In doing so, one of our supporting goals is to deliver meaningful social value for our Community Partnerships, supply chain and other stakeholders.

We will do this by working with them to understand what measures are important to them. We will measure social value using the National Themes, Outcomes and Measures (TOMs) framework and the Social Value Portal. The framework is flexible enough to cover the variety of contracts and grants that we award, from site-based work to in depth research pieces.





Quantifying social value creation via a set of indicators and with proxy financial values will help us and our suppliers maximise our achievement through connecting the GDF programme to real and tangible value. The TOMs framework will guide us to push for more growth, resilience, jobs, environmental protection and innovation.

**UNSDG ALIGNMENT 11, 16** 

### Strategic Partnering

To deliver our mission of a GDF we will rely on our supply chain, as well as many other partners and stakeholders.

We hope to continue learning from other nationally significant infrastructure projects including those outside the nuclear sector to ensure we have the knowledge and understanding of innovative practices and applications to make decisions of whether to implement them on the GDF programme.

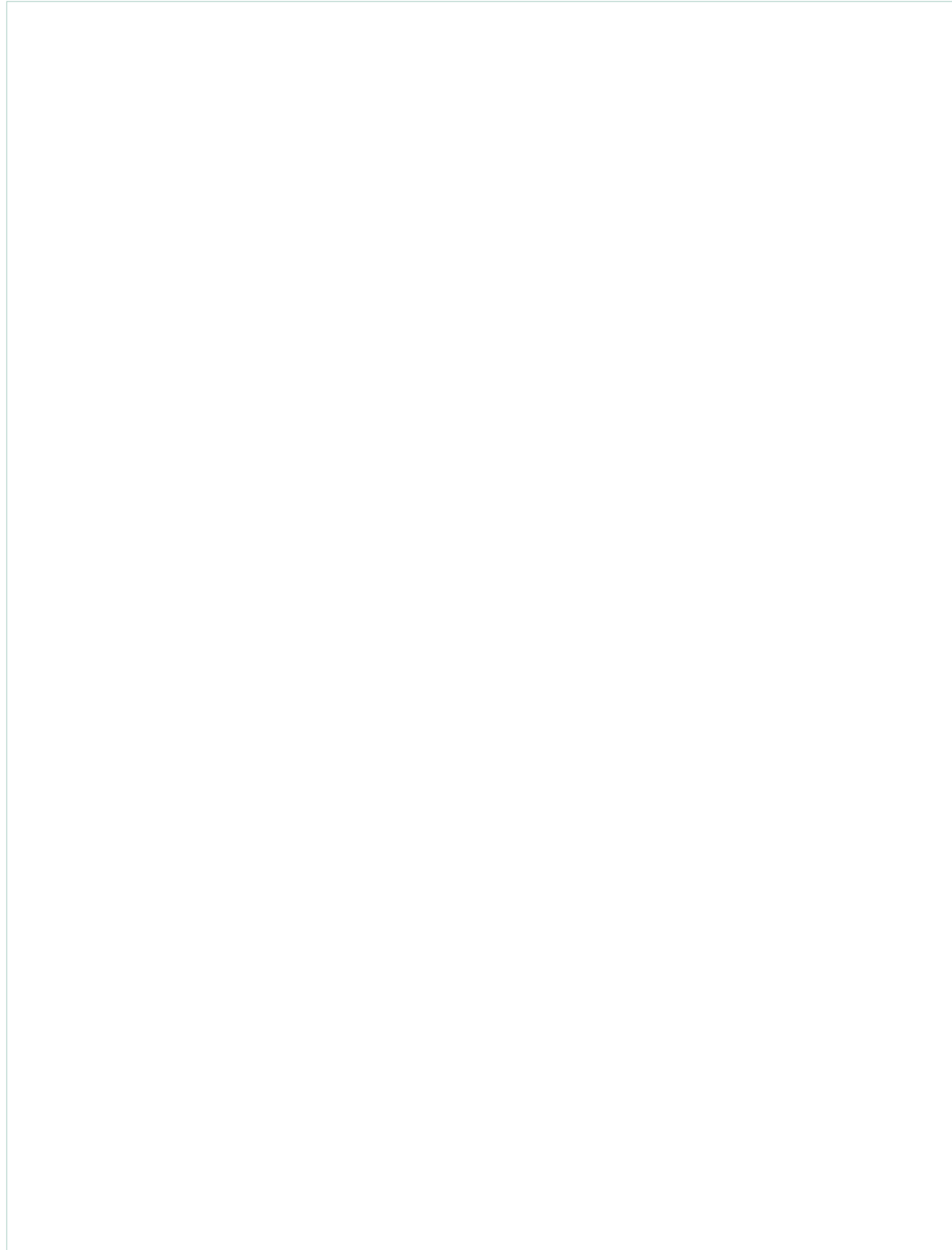
We are looking towards the renewable energy sector to ensure our power comes from a decarbonised grid and wherever possible other sources of clean energy.

Technological advancements will also ensure our project is taking advantage of the best applications, and that we are working as efficiently and equitably as possible.



In addition, we are focused on building strong, mutually beneficial relationships with our stakeholders. Our teams work hard to respect our environmental and socioeconomic commitments as well as generally being good neighbours and meeting the wider societal expectations around delivering a GDF.

**UNSDG ALIGNMENT 17** 





[www.nuclearwasteservices.uk](http://www.nuclearwasteservices.uk)



**Nuclear Waste  
Services**

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