
AMR RD&D Phase B Briefing and KC interest event



Agenda

Part 1: AMR RD&D Phase B

- 10:30 to 10:45 - Keynote
- 10:45 to 11:15 - BEIS Presentation on AMR RD&D Phase B
- 11:15 to 12:00 - Q&A Session
- 12:00 to 13:00 - Lunch and Networking

Part 2: Knowledge Capture

- 13:00 to 13:15 - Keynote
- 13:15 to 14:15 - BEIS Presentation on Knowledge Capture Project
- 14:15 to 14:45 - Q&A
- 14:45 to 16:00 - Networking
- 16:00 - Event Closes



AMR RD&D Phase B Keynote

Si Dilks



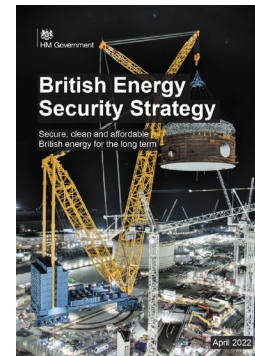
Policy Context

Point 10: Green Finance and Innovation

- 10 Point Plan and Net Zero Strategy announced a broad set of policy measures to drive the UK to net zero, including a BEIS £1bn+ Net Zero Innovation Portfolio

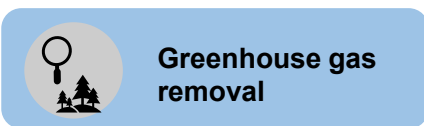
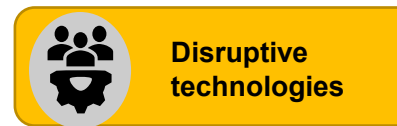
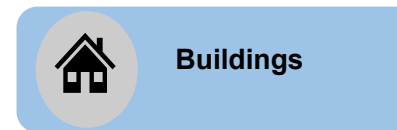
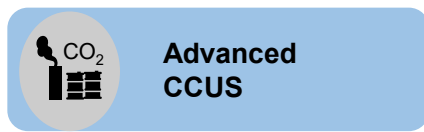
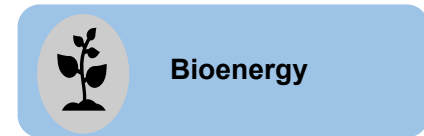
Point 3: Delivering New and Advanced Nuclear Power

- Announced the associated £385m Advanced Nuclear Fund, together with aspirations of first SMR's and an AMR demo by early 2030's.



BEIS Net Zero Innovation Portfolio

- £1bn+ of funding.
- Aims to accelerate the commercialisation of innovative low-carbon technologies, systems and business models in power, buildings and industry and decrease the costs of decarbonisation.
- Builds on previous £505m Energy Innovation Programme., which included £180m Nuclear Innovation Programme
- Potential to unlock 300,000 jobs by 2030 in exports and domestic industry; enables savings across low carbon sectors; will have a strong regional impact.
- Leverages £1bn industry matched funding.
- <https://www.gov.uk/government/collections/net-zero-innovation-portfolio>



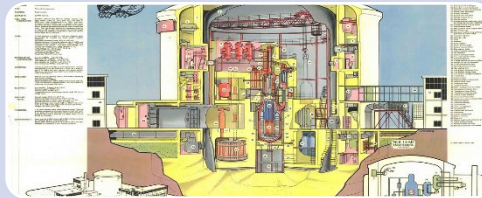
The Advanced Nuclear Fund

£385m of funding to support R&D in advanced nuclear technologies and create further optionality for nuclear to play a significant role in reaching our net zero and energy security ambitions.



SMR

Funding for the Low
Cost Nuclear Challenge
- Phase 2.



AMR

Funding work to put UK
on a trajectory to a
HTGR demonstration by
early 2030's



Cross cutting

Funding for
underpinning R&D and
engagement.

