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FOURTEENTH ANNUAL REPORT 2017-18

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Chair's Foreword

This year, I am introducing this Annual Report on behalf of the Committee as Interim Chair. Professor Laurence Williams stood down at the end of October 2017 and I stepped up from Deputy Chair during the recruitment process for Laurence's successor. Professor Julia West is temporarily filling my former position and I thank her for her support. Our collective thanks must go to Laurence for his tenure and contribution and the responsibility for leading us through the first half of the year. I would also like to thank Laurence personally for inviting me to be his deputy during that time. I would also acknowledge the rest of the Committee, as well as colleagues in RWM, NDA, from the Devolved Administrations and in BEIS, from both the sponsorship and policy functions, for working with us. I must thank members especially for maintaining CoRWM's collective energies and impact during this time, not least through more open and dynamic engagement.

It has been a full and busy year for the Committee. We have established a variety of administrative and process improvements as a result of the supplemented Secretariat, showing more of what we can do when fully supported. We said farewell to our temporary secretary, who left at the same time as our Chair and we welcomed a new expanded team who made swift progress in refreshing the website, setting up a social media presence on Twitter, improving links within and across government, ordering our documents and bringing a more systematic and structured approach to our meetings and administration. We hope that, with a new team about to arrive, we can continue this process of improvement into the 2018-19 year, alongside consideration and implementation of the recommendations of the Tailored Review of CoRWM undertaken by BEIS in the last quarter of 2017-18.

Much of the year was taken up in our normal plenary and Subgroup meetings and processes preparing for the Geological Disposal Facility (GDF) Working with Communities (WWC) and National Policy Statement (NPS) consultations in England and Wales launched in January. We hope that our contributions helped enhance the quality of some of the products and processes involved in the background and build-up. We also note the UK Government's response to our last Annual Report (see Annex F). There is much more to consider as we engage further in the coming year with the work required to assess the results of the consultation and progress the plans for delivery as the governments respond.

In the past year, we made very purposeful and informative visits to Dounreay, Sellafield and the Low Level Waste Repository. We saw a great deal of progress and engaged with the operators, regulators and government colleagues. We plan to engage as widely with stakeholders in the coming year, reflecting opportunities, ongoing challenges, new key personnel and the relationships with the devolved administrations so as to take whatever steps are necessary to operate well, reflecting the contribution they and UK government need from us.

In all of our work we endeavour to provide valuable and accessible indications of our assessments and positions and we plan to get better at sharing and explaining these.

This year, more than most in recent time, has been one where the focus on delivering a UK GDF became clearer and stronger and its prospects potentially more likely. CoRWM has played a direct role in scrutiny and advice as best we have been able, seeking to ensure appropriate outcomes from the decision makers and delivery bodies.



Professor Campbell Gemmell 21 June 2018

Executive Summary



We report, in this pivotal year on the range of committee activities and documents produced. With an enhanced secretariat for part of the year, we were able to make a range of administrative improvements – including revamping our newsletter, web and social media presence and re-cataloguing our 3422 documents - as well as visiting Sellafield, Dounreay and the Low Level Waste Repository, near Drigg.

Through our sub-groups as well as committee meetings in Edinburgh, Cardiff and London, we engaged with sponsors and partners and provided input to the governance planning and delivery processes around National Geological Screening, working with communities, land use planning and management of the inventory as well as producing a report on the potential impacts of withdrawal from EURATOM. We contributed just over 500 work days input to our scrutiny and advisory work supporting all four governments and RWM, not least in preparing for the consultations undertaken in the latter part of the year.

1. Introduction

- 1.1. This is the fourteenth Annual Report of the Committee on Radioactive Waste Management (CoRWM). It describes the Committee's work in the financial year from April 2017 to March 2018 and outlines CoRWM's current views on the status of UK plans and arrangements for the long-term management of higher activity radioactive wastes.
- 1.2. It should be stressed and understood that this report applies to activity up to 31 *March 2018.* Whilst this statement applies every year and is amplified by any delays in publication, there was a great deal of work underway throughout the year across the GDF landscape, particularly up to and after the year's end.

Scope of CoRWM's work

- 1.3. CoRWM's sponsors are the Department for Business, Energy and Industrial Strategy (BEIS) for the UK Government, the Scottish Government, the Welsh Government and the Department of the Environment (DAERA) in Northern Ireland. The Committee's work programme for 2017-20 (CoRWM Doc 3312) was agreed with its sponsors and carried out within CoRWM's agreed budget (Annex A).
- 1.4. CoRWM's 2015 Terms of Reference (Annex B) define its purpose:

"to provide independent advice, based on informed scrutiny of the available evidence, to UK Government and Devolved Administration Ministers (hereafter called 'sponsor Ministers') on the long-term management of radioactive waste, arising from civil and where relevant defence nuclear programmes, including storage and disposal."

1.5. The Committee's primary objectives are to:

"provide independent evidence based advice to sponsor Ministers on the Government's and Nuclear Decommissioning Authority's (NDA) and Radioactive Waste Management Ltd.'s (RWM) proposals, plans and programmes to deliver geological disposal (excluding Scotland), together with robust interim storage, for the UK's higher activity wastes as set out in the work programme agreed annually between CoRWM and sponsor Ministers; and to provide independent, evidence based advice on other radioactive waste management issues as requested by sponsor Ministers, including advice requested by Scottish Government in relation to its policy for higher activity radioactive waste."

- 1.6. In fulfilling its remit to provide independent and evidence based advice, CoRWM is expected to maintain an independent overview of issues relevant to the delivery of government's radioactive waste management programmes. It should bring to the attention of sponsor Ministers issues that it considers to be either: a) positive and worthy of note or b) concerns that, in the Committee's opinion need to be addressed.
- 1.7. During its work in the past year, CoRWM has primarily engaged with officials within BEIS, Welsh Government and RWM. RWM is the developer for a geological disposal facility (or facilities, should more than one be needed). The Committee has also engaged with officials in the Scottish Government and the Northern Ireland Executive, and with NDA and nuclear safety, security and environmental regulators.

CoRWM Membership

1.8. Membership of the Committee (Annex C) has remained unchanged during the year with the exception of the Chair, Professor Laurence Williams, who stood down in October at the end of his term of appointment. For the remainder of the year Professor Campbell Gemmell was appointed to undertake the role pending the recruitment and appointment of a new Chair. Professor Julia West stepped up to Acting Deputy Chair during this period.

CoRWM's Outreach Activities

- 1.9. CoRWM remains committed to engaging with the public and other stakeholders to not only gain an understanding of their views and concerns on UK radioactive waste management but also to make the work of the Committee more visible.
- 1.10. During the year CoRWM has continued to advertise a number of "open" plenary meetings on its website at which members of the public can attend and witness first-hand how the Committee undertakes its business. Attendance at these events by members of the public remains extremely low and the Committee believes that a wider engagement strategy is required.
- 1.11. New secretariat support to the Committee was finally secured in the latter half of the year augmented by a post graduate secondee from academia. In a short space of time the two individuals have not only updated CoRWM's website, introduced more efficient online ways of working but have also begun to use other media forms such as Twitter to publicise the work of the Committee.

Summary of Year

1.12. In the financial year 2017-18, CoRWM has provided advice and undertaken scrutiny in line with its work programme for 2017-20 (CoRWM Doc 3312) as described below in Section 2. See also Annex E, highlighting CoRWM meetings.

2. Delivery of our 2017-18 Work Programme

- 2.1. Planned work for the Committee for the year to 31 March 2018 was broken down into a series of tasks in CoRWM's work programme for 2017-20 (CoRWM Doc 3312). Some of these tasks are administrative but the majority are delegated to Subgroups. These Subgroups engage with the relevant bodies for their allocated task(s), scrutinise documents, attend events and gather views to formulate draft advice for discussion by the entire Committee. <u>Only with the consensus of the entire Committee is formal advice given.</u>
- 2.2. Some Subgroups are set up to deliver a one-off task such as to determine the impact of our withdrawal from Euratom on radioactive waste management, some to engage in a specific area such as Working with Communities & Communications and some are 'standing' Subgroups such as the Welsh and Scottish Subgroups. Subgroup membership can be found in Annex D.
- 2.3. Below is a summary of the work undertaken during the year against each of the tasks in CoRWM's work programme for 2017-20 (CoRWM Doc 3312).

Task 1: Working With Communities and Communications

2.4. **Task 1**: Scrutinise and provide advice to BEIS and RWM on activities related to the Implementing Geological Disposal (IGD) workstream on working with communities and communications. (Led by Subgroup 1).

2.4.1. Subgroup 1 has led on this task for England and Northern Ireland and Subgroup 6 has led for Wales. The two Subgroups have worked closely together during the year to ensure that a consistent approach is taken by the Committee. For more detail of the work of Subgroup 6 and its interactions with Welsh Government see Task 9, on Welsh Government Activities.

2.4.2. During the year Subgroup 1 has provided feedback to BEIS on its awareness raising workshops for their WWC consultation, scrutinised proposals for the Third-Party Expert View Mechanism (TPEVM) referred to in the WWC consultation, made clear the need to maintain clarity in the roles of BEIS, RWM and NDA, and advised on the key topic contents that need to be delivered to communities.

2.4.3. Key messages delivered by Subgroup 1 during the year are described in paragraphs 2.4.4 - 2.4.7

2.4.4. When engaging with public audiences, there is a strong need for clarity in the separate roles of RWM, NDA, and BEIS. This helps avoid situations where

these groups must defend each other's positions rather than articulate their own. CoRWM presented this point as a recommendation in its previous annual report:

"BEIS should ensure that the respective roles and responsibilities of BEIS and RWM relating to GDF communication activities are clearly defined and implemented".

