

**ALL RESERVOIRS, NON IMPOUNDING AND SERVICE RESERVOIRS PANEL ENGINEERS:**  
**REQUIRED ATTRIBUTES**

| Attribute Group                              | Attributes of All Reservoirs, Non Impounding and Service Reservoirs Panel Engineers  |
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| 1. Dam and reservoirs engineering knowledge  | <ul style="list-style-type: none"> <li>A. <b>Demonstrate a detailed knowledge of issues affecting the safety</b> of dams and reservoirs.</li> <li>B. <b>Demonstrate knowledge of geotechnics, hydrology<sup>1</sup>, hydraulics<sup>1</sup> &amp; structures</b> in relation to the design and construction of dams and reservoirs.</li> <li>C. <b>Demonstrate a detailed knowledge of the behaviour of dams and reservoirs</b> and of the monitoring and surveillance practices that may be adopted to ensure ongoing safety of existing dams and reservoirs, and first filling of new/raised dams.</li> <li>D. <b>Demonstrate a detailed knowledge of the nature and characteristics</b> of the full range of water retaining structures to which the reservoirs legislation applies.</li> <li>E. <b>Be able to provide appropriate technical guidance</b> and make appropriate recommendations to Undertakers and Reservoir Managers.</li> <li>F. <b>Demonstrate technical expertise and practical experience in design and construction</b> in the UK. Recent experience must include dam or reservoir design and supervision of major reservoir construction works and monitoring / surveillance of dams and reservoirs.</li> </ul> |
| 2. Reservoirs legislation                    | <ul style="list-style-type: none"> <li>A. <b>Demonstrate appropriate knowledge of the primary legislation</b> in all territories in which the applicant wishes to practice.</li> <li>B. <b>Demonstrate appropriate knowledge of the subordinate legislation</b> that supports the primary legislation in the territories.</li> </ul>   |
| 3. Observational skills                      | <ul style="list-style-type: none"> <li>A. <b>Be able to recognise</b> those features that may give advance warning of a developing structural problem within a dam and its associated works.</li> <li>B. <b>Be able to specify effective monitoring and surveillance regimes.</b></li> <li>C. <b>Be able to diagnose the condition of a dam</b> or reservoir and to direct studies so as to investigate defects that affect reservoir safety and determine whether works are needed to ensure ongoing safety.</li> </ul>   |
| 4. Independent judgment                      | <ul style="list-style-type: none"> <li>A. <b>Be able to identify and recognise</b> the limits of personal knowledge and skills.</li> <li>B. <b>Be able to identify critical indicators and assess risk</b> in connection with the ongoing safe storage of water in a reservoir</li> <li>C. <b>Be able to review information critically</b> and to make independent decisions on those actions necessary to ensure ongoing safety.</li> <li>D. <b>Be able to specify key design/ construction requirements for new dams and/or improvement works at existing dams</b>, including the specification of appropriate supervision, quality management, etc.</li> </ul>  |
| 5. Maturity of judgment                      | <ul style="list-style-type: none"> <li>A. <b>Be able to determine</b> the frequency at which a reservoir should be visited by the Undertaker or Reservoir Manager or other persons, if any, responsible for monitoring and surveillance.</li> <li>B. <b>Be able to decide when to escalate a safety issue</b>, such as seeking advice from other specialists or declaring an incident or emergency.</li> <li>C. <b>Demonstrate the ability to assess reservoir safety issues</b> and to make appropriate recommendations in the interest of safety and/or maintenance.</li> </ul>  |
| 6. Leadership & responsibility               | <ul style="list-style-type: none"> <li>A. <b>Be able to direct the technical management</b> of a reservoir safety incident until such time as control is passed over to the Emergency Services or other Agency/Department.</li> <li>B. <b>Be able to direct the design and construction</b> of physical works on dams.</li> </ul>  |
| 7. Health & safety hazards & risk management | <ul style="list-style-type: none"> <li>A. <b>Demonstrate appropriate knowledge and application of legislation, hazards and safe systems of work</b> relating to the design, alteration, new construction, operation and maintenance of reservoirs.</li> <li>B. <b>Be able to produce appropriate risk assessments and method statements</b> for all reservoir surveillance and monitoring activities.</li> </ul>   |
| 8. Interpersonal skills & communication      | <ul style="list-style-type: none"> <li>A. <b>Be able to communicate</b> well with Undertakers, Managers and non-technical staff involved in the management of reservoir safety.</li> <li>B. <b>Be able to discuss ideas and technical issues</b> with other engineers and specialists relating to dam design, construction, monitoring and reservoir safety.</li> <li>C. <b>Be able to prepare written documents</b> in a concise and succinct manner such that technical issues may be communicated effectively.</li> <li>D. <b>Be able to explain</b> the technical purpose and reason why safety and/or maintenance measures have been recommended.</li> <li>E. <b>Be able to explain</b> the technical purpose of design features incorporated within new dams)</li> </ul>   |

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| <b>9. Professional standards</b> | <ul style="list-style-type: none"> <li>A. <b>Be able to demonstrate that the applicant has kept up to date with advances in dam engineering</b> and surveillance practice.</li> <li>B. <b>Be able to demonstrate that the applicant has kept up to date with latest guidance</b> in each region to which the application refers.</li> <li>C. <b>Be able to demonstrate regular engagement in dams and reservoirs related CPD activities.</b></li> </ul> |
| <b>10. Generic</b>               | <ul style="list-style-type: none"> <li>A. <b>Chartered Engineer.</b></li> </ul>   |

<sup>1</sup> Not required for Service Reservoir or Non Impounding Reservoir Panel applicants