1 APPENDIX – SHETL SPECIFIC ASPECTS

1.1.1 The following paragraphs provide SHETL specific implementation details regarding each of the elements of the Network Output Measures.

1.1.2 The implementation details are also reviewed within KEMA Limited's Review of Electricity Transmission Asset Management Policies and Processes adopted by Scottish Hydro Electricity Transmission Ltd (http://www.ofgem.gov.uk/Networks/Trans/PriceControls/TPCR4/ConsultantsReports/Documents1/15734-KEMA_SHETL_AssetMgt_pub.pdf).

1.1.3 These specific network output measures are new to SHETL and it would not be possible to report these for past years. With the exception of the network performance and capability details which were first gathered in the 06/07 RRP process.

2 Network Asset Condition

2.1.1 The following section provides details of SHETL's current approach to assessing network asset condition.

2.2 Short and Medium Term Assessment

2.2.1 Routine inspection and reliability centred maintenance together with specific condition monitoring provides SHETL with early indication about the deterioration in condition of assets and possible requirement for replacement.

2.2.2 SHETL's Asset Risk Management Manual (MA-PS-034) identifies specific condition monitoring tools by equipment type. These include Dissolved Gas Analysis, Furfuraldehyde Analysis and comparative external condition assessment against known metrics using photographic comparison.

2.2.3 This information is then utilised when undertaking onsite condition assessments in conjunction with SHETL's Asset Replacement Decision Tool Procedure (PR-PS-401).

2.2.4 In order to determine the overall asset condition a condition assessment sheet (included within PR-PS-401) is completed during routine inspection and maintenance (at least every 2 years).

2.3 Reliability of Network Assets

2.3.1 As part of the condition assessments the fault rates (from ENA NAFIRs reports), spares availability and obsolescence of assets are also assessed to gain an appreciation of reliability.

2.4 Predicted Rate of Deterioration in Condition and Present/Future Ability to Perform Their Function

2.4.1 The predicted rate of deterioration of assets and their present/future ability to perform their function is considered a long term assessment and is primarily based on asset life replacement profiles. This involves analysing asset age profiles, average life of assets, standard deviation against the average and their associated replacement profiles.

2.4.2 This long term assessment allows the verification of short and medium term assessments and identifies trends in asset replacement and associated replacement issues.

2.4.3 Asset replacement models are modified using condition data on an ongoing basis.

3 Network Risk

3.1.1 SHETL currently assess network risk in accordance with the aforementioned Asset Replacement Decision Tool Procedure. The 'condition assessment' form includes the following assessments covering five main drivers;

- Asset condition
- Fault rate
- Spares and obsolescence
- Safety and Environment
- Age

3.1.2 SHETL consider condition, fault rate and age to be the three key indicators of the likelihood of asset failure. Correspondingly, spares/obsolescence and safety/environment are considered the key indicators of the severity of asset failure.

3.1.3 The condition assessment forms are input into a replacement model which allocates scores (based on an expert groups' review) to each of the five categories resulting in an overall risk replacement score. The five main drivers are weighted to reflect their importance (with condition currently having the highest weighting). Each asset class is scored against the criteria and a total score obtained.

3.1.4 The total score reflects the risk associated within asset failure and is the combination of the associated likelihood and severity of failure calculated from the five drivers which are assessed.

3.1.5 Dependent on the risk scores the rules allocate the following replacement timescales;

- Replace within 2 years (Red)
- Replace within 5 years (Amber)
- Replace after 5 years (Green)