Recommendation 2 of CoRWM's 2016-17 Annual Report

2.4.5. The Committee now considers that this recommendation has been met. As observed by members, this message was heard and acted upon by BEIS in its preparation for and delivery of stakeholder events during the WWC and NPS consultations. The roles and responsibilities of BEIS, NDA and RWM were clearly defined in the pre-event briefings and reiterated at the events. The events themselves were clearly led by BEIS and professionally facilitated.

2.4.6. CoRWM considers that the Third-Party Expert View Mechanism (TPEVM) is only one way that a community can access expertise and knowledge. The primary source of information will be RWM but many other bodies, including CoRWM, are available. The TPEVM as proposed carries with it a potential risk of being drawn into scientific controversy so requires careful management to be helpful. Further, expert advice may be needed on wider issues than scientific and technical matters. CoRWM intends to raise these concerns in its response to the Working with Communities Consultation. CoRWM had previously made a recommendation on TPEVM in its previous annual report:

"The UK Government, the Welsh Government and the Northern Ireland Executive should ensure that any proposed mechanism to provide independent third-party expert views to communities that are engaged in the GDF siting process is independent of RWM".

Recommendation 3 of CoRWM's 2016-17 Annual Report

2.4.7. Given the various observations and suggestions we have made, we consider that this recommendation has now therefore been superseded.

2.4.8. CoRWM welcomes the establishment during the year of an integrated BEIS, NDA and RWM Communications Team. The benefit of this 'joined up' approach to planning and executing GDF communications has already been seen in the successful launch of the Working with Communities and National Policy Statement Consultations on the 25 January 2018 where planned, coherent and consistent messages were provided by all bodies.

Task 2: National Geological Screening

2.5. Task 2: Scrutiny and provision of advice to BEIS and RWM on activities relating to the IGD workstream on National Geological Screening. (Led by Subgroup 2).

2.5.1. Subgroup 2 has continued to scrutinise and provide advice to RWM and BEIS on their continued application of National Geological Screening in anticipation of the launch of the GDF siting process. CoRWM maintains its strong support for supplying interested communities with all of the safety-related information available at the time of the launch.

2.5.2. However, CoRWM has had and continues to have concerns that the form of the output of National Geological Screening may not meet the 'screening' expectations of the public and may be misused to inappropriately eliminate regions for consideration.

2.5.3. Consequently, in relation to National Geological Screening, CoRWM made the following recommendation in its 2016-2017 Annual Report:

"Part 1 of RWM's National Geological Screening output should comprise the British Geological Survey's Technical Information Reports; Part 2 should show the relationship of this information to the safety of a GDF and Part 3 should contain information on areas that have been screened out from further consideration."

Recommendation 1 of CoRWM's 2016-17 Annual Report

2.5.4. The British Geological Survey (BGS), has in CoRWM's view, successfully completed their Technical Information Reports.

2.5.5. RWM has been responsible for developing Regional Narratives based on the BGS reports and data.

2.5.6. Subgroup 2 met with RWM on 31 May 2017 to discuss its revised draft Regional Narratives. Following, in part, Subgroup 2 advice, RWM then presented another revision in November of 2017. On 24 November 2017, Subgroup 2 again met with RWM to discuss its latest revision. At that time, CoRWM expressed its concern that the separation of components requested in the Recommendation had not been addressed.

2.5.7. CoRWM understands that a new version of RWM's draft Regional Narratives is imminent which CoRWM expects will address its concerns.

Task 3: GDF safety case activities

2.6. **Task 3**: Scrutiny and provision of advice to BEIS and RWM on activities relating to the development of a GDF safety case; the role played by geology. CoRWM will also investigate the timescale for and cost of site characterisation. (**Led by Subgroup 2**).

2.6.1. RWM published its 2016 Generic Disposal System Safety Case (gDSSC) on 22 July 2016. CoRWM did not review the 2016 gDSSC and obtained this documentation in October 2017.

2.6.2. In discussions with RWM, the Subgroup expressed the view that it would be helpful to publish three public-facing rock-type specific safety case documents with information extracted from the 2016 gDSSC. This view became Recommendation 1 of CoRWM's 2015-2016 Annual Report (CoRWM doc. 3292).

2.6.3. Following the production of the first draft of these public-facing safety case documents, a series of meetings between CoRWM and RWM were held and a series of associated revisions were made by RWM.

2.6.4. **CoRWM is now satisfied that RWM has met Recommendation 1 from the 2015-2016 Annual Report** and that the documents as they now exist will be very beneficial for any community seeking to engage in the process. These documents not only provide an overview of repository designs and present the safety-related features of each rock type, they also add a safety context to the results of the National Geological Screening.

2.6.5. CoRWM's other concern with the 2016 gDSSC is its use in the Letter of Compliance Process, specifically the need to address issues arising from the different potential host rocks for the repository. This concern was taken forward in this year's work programme as Task 7 led by Subgroup 4.

2.6.6. CoRWM is still planning to review the cost and timescales associated with developing a GDF. The first steps in the development of a GDF will be site evaluation, selection and characterisation. Both of these activities will draw from the results of the 2016 GDSSC and National Geological Screening which is still to be published.

Task 4: land-use planning and the NPS

2.7. **Task 4**: Scrutiny and provision of advice to BEIS and RWM on activities related to the IGD workstream on planning and the NPS. (**Led by Subgroup 3**).

2.7.1. Subgroup 3 held discussions with BEIS officials during preparations for the launch of BEIS' consultation on the draft National Policy Statement (NPS) for geological disposal. It subsequently drafted a formal response to this consultation and circulated it to the whole CoRWM membership for agreement. CoRWM is generally in agreement with the questions set out in the consultation but has cautioned that the Appraisal of Sustainability (AoS) report restricts the consideration of reasonable alternatives to a National Policy Statement with exclusionary criteria built in, and no National Policy Statement at all. In CoRWM's view, it would be advisable for the AoS to address any reasonable alternatives to the proposal for geological disposal rather than, as at present, simply alternatives to the plan.

2.7.2. It is CoRWM's judgement that, from a scientific and safety perspective, there are no reasonable alternatives to a permanent deep geological repository for dealing with higher activity radioactive wastes. However, at least two other policies have been considered elsewhere: (a) near surface storage (the policy adopted in Scotland); and (b) a GDF which is not for final disposal but incorporates retrievability of the contents. CoRWM considers that the right course would be to explain clearly in the NPS and/or the AoS why near surface storage has not been considered a reasonable alternative for all elements of the GDF inventory (due to high level waste and spent fuel), as well as providing further information on retrievability. After the NPS is formally adopted, it may be appropriate to include some of this information in the Post Adoption Statement. In this respect, CoRWM's position has changed as its perspective on the policy aspects has developed.

2.7.3. CoRWM also noted that although the NPS is primarily aimed at the Secretary of State, Planning Inspectorate and RWM (as developer), others in potential local communities will also read the document. CoRWM considers that it would be helpful to them if the planning process were explained in more detail. The draft NPS does not address in detail the question of compensation to people affected by GDF construction or associated transport, which may raise concerns in affected communities. It appears that compensation is not part of the planning process, but provision needs to be written into legislation and it would be helpful if this were explained.

2.7.4. During consultation workshops, queries were raised about the changing waste inventory, including different waste types, which underpins the NPS. Concerns included whether the inventory would be limited to legacy wastes whose quantities may be reasonably defined or could include wastes arising

from nuclear new build programmes of unknown capacity and duration. This raised the question of when the final inventory would be communicated to a community and whether this would be before or after the point at which the right of withdrawal might be exercised. This is important because it may impact upon community trust. An explanation of the relationship between the NPS and other government plans/legislation and their order of precedence would also be helpful. For example, in consultation workshops, questions arose about how national infrastructure projects would be prioritised if a particular location or environment were proposed for several competing projects.

2.7.5. Finally, CoRWM noted that the separate consultations on the draft NPS for Geological Disposal Infrastructure and the proposed Working With Communities (WWC) policy have been launched together and, consequently, are closely linked. CoRWM suggests that their robustness would be enhanced if they were made clearly stand alone or the linkages were made explicit.

Task 5: licensing and regulation of a GDF

2.8. **Task 5**: Scrutiny and provision of advice to BEIS and RWM on activities related to the IGD workstream on the licensing and regulation of a GDF. (Led by Subgroup 3).

2.8.1. CoRWM had previously issued the following recommendation to government:

"The UK Government, the Welsh Government and the NI Executive should request the nuclear safety, security and environmental regulators be available during the GDF siting process to explain that the regulatory framework will control the design, construction, commissioning, operation and closure of a GDF, and their roles in the permissioning process."

Recommendation 4 of CoRWM's 2016-17 Annual Report

2.8.2. Government responded by setting out the role of the regulators and noting that they had developed an 'overview of the regulatory process', which will be used to support engagement with communities during GDF siting. All regulators had confirmed that in addition to this overview, which would be published in advance of the launch of the siting process, they are always available to explain their roles and responsibilities.

2.8.3. CoRWM considers that its recommendation has now been superseded but would encourage all of the regulators to participate in public events to explain their roles during the siting process.