AMR RD&D Phase B Briefing

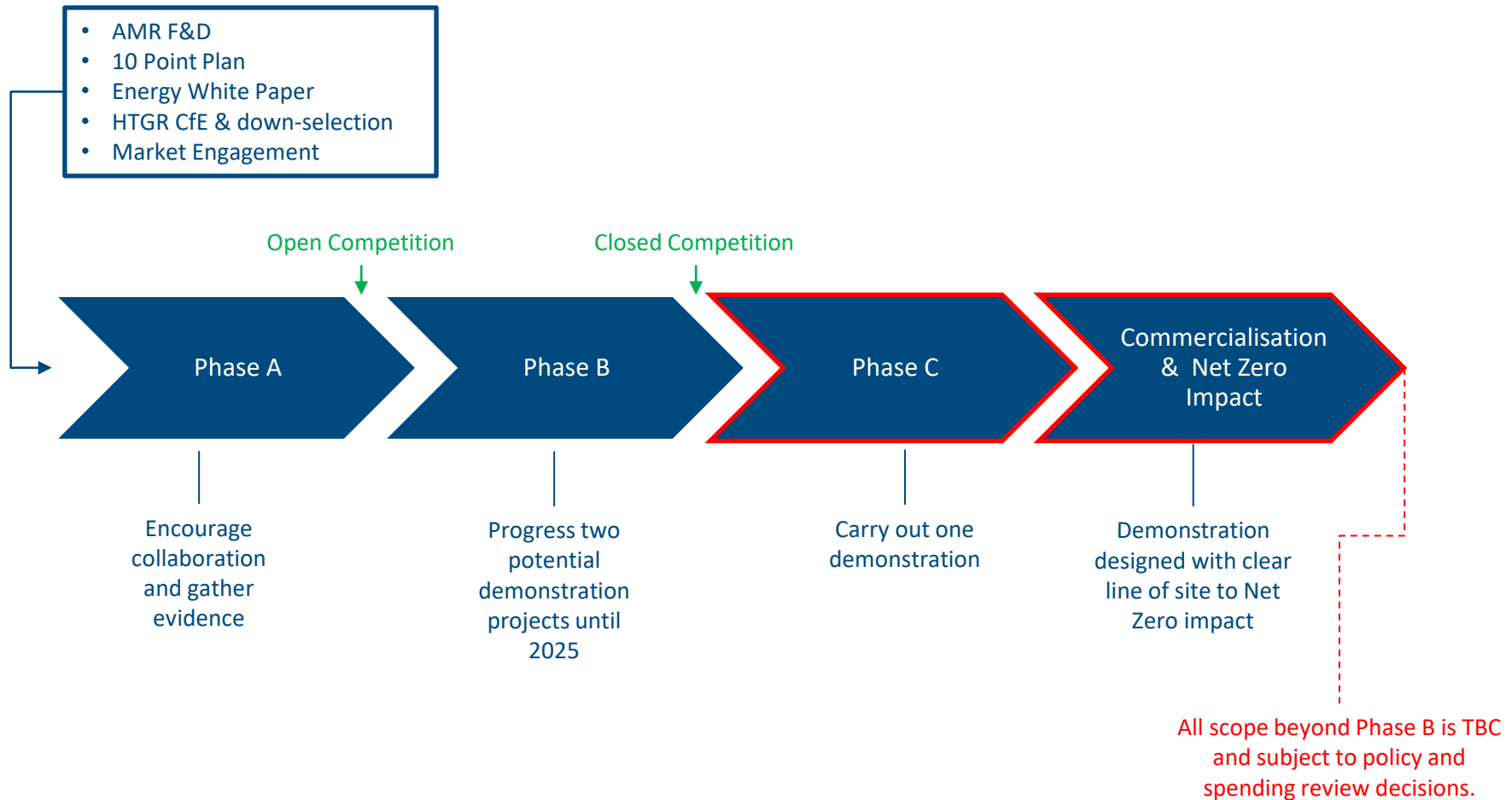
Michael Armstrong



Safety Moment



AMR RD&D Programme



Overall Aim and Goals (simplified)

