SRK Responses to GCS Nuclear-1 Hydrology EIR Peer Review (Report Version – 1 of 13 August 2015)

GCS Review Comments (*as Quoted)*	SRK Responses
Technical, Scientific and Professional Credibility Section 2.2.5: Long Term Hydrology Details: *More recent data from the WR2005 database (these were the most recent hydrological data available in 2011) instead of the far older WR1990 data should have been used since this report was compiled in 2011. Or alternatively a comparison between the WR90 and WR2005 could have been done. Current data are necessary and make more scientific sense since changes in quantity and patterns of rainfall are expected.*	We are in agreement. We did compare the WR2005 MAP which remained the same but there are other parameters that change. This was not used in any of the detailed calculations but formed part of the regional information. The report was updated using the WR2012 data.
Section 1.2.1: Methodology: *Certainly more than one and at least three peak flow calculation methods should have been employed. In this manner the results of the three methodologies could be verified against each other and the most site appropriate and robust methodology could have been selected as the final option.*	We did do some comparisons for order of magnitude but the adopted model was assessed in detail as part of the VERIFICATION AND VALIDATION (V&V): Surface Water Models for the site safety reports (SSRs). Additional information on the adopted flood method was included.
Defensibility of Methodology and Study Approach Section 1.2.1: Methodology: *The use of one peak flows calculation method (SCS Method) is not scientifically prudent, but the method chosen is an acceptable method. Other methods such as any of the Rational Methods, the Standard Design Flood method and the Midgley and Pitman method could have been used together with the SCS method and the best method for the site selected based on scientific judgement and experience.*	As per previous comment above this was addressed in the V&V in detail. We included a section on the criteria used in choosing the SCS model.
Section 2.1.9: Description of Model: *HEC-RAS model input parameters could have been explained further to help clarify what these are to non-technical people. A paragraph would do to explain the chosen Manning's roughness coefficients, explain what mixed regime is and to explain the boundary condition selected in the model. For instance, photographs of the sites showing vegetation and the general terrain would assist to justify the manning's 'n' values used.*	This was explained in more detail in the SSRs. We have included more information on the chosen parameters used in the HEC-RAS model.
Section 1.2.2: Legislative Framework and Regulatory Guidelines: *The provisions of the IAEA legislation followed in the study should be described in detail upfront and referred to in the text. This is necessary as this is the most significant piece of legislation for this study. The summary given for the nuclear standards and guidelines is too skeletal; it refers to the relevant documents for the study but the contents of these documents are not described for readers to get an understanding of what they recommend. Most stakeholders will not read the IAEA documents.*	The legislative Framework and Regulatory Guidelines were discussed at great length during the SSR with international external reviewer's familiar with the nuclear SSR, client, consultants etc. We have re-written and expanded on the legal framework where applicable

4.5 Information gaps, omissions or errors Information gaps, omissions or errors are specified below for each of the relevant sections in this report. The information gaps may cause difficulty in defending the document. ***Section 1.2.3: Assumptions and Limitations:*** *At this stage it has been assumed that the entire plant area (to the extent of the anticipated footprint) will be paved when operational. This assumption is fine if verified by client.*	This was provided by the client and may change, depending on the approved layout during detailed design stage.
Section 1.2.3: Assumptions and Limitations: *It is also assumed that the site footprint will have a surface area of approximately 60 ha and the depth would be about 15 m for the conceptual site positions. Again, this assumption is fine if verified by client.*	This was provided by the client and may change, depending on the approved layout during detailed design stage.
Section 2.1.3: Rainfall Details: *A comparison between SAWS, WR90 and local rain gauge (despite only 4 years' data) should have been undertaken.*	One must bear in mind that we are trying to predict the 1:10 000 return period and therefore need to use the longest rainfall records available. A separate detailed assessment on all the rainfall was carried out by the Meteorology specialist. This included a separate V&V report. The hydrology calculations were based on the information provided by the Meteorology specialist.
Section 2.1.9: Description of Model: *Model input parameters for the HEC-RAS model need to be explained as described in Section 4.4.*	This was explained in more detail in the SSRs. We have included more information on the chosen parameters used in the HEC-RAS model.
Section 2.1.11: Flood line Determination: *HEC-RAS flow velocities which were tabulated but have not been used or commented on.*	This was done in the SSR. The velocities were applied to the Velocity x Depth impact grid. A few paragraphs were also included on the velocities.
Section 2.1.11: Flood line Determination: *Figure 2.3: Flood lines are very unclear and should be plotted at a far larger scale with proposed infrastructure or the development area overlaid.*	Agreed. The black and white figures are not clear and colour was used in SSR. We have adjusted the drawings indicating floodlines to make clearer.
Section 2.1.11: Flood line Determination: *An explanation should be given of why flood lines were determined only at a few sections.*	This was done in the SSR. We included an explanation in the EIR.
Section 1.2.2: Legislative Framework and Regulatory Guidelines: *A description of the IAEA legislation should be provided upfront so that stakeholders understand what the legislation recommends.*	The legislative Framework and Regulatory Guidelines were discussed at great length during the SSR with international external reviewer's familiar with the nuclear SSR, client, consultants etc. We have re-written and expanded on the legal framework where applicable including the IAEA.