2.8.4. Subgroup 3 held discussions with BEIS officials on options for describing a GDF for the purpose of drafting regulations to prescribe the scope of licensing under the Nuclear Installations Act. It advised that a qualitative definition be used, and that consideration should also be given at the same time to the criteria for its subsequent delicensing when the rigorous system of controls resulting from licensing would no longer be appropriate. Comments were also provided to the Office for Nuclear Regulation (ONR) and Environment Agency (EA) on their draft Overview Document on the Regulation of a GDF.

2.8.5. Subgroup 3 also responded to a request from BEIS for comments at short notice on a draft of the Statutory Instrument prescribing the licensing of a GDF. It was clear that BEIS officials had listened to many of our earlier comments, but it was noted that delicensing criteria had not been covered and there were some areas where greater clarity would be helpful.

Task 6: RWM's organisational development

2.9. **Task 6**: Scrutiny and provision of advice to BEIS, other CoRWM Sponsors and RWM on RWM's organisational development. (**Led by Subgroup 4**).

2.9.1. During the year, the Committee has continued to monitor and scrutinise the on-going development of RWM's organisation, particularly with respect to its capability as a delivery organisation for a GDF. During 2016, the RWM Board had commissioned an independent panel to undertake an 'Organisational Readiness Review' (ORR) to determine "RWM's readiness to undertake the next phase of the GDF programme, particularly in undertaking constructive engagement with a number of communities leading to the selection of sites for borehole investigations."

2.9.2. The panel presented its final report in February 2017. Members of CoRWM met with RWM and the Chair of the panel in May 2017 to discuss the findings of the report. While CoRWM noted that several issues had been addressed, such as the appointment of a Programme Director, and that some progress with business cases and long-term plans had been made, the Committee was still of the view that its recommendation, especially in relation to the business model aspects, had not been met. As such, CoRWM's recommendation remained open:

"BEIS should initiate an independent external review of RWM's Business Model to assess its fitness for purpose in relation to the need for the UK to have an effective GDF delivery organization,"

Recommendation 6 of CoRWM's 2016-17 Annual Report

2.9.3. In July 2017, the BEIS Senior Responsible Owner (SRO) commissioned a Project Assurance Review, to be undertaken by the Infrastructure Projects Authority (IPA), of the GDF programme to give Ministers confidence that the GDF Programme and RWM in particular have the required capabilities and capacity to effectively deliver the next phase of the GDF programme – Community Engagement and Site Evaluation in 2018.

2.9.4. CoRWM commented on the initial draft terms of reference. The exercise was broadly welcomed, and although this was, we were told, longer than a standard PAR, the Committee felt that insufficient time had been allocated to the review, that insufficient emphasis had been placed on cultural and leadership issues and that the time resource allowed was very limited.

2.9.5. Subsequently, CoRWM members attended a Planning Meeting for the exercise in September 2017 at which discussions centred on the agenda and personnel to be involved in the two briefing days that were planned. The review team wanted to meet other RWM personnel from a 'diagonal cross-slice' of the organisation. Therefore, the first briefing day covering 'Organisational Design' was held on 9th October 2017 at Harwell and the second day covering 'Communications and Stakeholder Engagement' was held at BEIS on 13 October 2017. CoRWM members attended both of these events, which were considered to be open, transparent and comprehensive.

2.9.6. The IPA panel then undertook interviews with 39 key stakeholder representatives, including the Interim CoRWM Chair. In December 2017, their report was finalised. CoRWM studied the report and commented accordingly.

2.9.7. The general view of the Committee is that the IPA Review had fulfilled the requirements of its terms of reference in that it had assessed RWM's readiness to launch its first tranche of work, Project 2 (community engagement and initial site evaluation) and some wider programme issues.

2.9.8. The PAR Report recommended several areas for future action, these recommendations are all welcomed and considered by CoRWM to be highly relevant to helping ensure the successful delivery of the GDF Programme.

2.9.9. CoRWM acknowledge that this review focussed on RWM's capability to deliver Project 2, the next phase of the programme, and would like to see the focus of future reviews broadened to consider the longer-term capabilities required of the delivery-body for a GDF. These areas cover: organisational culture; challenge and internal assurance capability; digital and information skills requirements; governance arrangements. The recommendations are being delivered through the remit of the Geological Disposal Programme Board (GDPB) chaired by BEIS.

2.9.10. Overall, CoRWM considers that the major issues still to be addressed relate to: management and staff culture; governance; the nature and extent of RWM's ability to make decisions.

2.9.11. With regard to management and staff culture, the Committee notes that there is evidence of steady progress towards a more project and delivery orientated organisation. RWM is making the transition from research (and the support of safe, long-term management of higher activity waste etc.) to engagement. In due course it also has to transition from engagement to eventually running one of the largest capital projects in the UK. CoRWM would like to see more evidence of plans to meet this requirement and of RWM's envisaged capabilities as the project evolves.

2.9.12. The Committee still has reservations about the governance arrangements in place for RWM. For example, there is evidence that approval routes can be onerous and unwieldy, especially with regard to timescales of 4 – 6 months for sequential routes through them, excluding assurance times.

2.9.13. With regard to the question of whether RWM should become an independent organisation in its own right, CoRWM has seen no evidence to counter its view that there is a need for an independent, capable, flexible and robust organisation able to deliver geological disposal infrastructure on behalf of and fully accountable to the UK Government.

2.9.14. The Committee was pleased to note that the main recommendations from the IPA Review had been formulated into an action plan and that progress on these actions is being monitored through the Geological Disposal Programme Board (GDPB).

2.9.15. Overall, the Committee feels that, whilst the exact terms of its original recommendation have not been fulfilled, progress is being made along other routes and that the recommendation can be set aside. The Committee will continue to scrutinise aspects of RWM's organisational development particularly with regard to: progress with IPA Project Assurance Review recommendations; the development of organisational culture; business models; programme management capabilities.

Task 7: the Letter of Compliance process

2.10. **Task 7**: Scrutiny and provision of advice on RWM's Letter of Compliance Process. (Led by Subgroup 4).

2.10.1. With regard to scrutinising RWM's Letter of Compliance (LoC) process, members held a meeting with RWM in March 2018 to discuss the applicability

of the LoC process to the conceptual designs in all three main rock types. CoRWM had previously recommended the following to RWM:

RWM should ensure the Letter of Compliance process is applicable to *GDFs* in all three rock types.

Recommendation 5 of CoRWM's 2016-17 Annual Report

2.10.2. RWM is firmly of the view that the LoC process is totally applicable in the full range of geologies currently being considered. Accordingly, it is planned that RWM present their case, justification and evidence at a meeting with the full CoRWM committee in June 2018. A satisfactory outcome of this meeting should address this recommendation.

Task 8: Scottish Government activities

2.11. **Task 8**: Scrutiny and provision of advice to the Scottish Government on the management of radioactive waste in Scotland. (Led by Subgroup 5).

2.11.1. Subgroup 5's year ended with a very useful meeting between the Acting Chair and the Scottish Government Cabinet Secretary for Environment, Climate Change and Land Reform, Roseanna Cunningham MSP and her officials on 28 March. Discussions included progress on Higher Activity Waste Implementation Strategy, international perspectives on radioactive waste and CoRWM's activities during the year, including its visit to Dounreay 24-26 July and its views on progress at the site.

2.11.2. Ms Cunningham renewed her support for the Committee and asked about CoRWM's Euratom Report (CoRWM doc. 3381) led by Subgroup 8. She also made connections with the work she had set in motion on future environmental governance in Scotland post-Brexit. CoRWM was asked to provide a tailored supplement to CoRWM doc. 3381 on Scotland-specific issues around environment, expertise availability, oversight, reassurance and international inspections.

2.11.3. Subgroup 5 maintained its connection with the six-monthly Scottish Nuclear Sites Group via the Chair's participation and briefing, attending its meeting on 12 October (the previous one was in March 2017), as well as the group meeting in conjunction with the Scottish Government's Near Surface Implementation Group (NSIG) on 2 October to consider Scottish policy issues and relevant developments. That latter category included engagement in the stakeholder workshop (8 October) run by Scottish Government and SEPA on the consultation on the Integrated Authorisation Framework focusing on Radioactive Substances environmental permitting reform and progress on the

Basic Safety Standards Directive and High-Activity Sealed Radioactive-Sources Directive.

2.11.4. The inaugural NSIG meeting, called and chaired by Scottish Government, involved Subgroup 5 and the then CoRWM Chair, Laurence Williams, as well as representatives from SEPA, NDA and RWM. ONR is expected to attend in future.

2.11.5. This meeting proved opportune as it facilitated a discussion on the place of Near Surface Disposal in the overall strategy for wastes. This, in turn, in conjunction with the Letter of Compliance discussion in Subgroup 4 and the wastes issues addressed by Subgroup 7, triggered a meeting with BEIS and NDA colleagues in February, attended by Gregg Butler and Campbell Gemmell where CoRWM helped to ensure that a wide range of colleagues from across government came together to establish the landscape of issues around appropriate management of the radioactive waste inventory. Further progress on this is expected in the Summer of 2018 with NDA in the lead in setting out a fuller picture.

2.11.6. Finally, CoRWM's November 2017 Plenary meetings were held in Edinburgh where there was also an opportunity for the Committee members to receive an overview of his term from the departing Chair; to hear from him on his progress with the draft Euratom Report and to say farewell. That last aspect was also marked by the return of few former members for the occasion.