Aim

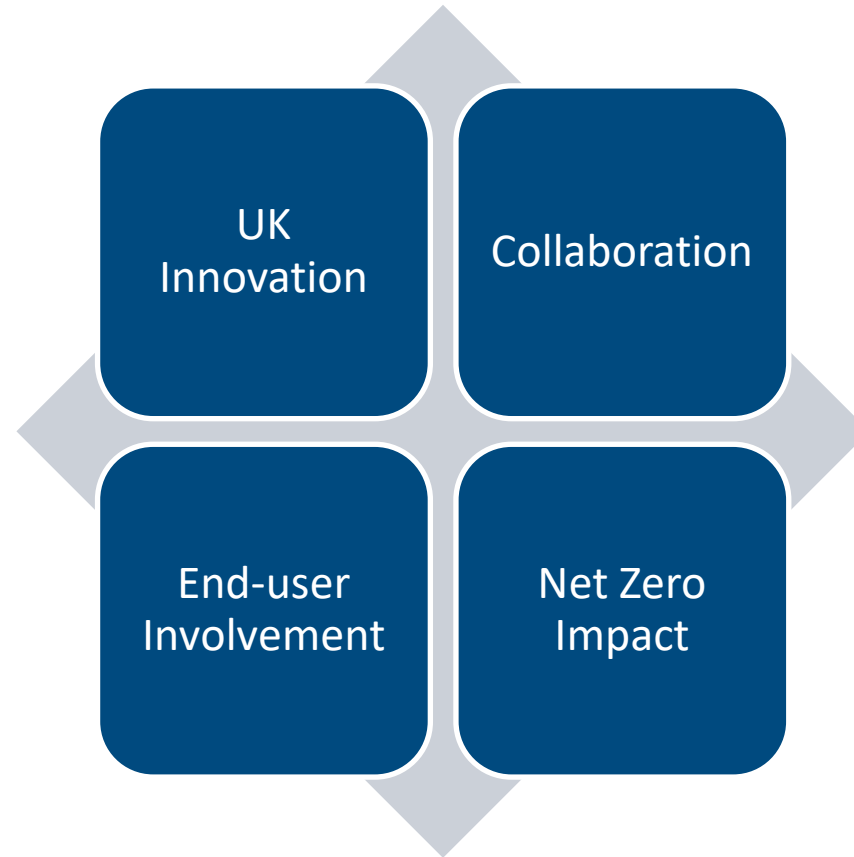
Demonstrate HTGR technology in a way that unlocks the option for commercial deployment in the UK

Goals

- Identify the optimal demonstration to maximise potential Net Zero impact
- Progress innovative technology to reduce the lifetime cost of HTGR systems
- Demonstrate that high temperature heat can be safely extracted from HTGRs in the context of a realistic use case
- Develop the UK supply chain
- Develop UK IP



Key Principles



Phase B Aim and Objectives (simplified)

Aim

Get two HTGR demonstration projects to the point that they could enter GDA Step 2*

Objectives

- Progress designs to at least the point that they could enter GDA Step 2
- Address technology development challenges
- Develop robust phase C delivery plans
- Develop skills and capability

*The programme has been structured around the GDA process to allow measurable outcomes. GDA is not mandatory – a project aimed at a direct site licence application is equally valid



Phase B Overview

Funding

- Up to £55m for up to two projects
- Match funding required

Schedule

All activities must be complete by end of Feb 2025 – more detailed schedule provided in Competition Guidance Notes

Scope

- Front-End Engineering Design
- Site selection activities
- Technology development challenges
- End-user engagement
- Engagement with nuclear regulators
- High-level fleet roll-out planning
- Support to knowledge capture project
- Additional scope as proposed by the Applicant



Phase B Overview

Deliverables

- 18 deliverables including –
 - Budgets and schedules with increasing accuracy project matures
 - Customisable submissions to regulators
 - Market report
 - Demonstration of readiness for regulatory approval
- Potential additional deliverables to be agreed with successful projects

Assessment Criteria

- 25% Cross-Functional Delivery Capability and Expertise
- 20% Technical Solution
- 30% Strategic Relevance
- 5% Project Management Capability
- 10% Value for Money
- 10% Social Value



