**Groundwater Review Group – Role Specification**

**Context**

RWM’s Groundwater Review Group (GWRG) provides scrutiny and advice on RWM’s groundwater programme required for the delivery of a Geological Disposal Facility (GDF). The GWRG acts as a supportive critical friend to RWM’s groundwater programme, drawing on expertise of RWM’s and UK predecessor programmes, and international programmes in a variety of geological environments, as well promulgating relevant knowledge and learning from non-nuclear fields. To join RWM intelligent client (IC) staff we are currently seeking an external expert to bring expertise regarding groundwater movement characterisation.

One of the activities performed by the GWRG is to review and scope the forward work plans for RWM’s Groundwater work. In this context Groundwater research covers a broad range of topics, including (but not limited to):

* the development and production of site descriptive models (SDM’s) based on site characterisation data
* development of new / novel field techniques and equipment
* groundwater movement modelling using a range of conceptual model approaches and codes (3D representation, considering space and time evolution)
* modelling of groundwater chemistry evolution and development of reference groundwaters
* Understanding the perturbations to the geosphere associated with construction and closure of a GDF
* coupled process modelling – thermal, hydraulic, mechanical and chemical interactions associated with the GDF, at all parts of the flow path (including modelling of the engineered barrier system)
* scoping and planning underground / *in situ* and laboratory experiments, and delivering work-in-kind to partner projects at underground rock laboratories
* furthering understanding of the role of groundwater movement and groundwater chemistry in the Engineering Damaged Zone (EDZ) and Borehole Damaged Zone (BDZ)
* understanding and representing two-phase flow in the geosphere and biosphere

Our external experts need to be independent of RWM’s programme. RWM draws specific attention to the fact that participation to the GWRG would give a competitive advantage that may preclude that expert (or their organisation) from leading or active involvement in competitive tenders for any of the work that is planned / discussed at the GWRG. RWM does, however, realise that the pool of experts able to respond to this call is limited, therefore an expert appointed to the GWRG, could work as a subcontractor / supplier to a bid prepared by another contractor, on the basis that information from the GWRG is retained by expert as confidential during the tendering process.

**Scope of Works**

RWM is looking for an expert to join the GWRG who will bring a significant breadth and depth of expertise and experience of UK and international programmes (those with UK relevant geological environments).

The skills / expertise required for the role are outlined below.

The role is required in FY20/21 and FY21/22. The following labour effort should be expected:

FY20/21

* Attendance at one GWRG workshop, duration of 1.75 days, to be held at / near to RWM’s Harwell office
* Allowance of three days (in addition to attendance of the workshop) for review / provision of materials before, and following, the GWRG workshop
* Allowance for two additional days support to RWM’s groundwater programme, to be used for the review of the scope / technical specifications for projects in planning, and / or advice on next steps following review of project specific materials. These interactions will be remote, and travel to Harwell is not required.

FY21/22

* Attendance at two GWRG meetings, duration and location as per previous
* Allowance of a total of six days additional time for pre / post GWRG workshop activities
* Allowance of three additional days to support RWM’s groundwater programme, for similar scope as per above.

**Experience and Expertise Specification**

The experience and expertise required for this role is outlined below.

Groundwater Movement Expert

* Degree in relevant groundwater / geoscience discipline
* Recognised international expert on the topic of groundwater movement, in a variety of potential GDF host rocks (clay, salt, higher strength rock) / geological environments, demonstrated by:
	+ Extensive publication record – including as first author, relating to research that supports UK and international GDF programmes, specifically regarding groundwater movement, including hydro-mechanical behaviour in clay and higher strength rock house rocks
	+ Track record of providing advice, support and scrutiny to (and of) UK and international GDF programmes
	+ Thorough understanding of state of knowledge techniques for hydraulic testing and sampling, to characterise the hydrogeology setting at local and regional scales for a GDF – for clay, higher strength rock and evaporite containing site environments
	+ Proven track record in characterisation of groundwater pathways relevant to GDF depths (>1km bgl) – UK experience essential
	+ Site based experience of planning and supervising hydrogeological testing of deep boreholes in higher strength rock environments, to GDF relevant depths (~1km) and subsequent interpretation of hydrogeological information to support site characterisation / development of site descriptive models
	+ Expertise and demonstrable understanding of modelling groundwater movement in fractured rock networks employing a diverse range of conceptual models, including Discrete Fracture Network, (DFN), Equivalent Continuous Porous Media (ECPM) and channel modelling – with active involvement and work ongoing for international programmes in both clay and fractured geologies
	+ Demonstrable knowledge of characterising / understanding groundwater movement and solute transport in clay rocks, and understanding of the implication of the groundwater movement on safety cases / performance assessment – drawing on experience working for GDF programmes with clay host rocks, including the critique and review of results / information from experiments in URLs
	+ Use and interpretation of tracers information from GDF or URL relevant settings
	+ Expertise of advising WMOs on approaches and methods for deriving input parameters for performance assessment in HSR rock
* In-depth understanding of regulatory drivers, and the requirements that these place on the groundwater research of international GDF programmes – this may be demonstrated by working for / on behalf of regulators of international programmes, or supporting the GDF community in responding to regulatory driven information needs
* Expertise in coordinating and drawing together views and opinions from a diverse range of specialist groundwater modelling experts – relevant to HSR, LSSR and evaporite rock types
* Critical appraisal of the appropriate use of analogues to support GDF programmes

An initial screening exercise will be undertaken to evaluate whether a competitive tendering process is required. If you are interested in participation in the GWRG we would be pleased to review your CV as part of the screening process. CV’s will be evaluated against the role criteria above.