Task 9: Welsh Government activities

- 2.12. **Task 9**: Scrutiny and provision of advice to the Welsh Government on the management of radioactive waste in Wales, including the possibility of a review of the radioactive waste infrastructure in Wales. (Led by Subgroup 6).
- 2.13. CoRWM met with Welsh Government officials in April 2017 and March 2018. Throughout this period the main activity was commenting on three drafts of the Welsh Government's consultation 'Working with potential host communities -Geological disposal of radioactive waste'. This document reflected the different situation of the Welsh Government from that of BEIS (BEIS 'Working with Communities: implementing geological disposal' consultation), in that Welsh local government is structured considerably differently to that in England. Welsh Government policy states that a Geological Disposal Facility (GDF) 'will only be built in Wales if a community is willing to host it, and a safe site can be found'.
- 2.14. The consultation was duly issued on 20th January 2018, with a closing date for comments of 20th April. CoRWM will be contributing its views to this consultation, which will be published after submissions close in April. The Welsh

Government has asked CoRWM to provide technical comments on consultation replies where required, which CoRWM will be pleased to do.

Task 10: storage of radioactive waste, spent fuel and nuclear materials

2.15. **Task 10**: Scrutiny and provision of advice to BEIS and NDA on the storage of radioactive waste, spent fuel and nuclear materials that may be destined for disposal in a GDF. (Led by Subgroup 7).

<u> Spent Fuel – Magnox:</u>

2.16. NDA's strategy of reprocessing all Magnox fuel remains unchanged. The cessation of reprocessing is programmed for 2020, with the exact date contingent on Wylfa defueling rates. Contingencies of dry storage under air in an existing design of shielded container remain the fall-back for any Magnox or Dounreay Fast Reactor (DFR) fuel material which is not reprocessed. In the event of a sudden, irreversible failure of reprocessing, fuel can continue to be stored safely in-reactor until it can be transferred to Sellafield for long-term storage. Previous experience of dry storage of Magnox fuels under air continues to provide confidence in these approaches.

<u> Spent Fuel – Oxide:</u>

2.17. The oxide fuel reprocessing programme remains on track for THORP to complete its mission later this calendar year with storage and contingencies as reported last year. Some fuel from the Steam Generating Heavy Water Reactor (SGHWR) at Winfrith will likely remain unreprocessed, but this is zirconium clad and is suitable for long term wet storage. As reported in CoRWM's 2016-17 annual report (CoRWM doc. 3341), cessation of THORP reprocessing is likely to leave around 20-25 te HM (tonnes of equivalent heavy metal) overseas fuel, including 16 te HM of spent Mixed Oxide (MOX) fuel which is not scheduled for reprocessing anyway. This and the SGHWR fuel will be stored pending a future decision on whether to dispose of it in a UK GDF.

<u>Plutonium</u>

- 2.18. There has been no change to the re-use and waste options being examined for the current expected plutonium inventory. This remains at around 140 te plutonium (Pu, predominantly stored as plutonium oxide, PuO₂), and the NDA is continuing to work on technical and commercial risk reduction of re-use and immobilisation options.
- 2.19. The one certainty about the UK Pu stock is that any of the future options will involve lengthy storage periods running to decades. In response to this position,

NDA is continuing with its programme which will:

- transfer all civil UK plutonium stocks to Sellafield
- where necessary, treat the PuO₂ to make it suitable for long term storage (mainly involving heat treatment to remove chlorine contamination and moisture)
- place all the PuO₂ into storage cans with a design life of at least 100 years, and
- store all the canned PuO₂ inventory in Sellafield Product and Residues Store (SPRS) modules with a similarly long design life.
- 2.20. Capability is being put in place for the early treatment of some plutonium packages. Work is continuing at Sellafield on a plant which can treat, as appropriate, and repack all of the plutonium packages. This plant is expected to come on-line in the mid-2020s and will repack cans into packages (with a design life of 100 years) which will be stored in modules of the most modern passively cooled store, the SPRS. This will 'future proof' the Pu stocks for decades but will not remove the need for Government to take a decision on the future of this material, which is, at the same time, both a large potential energy source and a large potential financial liability.

<u>Uranium</u>

- 2.21. NDA continues its operations to consolidate all uranics on the Capenhurst and Sellafield sites. NDA is also:
 - continuing its high-level work to investigate whether, in the event that depleted uranium is declared to be a waste, Near Surface Disposal of uranic material is technically feasible, desirable or cost effective when compared with disposal in a GDF
 - beginning the process of reducing the hazard potential of its uranium hexafluoride (UF6) stocks into an oxide form that is more suitable for long-term storage or disposal, termed 'deconversion'.
- 2.22. There is very little evidence of problems occurring during well-managed UF6 storage, worldwide and over many decades.

Task 11: UK withdrawal from the Euratom Treaty

2.23. **Task 11**: Review of the radioactive waste management implications of the UK withdrawal from the Euratom Treaty and provide advice to the UK Government,

the Scottish Government, the Welsh Government and the Northern Ireland Executive. (Led by Subgroup 8).

- 2.24. CoRWM produced a comprehensive memorandum (CoRWM doc. 3381) for the Departments, identifying the main areas of regulation under the Euratom Treaty in the field of management of radioactive waste and spent fuel, as well as associated areas of transport and research. The key pieces of Euratom legislation were summarised, together with the corresponding international treaty provisions and IAEA standards, and relevant domestic legislation. Areas requiring attention upon withdrawal from the Euratom Treaty were identified, and recommendations made as to steps to fill any resulting gaps.
- 2.25. Following that work a request has been made by the Scottish Government for further discussions on issues specific to Scotland, and this work is ongoing.
- 2.26. It is anticipated that there may be further requests by BEIS for advice on specific areas as the terms of exit become clearer.

In-year additional tasks

- 2.27. At the Open Plenary in London on 10th January 2018, it was decided to set up a short-life working group to take a considered look at what CoRWM should be doing in terms of public engagement. This was as a consequence of the revitalised web page and Twitter account which were started to raise the profile of the Committee. The plan was that this group would discuss the options and what was feasible, with the output then becoming a regular plenary agenda item through FY 18-19. After email exchange on ideas, a meeting was held on 2nd March 2018 to finalise thoughts for plenary discussion.
- 2.28. The main conclusions from this group were:
 - CoRWM is an independent advisory body which constructs a work programme discussed and agreed with the UK Government and the Devolved Administrations. The Committee will always present a considered opinion rather than an immediate response to something identified or raised with it and that, regardless of the type of engagement, this will always hold true. However, it was felt that there is scope for some pro-active engagement in exploring issues and raising the profile of CoRWM as, over recent years, there has not been much public focus on its activities. This is particularly important at this time with the various consultation exercises (WWC, NPS, Wales) underway and the potential for the launch of the GDF siting process in the near future.
 - It was agreed that individual CoRWM members would never offer personal

opinion in interacting with the wider public (considered opinion is offered with unanimous Committee agreement), but it would be possible to present information about CoRWM and its role and activities through a single presentation that could be used by all members. The audience thought to be the most pertinent in the near term would be Professional Institutes (CoRWM members cover a broad range of sectors and could present to their own institutes), Chartered Institutes, Women's Institute etc.

- There were other engagement ideas (such as briefing/meeting with the groups liked to be engaged in the siting process through the Third-Party Expert View Mechanism (TPEVM) which would need more careful consideration and the way forward will be that this topic will become a regular agenda item for Plenary meetings through FY 18-19 and a programme of speakers and inputs will be prepared and delivered.
- 2.29. The group agreed the following as actions:
 - The plan for a standard presentation that all members would be well versed in and could use as the basis of any external interaction was taken to the Plenary meeting on 23rd March 2018. There is a presentation already in existence that can be updated and used for this purpose.
 - A list of speakers to be invited to Open Plenary Meetings is being developed in order to discuss topics of relevance to CoRWM and the wider public. This also affords a wider opportunity to see the working of CoRWM.
- 2.30. This working group is now disbanded and the topic of wider engagement for CoRWM will now be a regular agenda item at Plenary meetings. Implementation overall will also be influenced by the results of the Tailored Review.

3. Forward Look

- 3.1. The Committee's focus for 2018-19 will now shift from its pre-consultation scrutiny and advice to BEIS and Welsh Government on WWC and the NPS to scrutinising how the WWC policy is implemented.
- 3.2. The Committee will continue to provide scrutiny and constructive feedback and advice to RWM on its preparation for and launch of the GDF siting process in England, Wales and Northern Ireland.
- 3.3. The Committee believes that now is the time to look at the next major phases of RWM work, community engagement and information provision, site, evaluation, selection and characterisation. Based on its extensive experience and expertise in project management, geology and engineering delivery, CoRWM will be reviewing RWM plans with a focus on potential opportunities to reduce costs and timescales for completion.
- 3.4. The Committee will seek to work with NDA to better understand how progress in radioactive waste management across its estate could be more accessibly measured and reported and how this information could then be used to better manage and plan the future handling of the overall inventory..
- 3.5. More generally, the Committee will continue to provide advice to BEIS and the Welsh and Scottish Governments on aspects of radioactive waste policy and its implementation (albeit different under the different administrations) as detailed in its Proposed Work Plan 2018-21 (CoRWM Doc. 3397) and as may be requested during the coming year.
- 3.6. Finally, CoRWM looks forward to continuing a more proactive and productive engagement with its stakeholders, particularly the public, over the coming year.