Practicalities

- All applications via online portal
 - Run through in advance
 - Note word limits
 - Note declarations and attachments required
 - Consider structure alongside assessment criteria
- Submit questions **by 2pm, Mon 23rd Jan**
- Register to bid **by 2pm, Fri 27th Jan**
- Submit bids **by 2pm, Sun 5th March**




Department for
Business, Energy
& Industrial Strategy

Advanced Modular Reactor (AMR) Research Development & Demonstration (RD&D) Phase B

Application Form

Important: please fill in this form using the [Advanced Modular Reactor \(AMR\) Research Development & Demonstration \(RD&D\) Phase B Guidance Notes/ ITT \(13/12/22\)](#).

If you would like to see the complete set of questions you can click on [this link](#) to download a Word version.

Please note you must complete your application using this online form. If you are using the offline document to draft your responses ahead of submitting them in the online application form, please note that rich text formatting e.g. bold, underline etc. are not supported by the online application form. Please ensure that you allow sufficient time for the transfer of information from the offline version to the online application form.

Personal data provided will be processed as per the [Privacy Notice](#) in line with General Data Protection Regulations.

In the event of any differences between this application form and the Grant Competition Guidance Notes, the Grant Competition Guidance Notes shall take precedence. If you have any questions please submit via [this form](#).

The application form with supporting information must be submitted **by 2pm 5 March 2023**.

OGL

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Call to Action



Q&A



AMR Knowledge Capture Project

Lindsey Butterworth
Lucy Platts



Safety Moment



Agenda

12:00 – 13:00	Lunch and Networking	
13:00 – 13:15	AMR RD&D Overview Michael Armstrong, Head of Advanced Modular Reactors (RD&D)	Live Stream Event
13:15 – 14:15	AMR Knowledge Capture Project Overview Lindsey Butterworth, Head of International Nuclear Innovation Strategy Lucy Platts, Technical Advisor	
14:15 – 14:45	Q&A Session	
14:45 – 16:00	Networking	
16:00	Event Closes	

AMR RD&D Overview



AMR Knowledge Capture

- Large amount of historic work on Advanced Nuclear Technologies (ANT) from which the nuclear sector can learn
- UK nuclear industry is likely to undergo significant changes over the next decade
- It is important that critical knowledge is maintained through knowledge capture and dissemination
- Knowledge capture enables any programme in the UK or internationally to benefit from the feedback effects of 'learning by doing'



Purpose

- The purpose of the AMR Knowledge Capture Project is to support the development of AMR in the UK
- The project will
 - Facilitate knowledge capture and dissemination to reduce the time, risk, and cost of AMR RD&D programme delivery
 - Explore how to facilitate further knowledge sharing across the nuclear industry in the area of ANT
 - Provide UK organisations with valuable knowledge to leverage against international funding

