

Appendix A

Complex Engineering Problems

Work Package	Characteristic	Features	Score	Compliance (Please add remarks and mark for related preamble)
WP1*	Depth of Knowledge required	Resolved with forefront in-depth engineering knowledge (WK3, WK4, WK5, WK6 or WK8) which allows a fundamentals-based, first principles analytical approach.	/3	
WP2	Range of conflicting requirements	Involve wide-ranging or conflicting technical, engineering and other issues.	/1	
WP3	Depth of analysis required	Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models.	/1	
WP4	Familiarity of issues	Involve infrequently encountered issues	/1	
WP5	Extent of applicable codes	Beyond codes of practice	/1	
WP6	Extent of stakeholder involvement and level of conflicting requirements	Involve diverse groups of stakeholders with widely varying needs .	/1	
WP7	Interdependence	Are high level problems including many component parts or sub-problems.	/1	
EP1	Consequences	Have significant consequences in a range of contexts.	/1	
EP2	Judgement	Require judgement in decision making	/1	
Aggregate			/5%	

Complex Engineering Activities

Preamble	Complex activities mean (engineering) activities or projects that have some or all of the following characteristics listed below	Score	Compliance (Please add remarks and marks for against relevant preamble)
Range of resources	Diverse resources (people, money, equipment, materials, information and technologies). EA1	/1	
Level of interaction	Require resolution of significant problems arising from interactions between wide ranging or conflicting technical, engineering or other issues.EA2	/1	
Innovation	Involve creative use of engineering principles and research-based knowledge in novel ways. EA3	/1	
Consequences to society and the environment (* UN SDGs)	Have significant consequences in a range of contexts , characterised by difficulty of prediction and mitigation.EA4	/1	
Familiarity	Can extend beyond previous experiences by applying principles-based approaches.EA5	/1	
Aggregate		/5 %	