4. Conclusions and Recommendations

- 4.1. A number of long standing issues raised in previous Annual Reports have been successfully addressed during the year or have now been considered closed or superseded. There have also been unforeseen delays to the key launch stages of GDF siting. This has allowed opportunities for refinement of proposed processes and necessary preparations. Progress for CoRWM has also been achieved by open and constructive dialogue between CoRWM and, BEIS, NDA and RWM as well as a very welcome enhancement of the Committee's secretariat.
- 4.2. CoRWM looks forward to continued positive engagement with BEIS, Welsh Government, Scottish Government, NDA and RWM over the coming year.
- 4.3. Consistent with international consensus, and maintaining CoRWM's 2006 assessment, the Committee continues to consider that deep geological disposal remains the best long term solution for safely dealing with the inventory of Higher Activity Waste. The Committee can foresee no scenario under which a GDF would not be a key part of the necessary solution.
- 4.4. Two recommendations from CoRWM's previous annual report, one regarding the applicability of RWM's Letter of Compliance Process to all three rock types (see Task 7, beginning para. 2.10), and the other, regarding the output and presentation of the results of National Geological Screening (see Task 2, beginning para. 2.5.3) remain open and outstanding at this year-end but both are expected to be successfully addressed in June and July 2018.
- 4.5. No new recommendations have been raised in 2017-18.
- 4.6. Finally, as indicated earlier in this report, the Committee sees this as a pivotal time for the GDF programme and for the Committee itself. The Committee has undergone a Cabinet Office Tailored Review, with a report expected to be published in the coming months, and is one of many moving parts in the rapidly progressing GDF system. There has been a great deal of work done by many individuals to reach this point. We are collectively on the brink of making important and difficult decisions with long term costs, impacts and benefits that could lead to the long hoped for implementation of the GDF siting policy. In the light of the recent consultations, key decisions now need to be taken.
- 4.7. It is likely then that the coming year will be critical to the ultimate success of implementing a GDF founded on identifying a suitable site and a willing community to host it. CoRWM continues to believe that a GDF facility is a strategic need and an essential part of the long term management of our radioactive waste legacy.

4.8. Whilst there has been a great deal of very positive activity for the Committee and partners, not least BEIS, RWM and Welsh Government, reaching a crescendo towards the end of the year of this report, we look forward to a further, critically important year of progress ahead.

Annex A: CoRWM Expenditure 2017-18

Table 1 shows CoRWM's budget out-turn for the year, broken down by main spending areas. The budget was set at £275,000.

Budget Items	Budge t (£k)	Out-turn (£k)	
Members' Fees ¹	165.4	162.6	
Meetings and Visits ²	100.6	00.7	
Incidental expenses ³	109.0	99.7	
Total	275	262.3	

Table 1 CoRWM's Budget Out-Turn 2017-18

¹ Members' fees include Employer National Insurance Contributions.

² Meetings and visits includes venue costs and members' accommodation and transport costs for Plenary Meeting, site visits and other meetings.

³ Incidental expenses covers member's subsistence and incidental costs when attending and travelling between meetings and site visits.

CoRWM is not required to report on the individual contributions from members and the subsequent fees they receive, but chooses to publish this information in aid of transparency. Table 2 shows days worked by each member from which fees received can be inferred.

The standard fees are those paid at the rates specified in Members' terms of appointment. These state that the Chair can claim £450 a day for up to 78 days per year, the Deputy Chair can claim £380 for up to 52 days per year and Members can each claim £300 a day for up to 52 days in a year.

Name	Work Days
Laurence Williams (Chair until November 2017)	35.5
Campbell Gemmell (Deputy Chair until November 2017 and Interim Chair from November 2017)	62
Gregg Butler	43
Paul Davis	40
Melissa Denecke	25
Andy Hall	32.5
Joanne Hill	34.5
Stephen Newson	37
Simon Redfern	16
Richard Shaw	30
Stephen Tromans	29
Andrew Walters	28
Julia West (Interim Deputy Chair from November 2017)	38
Janet Wilson	51
Total	501.50

Table 2: Days worked by CoRWM Members

Annex B: CoRWM's Terms of Reference

Purpose

1. The purpose of the Committee on Radioactive Waste Management (CoRWM) is to provide independent advice, based on informed scrutiny of the available evidence, to UK Government and Devolved Administration Ministers (hereafter called 'sponsor Ministers') on the long-term management of radioactive waste, arising from civil and where relevant defence nuclear programmes, including storage and disposal.

2. CoRWM will provide strategic oversight of radioactive waste management in the UK, in such a way that does not duplicate the role already fulfilled by the statutory independent safety, security and environmental regulators.

Objectives

3. The primary objectives of CoRWM are to:

a) provide independent evidence based advice to sponsor Ministers on the Government's and Nuclear Decommissioning Authority's (NDA) and Radioactive Waste Management Ltd's (RWM) proposals, plans and programmes to deliver geological disposal (excluding Scotland), together with robust interim storage, for the UK's higher activity wastes as set out in the work programme agreed annually between CoRWM and sponsor Ministers; and

b) provide independent, evidence based advice on other radioactive waste management issues as requested by sponsor Ministers, including advice requested by Scottish Government in relation to its policy for higher activity radioactive waste.

In fulfilling its remit to provide independent and evidence based advice, CoRWM is expected to maintain an independent overview of issues relevant to the delivery of government's radioactive waste management programmes. It should bring to the attention of sponsor Ministers issues that it considers to be either: a) positive and worthy of note or b) concerns that, in the Committee's opinion need to be addressed.

Responsibilities

4. CoRWM will have a collective responsibility for:

- recognising the policy framework within which it will operate, including the roles and responsibilities of Government, the NDA, RWM and the various statutory independent regulators in relation to CoRWM's own advisory role;
- delivering its evidence-based advice to sponsor Ministers in accordance with agreed work programmes. It will be for sponsor Ministers, with appropriate reference to their respective Parliaments and Assemblies, to take decisions

on the evidence based advice they receive and to give directions to the NDA/RWM as necessary on any subsequent changes that they deem to be required in the delivery of radioactive waste management programmes;

- delivering the work programme within the agreed budget, although the Chair may request sponsor Ministers for an adjustment to this budget should this be considered necessary; and
- submitting an annual written report to sponsor Ministers, by 30 June of each year. The report will include CoRWM's progress with the agreed work programme, advice deriving from it and costs incurred. It will be made available in the libraries of the UK and Scottish Parliaments, the National Assembly for Wales and the Northern Ireland Assembly.

5. The Chair, supported by one or more CoRWM members when appropriate, will generally meet every two months with sponsor officials to report progress on the work programme and to discuss advice being provided at official level.

6. The Chair will meet sponsor Ministers on appointment, and then at least annually along with other members as appropriate. The Chair may also be required to present the position of CoRWM to Parliamentary or Assembly committees and representatives as appropriate.

Deliverables

7. CoRWM's deliverables will be set out each year in a proposed three-year rolling work programme.

8. The work programme will be submitted to sponsor Ministers by 31 March each year for discussion and agreement. Any in-year changes will be the subject of agreement by CoRWM and sponsor Ministers.

9. The work programme will include details of specific areas of work, reports which the Committee intends to produce, the proposed role of sub-groups and any other activities or events, including proposals for stakeholder engagement.

10. In delivering its annual work programme, and where there is a common interest, the Committee should liaise as appropriate with regulators and any other relevant bodies that advise Government and the regulators.

11. With the agreement of CoRWM's sponsor Ministers, other parts of Government, the NDA/RWM and the regulators may request independent advice from CoRWM. Relevant Parliamentary / Assembly Committees may also propose work to sponsoring Ministers, for consideration in the work programme. Any additional work would need to be funded by the requesting party.

Membership

12. The Committee is jointly appointed by sponsor Ministers and appointments will be made following the Code of Practice for Ministerial Appointments to Public Office published by the Commissioner for Public Appointments.

13. Appointments will usually be for four years and sponsor Ministers retain the right to terminate appointments at any time in light of individual members' performance, changes in CoRWM's work requirements, or completion of the work required of CoRWM.

14. CoRWM shall consist of a Chair and up to eleven members, one of whom will be appointed by sponsor Ministers as Deputy Chair on the recommendation of the Chair. Members will not be mandated representatives of organisational or sectoral interests.

15. The skills and expertise which will need to be available to the Committee will vary depending on the programme of work. Sponsor Ministers may review the membership of the Committee, and the skills and expertise required.

16. CoRWM is set up by, and answerable to sponsor Ministers and is funded by the taxpayer. It must therefore comply with the Cabinet Office guide for Departments https://www.gov.uk/government/publications/public-bodies-information-and-guidance

17. These and other relevant procedural requirements will be set out in CoRWM's Code of Practice which members will agree to, prior to appointment.

Subgroups

18. Members of CoRWM itself may not have all the skills and expertise necessary to advise Government. The Committee will need to decide how best to secure access to other appropriate sources of expert input during the course of its work. It will have the option of setting up expert sub-groups containing both CoRWM members and other appropriate co-opted persons. The engagement of consultants will be dependent on sufficient funds being available to CoRWM and the necessary business cases being approved by sponsors as appropriate and, if required, Cabinet Office.

19. A member of CoRWM will chair any sub-group of this nature and ensure its effective operation, as well as provide a clear line of responsibility and accountability to the main Committee. It will be for the main Committee to assess and decide upon the advice it receives from such sub-groups. CoRWM may also utilise other appropriate means of securing expert input, such as sponsored meetings and seminars. The Chair will ensure that sub-group work and all other activities are closely integrated.