3.1.6 Figure 3.1.6 below shows an example output from the replacement model for Transformer risk scores.

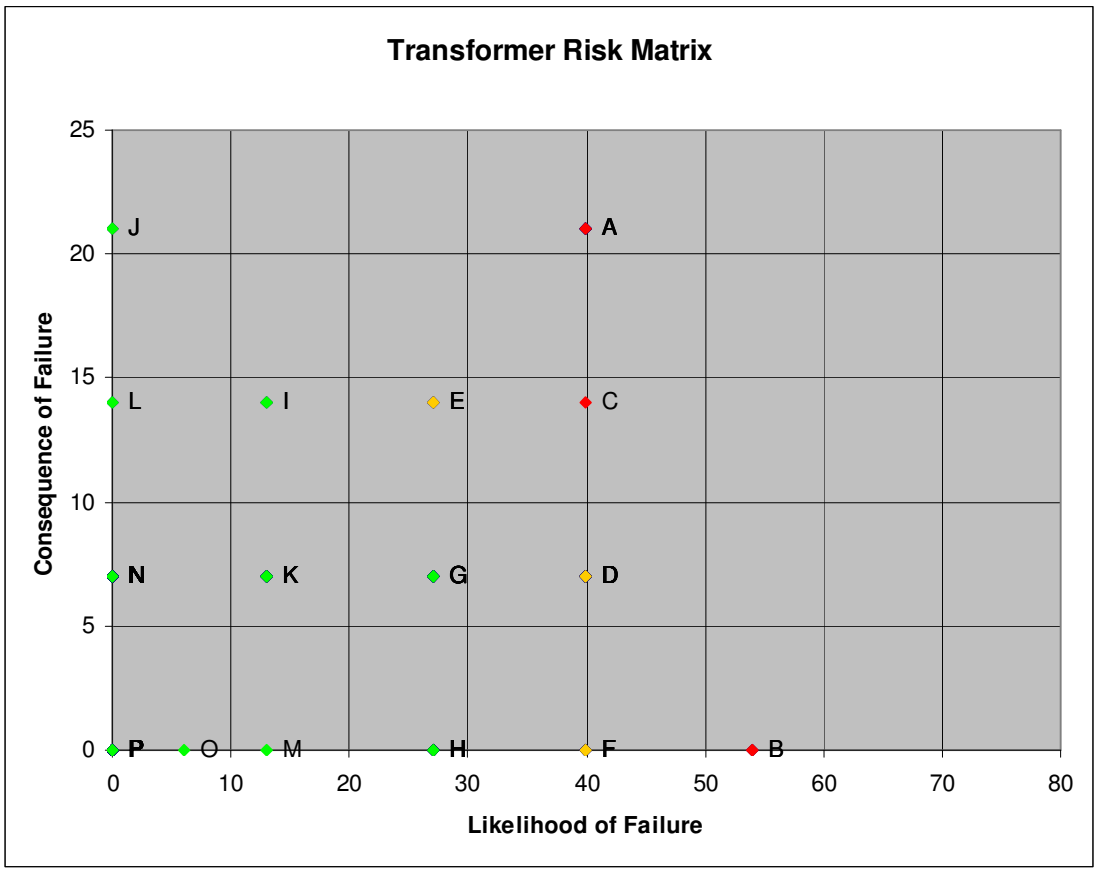

Figure 3.1.6

3.1.7 SHETL aim to align their current replacement model to the overall methodology and the further work to be undertaken regarding criticality.

4 Network Performance

4.1.1 As indicated within the main methodology document currently the National Grid outage planning tool TOGA (utilised to monitor GB Transmission System Performance) does not contain the reporting required to produce average circuit unreliability. This additional reporting would have to be agreed to be included within the GB Transmission System Performance reporting.

4.1.2 SHETLs network performance reporting within the RRP is derived from the figures published within the annual GB Transmission System Performance Report.

5 Network Capability

5.1.1 As indicated within the main methodology document network capability will be reported via the existing RRP Tables 4.8 and 4.9.

5.1.2 Table 4.8 'Boundary Transfers and Capability reports';

- Planned transfer (GW)
- Required capability (GW)
- Actual capability (GW)

5.1.3 The above figures are derived from the Seven Year Statement for the relevant year and associated network analysis.

5.1.4 Table 4.9 'Demand and supply capacity at substations' reports;

- Number of substations within Peak demand/intact capacity
- Number of substations within seasonal peak demand/n-1 capacity

5.1.5 The above figures are derived from analysis utilising the Week 24 demand forecast data.