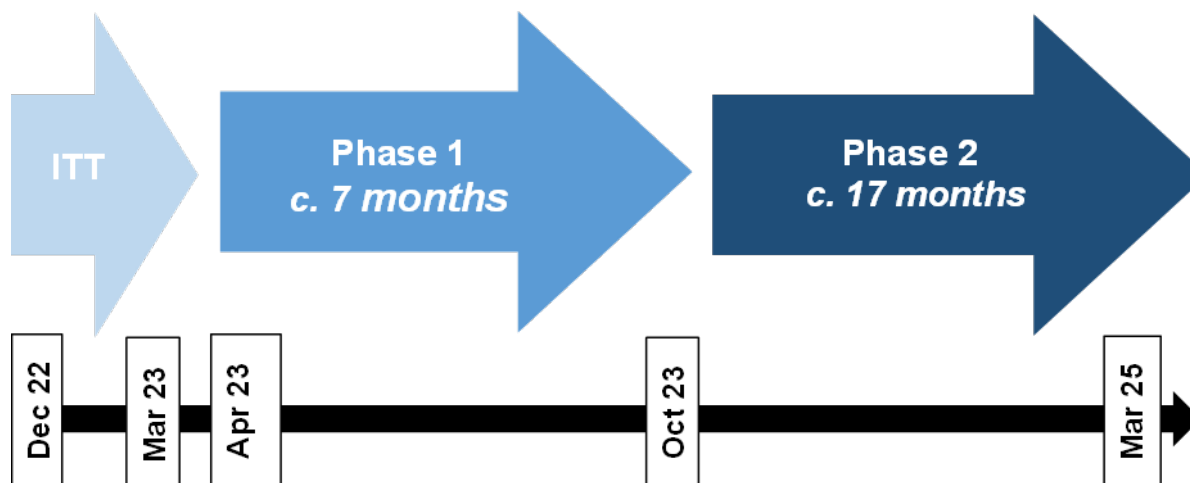
Aim and Objectives

- ❖ Reduce the time, risk and cost of AMR RD&D programme delivery and other relevant BEIS funded programmes

The project objectives are outlined as follows:

1. Identify relevant resources and conduct knowledge capture activities that can accelerate, de-risk and reduce the cost of AMR RD&D programme delivery
2. Enable access to knowledge, research and data in support of ANT deployment
3. Disseminate learning with relevant stakeholders to support decision making
4. Maintain and develop UK capability and knowledge in the ANT field
5. Leverage UK innovation and knowledge capture investment against national and international programmes

Project Structure



Requirements

Cross-cutting requirements (Phase 1 and Phase 2)

R1	Programme initiation and ongoing management	To give assurance that the Supplier has the appropriate resources and processes in place to meet the Requirements in an efficient manner.
R2	Stakeholder engagement and knowledge dissemination	To determine potential beneficiaries of the outputs from the AMR Knowledge Capture Project and ensure their involvement throughout the project lifecycle.

Requirements

Phase 1 – Discovery

R3	Scoping	To establish an understanding of what records, data, materials, and expertise are held by different organisations and individuals from across the nuclear sector that could support AMR Knowledge Capture Project aims and objectives. Also, to develop a long-list of potential knowledge capture topic areas for ANT.
R4	Prioritisation and down-selection	To identify a short-list of knowledge capture topic areas and activities based on, but not limited to, BEIS prioritisation criteria that can be delivered within the budget and timescales of the Knowledge Capture Project.
R5	Knowledge Management	To propose an approach to making the outputs of the AMR Knowledge Capture project accessible to the wider community.
R6	Stage-Gate	To review the findings and recommendations of Phase 1.

Requirements

Phase 2 – Delivery

R7	Knowledge Capture	To undertake identified priority knowledge capture activities with ongoing engagement with relevant stakeholders.
R8	Final reporting	To provide an accessible means to disseminate the findings to a diverse range of stakeholders as appropriate.

Common Challenges with ANT

High Temperature Gas Reactors (HTGRs)

- Reactor physics, thermal hydraulics, criticality, and fuel performance
- Fuel design and verification
- In-core inspection
- Graphite dust (impact on source term), low activation graphite, graphite performance
- Disposability of TRISO fuel and graphite and decommissioning of HTGRs
- Water ingress in HTGRs
- Design Codes and Standards
- Material performance at very high temperatures
- Design, Licensing and Validation of passive safety systems
- Modularisation and digitalisation
- Construction, operations, maintenance and reliability

Common Challenges with ANT

Other AMR Systems

- Physics and modelling
- Fuel design and qualification
- Material performance and operational inspection (Nuclear Island)
- Design for decommissioning and waste management
- Development and validation of specific safety systems (including passive safety)
- Design Codes and Standards
- Construction, operations, maintenance and reliability

Prioritisation Criteria

BEIS has developed the following set of prioritisation criteria to be used as part of the Phase 1 'prioritisation and down-selection' requirement.