Engagement and transparency

20. CoRWM shall undertake its work in an open and consultative manner in order to secure the confidence of stakeholders in the advice it provides. It will engage with stakeholders

and it will publish advice (and the underpinning evidence) in a way that is meaningful to the non-expert. It will comply, as will sponsoring departments, with 'The Government Chief Scientific Advisor's guidelines on the Use of Scientific and Engineering Advice in Policy Making₂₃', as well as other relevant Government advice and guidelines. Government will respond to all substantive advice. Published advice and reports will be made available in respective Parliaments and Assemblies, as will any Government response.

21. To secure stakeholder confidence in its activities and advice, CoRWM's work will be characterised by:

- a published reporting and transparency policy;
- relevant stakeholder engagement as required;
- clear communications including the use of plain language, publishing its advice (and the underpinning evidence) in a way that is meaningful to the non-expert;
- making information accessible through its website;
- encouraging people to ask questions or make their views known and considering their concerns;
- providing opportunities for people to challenge information, for example by making clear the sources of information and points of view on which the Committee's advice is based.

Review

22. CoRWM will be subject to Triennial Review in accordance with Cabinet Office requirements and under a timetable agreed between DECC and the Cabinet Office.

Annex C: CoRWM Membership



Former Chair

Laurence Williams FREng (Chair) - is an Emeritus Professor of Nuclear Safety and Regulation. He is a Senior Research Fellow at Imperial College London; Visiting Senior Fellow at the National Nuclear Laboratory; Chair of the Defence Nuclear Safety Committee; Member of the Nuclear Innovation and Research Board; Member of the High Scientific Council of the European Nuclear Society; Chair of the Nuclear Institute's Editorial Committee for Nuclear Future; Member of the European Bank for Reconstruction and Development's International Advisory Group on Chernobyl.

Prior to entering academia Laurence was the Chief Engineer and Director for Nuclear Safety, Security and Environment at the Nuclear Decommissioning Authority; Her Majesty's Chief Inspector of Nuclear Installations; Director for Nuclear Safety and a member of the Board of the Health and Safety Executive; Chairman of the IAEA Commission on Safety Standards, where he was responsible for overseeing the development of international standards in the areas of nuclear safety, radiation protection, radioactive waste management and the transport of nuclear materials.

Current term of office ended: October 2017



Acting Chair

Campbell Gemmell is a Partner in Canopus Scotland Consulting, working largely on environment policy and regulation issues in the EU, Australia and China.

Campbell is currently also a Consultant with the World Bank Group and Chair of Scottish Government's Round Table on Environment and Climate Change Group on Environmental Governance. He is Visiting Professor at Strathclyde University Law School, Honorary Professor of Environment Research, Policy, Regulation and Governance in the University of Glasgow and Adjunct Professor in Environment Contamination Assessment and Remediation in the Future Industries Institute at UniSA, Adelaide.

He is former CEO of the South Australian EPA (2012-14) and was CEO of SEPA (2003-12), with, in Scotland, responsibility for environmental regulation of the civil nuclear programme and relevant wastes from Scottish defence and research sites. He was closely involved in assessing and tackling the Dounreay particles legacy and related issues in other locations in Scotland. He was a member and Chair of the Dounreay Particles Advisory Group 2001-11. Campbell also chaired the South Australian State Radiation Protection Committee 2012-14 and was, during 2016, an Independent Advisor to Scottish Government on Underground Coal Gasification.

Campbell is also a qualified mediator.

Current term of office ends: November 2020



Acting Chair

Julia West is Principal of West Consult having spent most of her career at the British Geological Survey (BGS). She is also an Honorary Visiting Professor at the University of Manchester (School of Earth, Atmospheric and Environmental Sciences). She is a Chartered Biologist and Fellow of the Royal Society of Biology.

Julia has a PhD in geomicrobiology with over 35 years of practical experience in the multi-disciplinary science underpinning radioactive waste management. She has provided expertise and advice to national programmes in the UK, Europe, Japan and North America, often working in international collaborations. Her work has included site characterisation and performance assessment studies, development of repository concepts, natural analogue studies as well as her seminal geomicrobiology research.

Julia also has long experience in advisory groups and committees in the UK and overseas. She has a great interest in the communication of geoscience, lecturing and writing on this topic, particularly in the context of radioactive waste disposal.

Julia is the author/co-author of over 200 articles, scientific papers, book chapters and commercial technical reports.



Gregg Butler is Co-Director of Integrated Decision Management Ltd, Professor of Science in Sustainable Development at the University of Manchester, and Head of Strategic Assessment for the Dalton Nuclear Institute.

He has a BSc and PhD in metallurgy from Swansea University, and over 45 years' experience in the nuclear industry, having worked in most parts of the fuel cycle, in research and development, planning, commercial, plant operations, plant and site management and director roles. He was a member of the Radioactive Waste management Advisory Committee from 1994 to 2004. Current research interests include Generic Feasibility Assessment of nuclear systems, plutonium use, the sustainability of nuclear power and its regulation, and effectiveness of decision making methodologies in bringing robust conclusions to be reached taking account of economics, regulatory outcomes, and stakeholder views and values.

Current term of office ends: **November 2018**



Paul Davis is the owner of EnviroLogic Inc., an environmental and water resources consulting company in Durango, Colorado, USA.

He has over 30 years of experience in the geologic disposal of radioactive waste, starting with site characterization of the Waste Isolation Pilot Project (WIPP) for the United States Geological Survey. At Sandia National Laboratories, he participated in and led the development of performance assessment methodologies for geologic repositories in bedded salt, basalt, and volcanic tuff for the US Nuclear Regulatory Commission, specializing in groundwater flow and transport modelling and the quantification and propagation of uncertainty. He also provided technical support for the development of safety standards for highlevel waste disposal for the U.S. Environmental Protection Agency and led the WIPP team responsible for the integration of site characterization, research, performance assessment and regulatory compliance.

He is currently collaborating with Los Alamos National Laboratories in the quantification of uncertainty in stable isotope analyses and with Moscow State University, Russia in the development of regional groundwater flow models.



Professor Melissa A. Denecke is Scientific Director of the Dalton Nuclear Institute at The University of Manchester and holds a Chair in the University's School of Chemistry.

She has over two decades experience in nuclear fuel cycle research and development, notably in disposal of radioactive waste and legacy clean-up. She is a world expert on studies of radioactive materials using synchrotron radiation. Melissa serves on a number of scientific advisory boards, including the Deutsches Elektronen-Synchrotron Photon Science Committee and the Institute de Chimie Séparative de Marcoule, and committees propagating gender balance, such as Women in Nuclear Global Executive Board representing Europe.

Current term of office ends: **November 2020**



Andy Hall has recently retired from the position of Chief Nuclear Inspector in the Office for Nuclear Regulation.

His career with the regulatory body spanned technical assessment, site inspection and nuclear policy roles, and over the years he held various senior management positions including Head of the Nuclear Power Reactors Division, Head of the Nuclear Fuel Cycle & Decommissioning Division, and Head of the Health & Safety Executive's Nuclear and Hazardous Installations Policy Division.

His expertise was recognised internationally through his appointment as Chair

of the European Nuclear Safety Regulators Group (ENSREG), which advises the European Commission, and his election to Vice-President for the 4th Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

Andy's early career was spent in academia undertaking research in astrophysics, during which he was elected a postdoctoral Research Fellow and member of the Governing Body of St. Edmund Hall, Oxford. He is a Fellow of the Institute of Physics.



Joanne Hill is an Engineer with over 20 years' experience in the nuclear industry holding senior roles in academic, regulatory and commercial environments. She is a specialist in radioactive waste management, with experience in the civil nuclear energy programme covering operational and decommissioning sites, new build and geological disposal facilities.

Joanne is a Fellow of the Institute of Materials, Minerals and Mining (FIMMM) and holds a PhD in Radioactive Waste Management. After gaining her PhD she worked as a Senior Research Fellow in the Immobilisation Science Laboratory at the University of Sheffield, before moving to Nirex (now Radioactive Waste Management Ltd) as the Wasteform Research Manager focusing on the provision of underpinning evidence to support the Geological Disposal Facility (GDF) concept.

Joanne moved to the private sector in 2006 and has worked in a number of consultancy roles covering a broad range of the civil nuclear sector. She is currently a Director at Collingbourne Consulting Limited. Throughout her career, Joanne has developed wide, in depth knowledge and experience in radioactive waste management and disposal in addition to the personal qualities necessary to build and maintain strong business relationships.

Current term of office ends: **November 2020**



Stephen Newson is a Chartered Engineer and Fellow of the Institute of Materials, Minerals and Mining and is currently working as a Mining Consultant on a range of underground projects in the UK and overseas.

He has over 40 years of mining experience including operational management, research and development, business planning and the design and construction of large underground excavations. He spent 16 years with British Coal, latterly responsible for the specification and approval of underground tunnel and coalface support systems on a national basis. During this time his was also a UK representative on the European Experts' Committee on tunneling systems. He has worked for a number of major companies on new mine construction and expansion projects in Australia, Asia, North America and Africa. He has also, as a consultant, previously worked on underground design and planning projects related to the potential disposal of radioactive waste underground.



Simon Redfern is Professor of Mineral Physics at the University of Cambridge. His research focuses on the behaviour of minerals and aqueous fluids at high temperatures and pressures. He has previously led large research projects investigating the fate of radionuclides in minerals and in the environment, within the context of searching for methods for high level radioactive waste disposal.

He studied Mineral Sciences at the University of Cambridge, obtaining a BA and PhD. Since then he has published more than 200 research papers in the peer reviewed scientific literature and mentored dozens of postgraduate students to their own PhDs.

He currently serves as a member of the Science Board of the Natural Environment Research Council and formerly filled a similar role on the Science and Technologies Facilities Council, with particular oversight of national neutron research facilities for environmental science.

Current term of office ends: November 2018



Richard Shaw is an exploration and mining geologist (C. Geol; Eur. Geol) with over 25 years of experience in the deep geological disposal of radioactive waste. He retired from the British Geological Survey (BGS) in October 2016.

Previous experience includes 7 years of exploration, environmental impact assessment and mining feasibility for a uranium deposit in Africa. He was Team Leader of the BGS's Radioactive Waste Team until April 2016 with responsibility for all work, both internally funded and commissioned that the BGS undertook in the radioactive waste disposal sector.

He has considerable experience of the Nirex site investigation programmes and relevant experience of other European programmes, in particular those of France and Sweden, and has undertaken work for Andra, Ondraf-Niras, SKB, Covra, and JAEA as well as RWM. He was Coordinator (2009-2013) of the EC FP7 Euratom FORGE (Fate of Repository Gases) Project. This pan-European (24 partners in 12 countries) was looking at the generation, migration and fate of gases in a radwaste repository context.



Stephen Tromans QC is a barrister practising at 39 Essex Chambers, London.

He was Joint Head of Chambers from 2011-2015. He was worked as an academic at Cambridge (1981-1987) and as a solicitor (1987-1999). He became a barrister in 1999 and was appointed Queen's Counsel in 2009.

His area of specialism is environmental, energy natural resources and planning law. He has extensive experience of advising companies and government and representing them in court and at public inquiries. He has a particular focus on nuclear law and is the author of the leading text, "Nuclear Law". He is also the author of leading works on environmental impact assessment and contaminated land and has spoken and written widely on these topics.

He has been a member of the UK Environmental Law Association (UKELA) since its formation in 1986, and has been Chair and a Council member of UKELA. He is also a member of the International Nuclear Law Association (INLA) and a director of INLA UK. From 1994-2002 he was a Council Member of English Nature, the predecessor of Natural England and from 2010-2014 was the Chair of the Environmental Law Foundation (ELF).

Current term of office ends: November 2018



Andrew Walters is an Environmental Lawyer and Chartered Town Planner.

He has worked on an extensive range of project and policy work in the public and private sectors with a career stretching across 20 years in the UK and overseas. He has developed a reputation for delivery of complex environmental consents on а diverse range of infrastructure projects from the construction of deep water ports and harbours, nationally significant rail, highways, bridges, energy, waste and commercial development projects.

Andrew's regularly leads consenting campaigns bringing a deep understanding of the challenges of consenting development projects in multiple legislative environments, often with complex engineering considerations in highly sensitive sites of significant environmental importance.



Janet Wilson is the owner of Touchstone Nuclear Ltd providing strategic advice and support to the nuclear industry.

She has spent the majority of her career to-date working in the nuclear sector (public and private both civil and defence) at senior and executive level as a policy developer, strategic thinker, regulator and most importantly "doer" with an expert interest in areas of organisational development, nuclear safety, security, environment, nonproliferation and policing (armed response).

She is a Chartered Engineer, a Fellow of the Institution of Mechanical Engineers, a Liveryman of the Worshipful Company of Engineers, a Member of the institute of Directors and has a PhD associated with nuclear reactor safety.

Annex D: CoRWM Subgroups 2017-18

Subgroup 1: Working With Communities and Communications (6 Members)

Primary task

1. Scrutinise and provide advice to BEIS and RWM on activities related to the implementing Geological Disposal (IGD) workstream on working with communities and communications.

Membership:

Dr Janet Wilson (Subgroup Chair) Mr Paul Davis Professor Melissa Denecke Dr Joanne Hill Professor Simon Redfern Professor Julia West

Subgroup 2: GDF Safety Case and Geology (6 Members)

Primary tasks

- 2. Scrutiny and provision of advice to BEIS and RWM on activities relating to the IGD workstream on National Geological Screening.
- 3. Scrutiny and provision of advice to BEIS and RWM on activities relating to the development of a GDF safety case; the role played by geology. CoRWM will also investigate the timescale for and cost of site characterisation.

Membership:

Mr Paul Davis (Subgroup Chair) Dr Andy Hall Mr Stephen Newson Professor Simon Redfern Dr Richard Shaw Professor Julia West

Subgroup 3: Planning and Regulation (4 Members)

Primary Tasks

4. Scrutiny and provision of advice to BEIS and RWM on activities related to the IGD workstream on planning and the NPS.

5. Scrutiny and provision of advice to BEIS and RWM on activities related to the IGD workstream on the licensing and regulation of a GDF.

Membership:

Dr Andy Hall (Subgroup Chair) Mr Stephen Tromans QC Mr Andrew Walters Professor Julia West

Subgroup 4: Organisational Development (5 Members)

Primary Tasks:

- 6. Scrutiny and provision of advice to BEIS, other CoRWM Sponsors and RWM on RWM's organisational development.
- 7. Scrutiny and provision of advice on RWM's Letter of Compliance Process

Membership

Mr Stephen Newson (Subgroup Chair) Professor Campbell Gemmell Dr Joanne Hill Mr Stephen Tromans QC Mr Paul Davis

Subgroup 5: Scottish Government Activities (4 Members)

Primary Task

8. Scrutiny and provision of advice to the Scottish Government on the management of radioactive waste in Scotland.

Membership

Professor Campbell Gemmell (Subgroup Chair) Mr Andrew Walters Dr Janet Wilson Mr Stephen Newson

Subgroup 6: Welsh Government Activities (3 Members)

Primary Task:

9. Scrutiny and provision of advice to the Welsh Government on the management of radioactive waste in Wales, including the possibility of a review of the radioactive

waste infrastructure in Wales.

Membership

Professor Gregg Butler (Subgroup Chair) Professor Melissa Denecke Dr Richard Shaw

Subgroup 7: Storage of Radioactive Waste, Spent Fuel and Nuclear Materials (3 Members)

Primary Task:

10. Scrutiny and provision of advice to BEIS, and NDA and the storage of radioactive waste, spent fuel and nuclear materials that may be destined for disposal in a GDF.

Membership:

Professor Gregg Butler (Subgroup Chair) Professor Simon Redfern Dr Joanne Hill

Subgroup 8: Euratom exit implications for radioactive waste management (7 members)

Primary Task:

11. Review of the radioactive waste management implications of the UK withdrawal from the Euratom Treaty and provide advice to the UK Government, the Scottish Government, the Welsh Government and the Northern Ireland Executive.

Membership:

Professor Laurence Williams/Mr Stephen Tromans QC (Subgroup Chair) Professor Gregg Butler Mr Paul Davis Professor Campbell Gemmell Dr Andy Hall Mr Stephen Newson Dr Janet Wilson

Annex E: Meetings held during 2017-18

[Fact check and more to add once sharepoint transferred: GDPBs, some NGO mtgs, Sponsors mtgs., extra details on consultation workshops, Gdssg]

Date	Meeting	Attending Capacity
10 May 2017	Chair's meeting with sponsors	Chair
10 May 2017	NDA research board meeting	Observer
16-17 May 2017	Start of work-year Plenary - London	Plenary
May 2017	Subgroup 4 meeting with RWM readiness review panel	Participant
-	Subgroup 1 / BEIS / RWM meeting on Working With Communities and Communications	Participant
26 May 2017	Subgroup 1 / BEIS / RWM meeting on Working With Communities and Communications	Participant
14-15 June 2017	Summer Plenary – Cardiff	Plenary
4 July 2017	Subgroup 3 / BEIS telecon on describing the GDF and the inventory for disposal	Participant
10 July 2017	Subgroup 1 / BEIS / RWM meeting on Working With Communities and Communications	Participant
25 July 2017	Visit to Dounreay	Plenary
19-20 September 2017	Early Autumn Plenary - London	Plenary
2 October 2017	Scottish Nuclear Sites meeting	Participant
4 October 2017	Visit to the Low Level Waste Repository – Cumbria	Plenary
5 October 2017	Visit to Sellafield - Cumbria	Plenary
8 October 2017	Scottish Government Near Surface Implementation Group meeting	Participant
9 October 2017	IPA review of RWM planning meeting - Harwell	Observer
12 October 2017	IPA review of RWM planning meeting – London	Observer
12 October 2017	Scottish Government stakeholder workshop	Participant
26 October 2017	Subgroup 1 / BEIS / RWM meeting on Working With Communities and Communications	Participant
22-23 November 2017	Late Autumn Plenary – Edinburgh	Plenary
24 November 2017	Subgroup 2 / RWM meeting on National Geological Screening outputs	Participant

28 November 2017	Subgroup 7 / NDA meeting on waste storage	Participant
14 December 2017	Subgroup 3 / BEIS meeting on GDF licensing, regulation, and land use planning - London	Participant
8 January 2018	Subgroup 1 / BEIS / RWM / NDA on GDF consultations	Participant
8 January 2018	BEIS CoRWM discussion on waste strategy	Participant
9-10 January 2018	Late Winter Plenary - London	Plenary
18 January 2018	Subgroup 2 / BGS meeting - Nottingham	Participant
13 February 2018	Chairs meeting with Sponsors	Chair
13 February 2018	CoRWM / NDA / BEIS / Welsh Government workshop	Observer
22 February 2018	BEIS NGO forum - London	Observer
2 March 2018	RWM telecon on the Letters of Compliance process	Participant
2 March 2018	Subgroup telecon on engagement	Subgroup
7 March 2018	Welsh Government / Subgroup 6 meeting - Cardiff	Participant
12 March 2018	Subgroup 3 / BEIS meeting on GDF licensing, regulation, and land use planning - London	Participant
21 March 2018	Subgroup 1 / BEIS / RWM meeting on Working With Communities and Communications - London	Participant
21 March 2018	RWM workshop on Siting and Engagement – London	Participant
22 March 2018	BEIS workshop on GDF policy consultations – London	Observer
22-23 March 2018	End of work-year Plenary - London	Plenary
28 March 2018	Subgroup 7 / NDA meeting on progress reporting - Manchester	Participant
28 March 2018	Chair's meeting with Cabinet Secretary for the Environment, Climate Change, and Land Reform - Edinburgh	Chair

Annex F: Government's Response to CoRWM's 2016-17 Annual Report

Dear Professor Gemmell,

On behalf of BEIS and the Devolved Administrations, I would like to thank you, and Professor Laurence Williams as outgoing Chair, for the Committee on Radioactive Waste Management (CoRWM's) Annual Report 2016/17.