1. Continued relevance for High Temperature Gas-cooled Reactors (HTGR) and Fast Breeder Reactor R&D
2. Unique UK experience
3. Status, quality and accessibility of resources (e.g. documentation, data, materials)
4. Availability of first-hand knowledge for interpretation and context
5. Benefits to AMR RD&D programme objectives and other relevant BEIS funded programmes
6. Benefits to international collaboration (bi-lateral and multi-lateral)

International Engagement

It is expected that some of the outputs and findings from the AMR Knowledge Capture project will be used to support the UK's international engagement activities and could form part of the UK's contribution to ongoing multilateral and bilateral programmes.

Bilateral Engagements:

- US/UK Action Plan
- UK/Canada Action Plan
- UK/France nuclear cooperation
- UK/Japan Action Plan

Multilateral Engagements:

- Generation IV International Forum (GIF)
- Jules Horowitz Reactor
- Halden

Skills and Experience

- Project Management
- Technical Expertise
- Regulatory Expertise
- Stakeholder Engagement and Knowledge Dissemination

Indicative Timeline

Stage	Activity	Date
Launch	Competition Opened	13 th December 2022
	Information event	20 th January 2023
	Deadline for questions relating to the tender	5pm on 23 rd January 2023
	Responses to questions published	30 th January 2023
Apply	Deadline for receipt of tender	2pm on 28 th February 2023
Assess / Award	Eligibility check, technical assessment and moderation	March 2023
	Notification of award and Standstill Period	March/April 2023
Contract Signing	Contract award on signature by both parties	April 2023
Contract Delivery	Contract Start	April 2023
	Delivery End	March 2025

Budget

For **Phase 1**, there is an **upper limit** of **£750,000** excluding VAT.

For **Phase 2**, there is an **outline budget** of **£3.25 million** excluding VAT.

Stage-Gate

- The Knowledge Capture Project includes a Stage-Gate between Phases 1 and 2.
- The Department reserves the right to terminate the work at the end of Phase 1 if it does not have confidence that Phase 2 will support policy objectives or represent Value for Money.

Evaluation

To view, register and apply for this opportunity, please use the Jaggaer platform : <https://beisgroup.ukp.app.jaggaer.com/>

Pass / Fail Evaluation

Quality Evaluation

Price Evaluation

Pass/Fail Evaluation

Reference	Question	Scores Available
	Mandatory Pass/Fail Questions	
Declaration 3	Conflict of Interest	Pass/Fail
Annex C	Compliance with BEIS terms and conditions	Pass/Fail
Declaration 4	Standard Selection Questionnaire	Pass/Fail
Appendix 2	Compliance with Eligibility Criteria	Pass/Fail

Quality Evaluation

Criterion	Description	Weighting
01	Approach and Methodology	27.5%
02	Team and Resources	20%
03	Delivery	22.5%
04	Social Value	10%
05	Value for Money	5%
06	Price	15%
Total		100%

Score	Description
1	Not Satisfactory: There is no evidence to very little evidence that the question has been satisfactorily answered and major omissions are evident.
2	Partially Satisfactory: There is little evidence that the question has been satisfactorily answered and some omissions are evident. Much more detail is needed.
3	Satisfactory: There is reasonable evidence that the question has been satisfactorily addressed but some omissions are still evident and further detail is needed.
4	Good: The question has been well addressed with a good evidence base, with only minor omissions or lack of detail.
5	Excellent: There is clear evidence that the question has been completely addressed in all aspects, with questions answered clearly, concisely with a strong evidence base.

Pricing Evaluation

Phase 1 - Cross Cutting Requirements	5%	<i>R1 - Programme Initiation and Ongoing Management</i>
		<i>R2 - Stakeholder Engagement and Knowledge Dissemination</i>
Phase 1		<i>R3 - Scoping</i>
		<i>R4 - Prioritisation and down-selection</i>
		<i>R5 - Knowledge Management</i>
		<i>R6 01 - Phase 1 Review</i>
		<i>R6 02 - Phase 2 Project Plan</i>
Phase 2 - Cross Cutting Requirements	10%	<i>R1 - Programme Initiation and Ongoing Management</i>
		<i>R2 - Stakeholder Engagement and Knowledge Dissemination</i>
Phase 2		<i>Balance of available budget contribution towards projects</i>

Q&A