CoRWM provides important independent assurance as well as constructive feedback to the UK Government and Devolved Administrations' work on radioactive waste management issues. I note the six recommendations included in the report and a response is set out below. Officials would be pleased to discuss further, and work with CoRWM on these and other issues as the Implementing Geological Disposal programme for England, Wales and Northern Ireland progresses.

Recommendation 1: National Geological Screening Outputs:

Part 1 of RWM's National Geological Screening output should comprise the British Geological Survey's Technical Information Reports; Part 2 should show the relationship of this information to the safety of a GDF and Part 3 should contain information on areas that have been screened out from further consideration.

The National Geological Screening outputs will not definitively rule all areas as either 'suitable' or 'unsuitable' (White Paper, 2014). However, they will be divided into several elements to help people access the parts of most interest to them.

At the simplest level there will be plain English summaries of the geological information for each region, illustrated with maps showing areas that may include volumes of appropriate lower strength sedimentary rocks (e.g. clay), higher strength rock (e.g. granite) or evaporite rocks (e.g. salt) at the appropriate depths for a Geological Disposal Facility (GDF). These will be accompanied by more detailed regional and sub-regional reports that explain the relationship of the basic geological information to the safety of a GDF in each area. These will also be supported by short, explanatory video clips intended to explain technical terms for non-geologists.

The RWM website will also include a link to the British Geological Survey website to signpost their underpinning Technical Information Reports.

RWM has discussed the development of these outputs with CoRWM throughout the process to help ensure clarity.

Recommendation 2: Communication Roles and Responsibilities

BEIS should ensure that the respective roles and responsibilities of BEIS and RWM relating to GDF communication activities are clearly defined and implemented.

BEIS agree with CoRWM that communication roles and responsibilities relating to GDF communications should be clearly defined. To this end, RWM, NDA and BEIS have already established a GDF Communications and Engagement Coordination Group that includes a cross-section of senior communication representatives from each organisation. This group is developing integrated plans for the delivery of communications activity relation to geological disposal to better reflect the work of the group.

Recommendation 3: Access to Independent Third Party Expert Views

The UK Government, the Welsh Government and the Northern Ireland Executive should ensure that any proposed mechanism to provide independent third party expert views to communities that are engaged in the GDF siting process is independent of RWM.

BEIS have worked with a number of Learned Societies, RWM, Welsh Government and the Committee on Radioactive Waste Management (CoRWM) in developing the proposed Third Party Expert View Mechanism. This mechanism is intended to enable communities, RWM and Government to seek third party expert views from the Learned Societies on contested and unresolved issues of a technical and scientific nature during the siting process for a Geological Disposal Facility. The views provided by Learned Societies will be independent of RWM and provided directly to the community/ies concerned.

This mechanism is one aspect of the community engagement process, and will not be the primary mechanism through which communities receive information on a GDF. It is expected that the mechanism will be triggered only after other opportunities have been exhausted. Communities will receive and will be able to request information on a GDF from multiple different sources including RWM, regulators, expert consultants, universities, local experts, and CoRWM.

<u>Recommendation 4: Regulators – Role of the Regulators on the GDF Siting</u> <u>Process</u>

The UK Government, the Welsh Government and the NI Executive should request the nuclear safety, security and environmental regulators be available during the GDF siting process to explain that the regulatory framework will control the design, construction, commissioning, operation and closure of a GDF, and their roles in the permissioning process.

All the relevant independent regulators, that is to say the Office for Nuclear Regulation, the Environment Agency and Natural Resources Wales, are responsible for ensuring that any future GDF meets the mandatory high standards in place to protect people and the environment during construction and operation of the facility and after it has been closed. In Northern Ireland, the Northern Ireland Environment Agency, which is an Agency within the Department for Agriculture, Environment and Rural Affairs, will have similar responsibilities for ensuring that, should there be any proposals in future for a GDF to be sited in Northern Ireland, all standards and legislation in place to protect the environment and human health will be stringently adhered to at all stages of the process. In response to a request from BEIS, the regulators have developed an 'overview of the regulatory process', which will be used to support engagement with communities during GDF siting. The overview describes environmental and nuclear regulation and outlines the regulators' role in supporting the land-use planning process as currently envisaged to be applied to the implementation of geological disposal. The overview also emphasises that unless the safety cases submitted by RWM demonstrate that a GDF will meet the required standards for safety, security and environmental protection, it will not receive regulatory approval and will not be built.

All regulators have confirmed that in addition to the overview, which will be published in advance of the launch of the siting process, they are always available to explain their roles and responsibilities.

Recommendation 5: LOC process

RWM should ensure that the Letter of Compliance process is applicable to GDFs in all three rock types.

BEIS welcome the comments from CoRWM and the continued commitment from RWM to work constructively with CoRWM as the GDF programme continues to develop.

RWM continues to work with waste producers across the industry to assess the disposability of waste packaging proposals to inform decision making on the packaging of radioactive wastes. This disposability assessment process is referred to as the Letter of Compliance process. RWM uses a pragmatic assessment basis that is intended to cover the three rock types and is underpinned by its generic design and safety case and the technical developments and experience gained within the UK and internationally. This gives confidence that wastes packaged in the UK will meet the acceptance criteria, which would be implemented in any of the geological environments in which a UK GDF could credibly be implemented. We note that this disposability assessment process is also subject to scrutiny by the nuclear regulators.

RWM has updated its generic design and safety case to more explicitly consider the three rock types and this will be used to provide further confidence that the process remains applicable to GDFs in all three rock types.

Recommendation 6: Independent External Review of RWM Business Model

BEIS should initiate an independent external review of RWM's Business Model to assess its fitness for purpose in relation to the need for the UK to have an effective GDF delivery organisation.

The GDF programme is a major infrastructure programme and forms part of the Government Major Projects Portfolio (GMPP). As part of the Business Case

approval process, independent assurance activity is commissioned to ensure the arrangements for delivery of the GDF programme are fit for purpose. This includes reviews of the initial actions led by BEIS, communications and stakeholder plans as well as RWM's Business Model and preparations for leading the GDF siting process.

To conclude, I would like to take this opportunity to record my appreciation for all the hard work the Committee undertakes on behalf of the UK and Devolved Administrations. I have already written to Professor Williams to express my thanks for his five years' service as Chair of the committee, and I'd like to thank Professor Gemmell for agreeing to act as interim Chair until a new Chair is appointed.

Richard Harrigton

RICHARD HARRINGTON MP Minister for Energy and Industry

Annex G: List of Acronyms

This annex lists acronyms and abbreviations within the annual report. A more comprehensive list of acronyms and abbreviations in use within radioactive waste management is available online¹.

AoS	Appraisal of Sustainability
BEIS	Department for Business, Energy & Industrial Strategy
BGS	British Geological Survey
CoRWM	Committee on Radioactive Waste Management
DAERA	Department of Agriculture, Environment and Rural Affairs (Northern Ireland)
DCA	Delivery Confidence Assessment
DECC	Department of Energy and Climate Change
DFR	Dounreay Fast Reactor
EA	Environment Agency (England's Environmental Regulator)
EPA	Environmental Protection Authority (South Australia)
EU	European Union
FY	Financial Year
GDPB	Geological Disposal Programme Board
GDF	Geological disposal facility
gDSSC	generic Disposal System Safety Case
HM	Heavy metals
НМТ	Her Majesty's Treasurer
IAEA	International Atomic Energy Agency
IGD	Implementing Geological Disposal
IPA	Infrastructure Projects Authority
LoC	Letter of Compliance (previously Letter of Comfort)
MOX	Mixed Oxide Fuel
NDA	Nuclear Decommissioning Authority
NGS	National Geological Screening
NPS	National Policy Statement

¹ <u>https://www.gov.uk/government/guidance/acronyms-and-abbreviations-in-radioactive-waste-management</u>

- **ONR** Office for Nuclear Regulation (the regulator of safety, security and safeguards at nuclear facilities and transport of radioactive materials)
- PAR Project Assurance Review
- WIPP Waste Isolation Pilot Plant (US waste disposal facility)
- **RWM** Radioactive Waste Management Limited, a wholly owned subsidiary of the NDA charged with delivering Geological Disposal, created on 1 April 2014.
- SEPA Scottish Environment Protection Agency
- SRO Senior Responsible Owner or Officer
- **THORP** Thermal Oxide Reprocessing Plant
- **TPEVM** Third-Party Expert View Mechanism
- **WWC** Working with communities