3 September 2020

Power and Water Corporation

Darwin, Northern Territory

Australia

Via email: NetworkDevelopandPlanning.PWC@powerwater.com.au

Submission to Power and Water Consultation on draft SSIAG and Model Guidelines

DIgSILENT Pacific welcomes the opportunity to participate in Power and Water's industry consultation process on the following two documents:

- The draft Generator and Load Model Guidelines and Change Management Requirements V1.0", referred here as the *Modelling Guidelines*.
- The draft System Strength Impact Assessment Guidelines V1.0, referred here as the *SSIAG*.

Context

These two documents are fundamental to the successful integration of renewable energy technologies and the energy transition from carbon intensive sources. They reflect the experiences within the Australian National Electricity Market (NEM) and it is vital that they are implemented expeditiously to provide certainty to investors. Mistakes and oversights in relation to these topics could have impacts valued in multiple millions that might subsequently deter investors.

We are very supportive of the initiative to consult on and refine these documents and stress the importance of providing certainty and clarity for investors as soon as practicably possible.

Our company

Established since 2001 in Australia, DIgSILENT Pacific is the regional representative company of DIgSILENT GmbH headquartered in Germany. DIgSILENT GmbH are the developer of *PowerFactory* software, being an advanced power system analysis platform used extensively throughout the world, including in our local region of Oceania.

DIgSILENT companies, including DIgSILENT Pacific, are also active consultants in the field of power system analysis, providing a wide raft of analytical and advisory services to the electricity energy sector. As there are different requirements across Australia's regulated and private electrical networks, our consulting activities often also include analytical services via simulation on software platforms other than our own *PowerFactory* product.

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Our submission

We respectfully provide our opinion on these important documents in the context of an active consultant dealing with these issues in the NEM and also a developer of advanced software tools. We acknowledge we have a vested interest in promoting our software tools in part of this submission and would encourage Power and Water's consultation team to assess closely the relative merits of the software tools currently available and in use in both the NEM, the SWIS, the NWIS and in Northern Territory networks. This includes not only the analytical components of the tools but also the data management, storage and change management functions, which are increasingly important as the transition form a small number of large generators to a large number of smaller generators occurs.

Our knowledge of the Northern Territory power system

DIgSILENT Pacific was engaged by Power and Water in 2019 to provide *PowerFactory* software licenses and assist with the preparation of a new static transmission model for the Darwin-Katherine transmission system. This also included new static models for the two smaller regulated networks of Alice Springs and Tennant Creek.

Later in 2019 DIgSILENT Pacific was separately engaged to undertake generator modelling and model validation testing for a substantial portion of the existing conventional generation at Northern Territory (NT) power stations across these three regulated networks. This covered the portfolio of gas turbine and gas reciprocating generators at Territory Generation's Power Stations at Channel Island, Weddell, Katherine, Tennant Creek and Owen Springs, but this excluded all Jenbacher units given those validated models were project deliverables by others.

Power and Water and Territory Generation have already taken significant steps towards the creation of validated power system models. We note that all the Territory Generation models created are already suitable for both RMS and EMT studies using *PowerFactory*. These models are fundamental to achieving the outcomes envisaged in the two policy documents that are the subject of this consultation.

In a short period over 9 months, the regulated networks' system models were reconstructed from Power and Water's asset records and completely new detailed generation models were created and validated through field testing of each generator type scoped.

That project was a significant success that we consider to be exemplary with respect to the joint effort by DIgSILENT Pacific, Power and Water and Territory Generation.

With that background established, our submission responds to the four consultation questions.

Q1. Are the draft SSIAG and Model Guidelines aligned with the obligations outlined in the NTC?

In our opinion, the preparation of the two guidelines are aligned with the obligations of PWC as Network Operator and Network Service Provider (NSP).

Q2. Does the draft SSIAG provide sufficient detail to enable Users to understand how system strength impact assessments will be conducted and the data and models required for each assessment?

System strength can be a complex topic to address because it is presently dominated by the impact of high impedance connections, indicated by low Short Circuit Ratio (SCR), of Inverter Based Resources (IBRs). Although the document deals with that issue in appropriate detail, we believe some clarification in section 2.4.1 would be useful.

Specifically, in Section 2.4.1, paragraph 2 is verbatim from AEMO's 2018 SSIAG document and states that:

"There has been a growing realisation, both locally and internationally, that traditional positive sequence, phasor domain based modelling practices are, on their own, inadequate to fully examine the range of new stability issues introduced by the connection of large-scale inverter based resources (IBR). This is especially true for low system strength conditions where a network's aggregate short circuit ratio (SCR) 3 falls below 3. Guidance on calculation of aggregate SCR is presented in CIGRE Technical Brochure 671: "Connection of wind farms to weak AC networks" (CIGRE TB 671)"

The start of this paragraph is pre-amble from AEMO's 2018 decision to expand their approach to power system dynamic analysis from using balanced-only RMS to also consider full-unbalanced EMT. We see this statement addressing the competing forms of analysis between two of the software products used by AEMO, being PSS®E and PSCAD™.

PowerFactory supports both balanced and unbalanced RMS and EMT, so our product exceeds AEMO's latest hybrid approach insofar that the required method of calculation can be applied over the same base model and with solution of initial conditions. This compares with different network models and a requirement to 'flat start' the NEM models.

The use of EMT analysis to assess specific criteria in a power system is a straightforward case of applying the appropriate analytical tool when required and we note both RMS and EMT analysis have been available on computer software for well over 50 years.

The 'emerging' network stability problems from the introduction of IBRs into weak networks arises from the use of Grid Following Inverters (GFL), which are presently the most common type of inverter for connecting large scale solar, wind and battery resources to national transmission networks. The SSIAG addresses problems that are mainly due to GLFs in weak grids.

However, Grid Forming Inverters (GFI) act as voltage (rather than current) sources and can potentially enhance system strength. However, these GFIs are only mentioned once in Section 6.0 of the SSIAG as a mitigation option. Although rare in large national grids, GFI IBRs have already been implemented on smaller isolated networks in Australia, so it is considered an available technology and we recommend the SSIAG clarifies at the beginning of the document that the problem of low SCR outcomes substantially relates to the use of GLF technologies.

Alternative wording to paragraph 2 is recommended as follows:

> *"Networks with low system strength are vulnerable to complex and adverse outcomes that are less problematic on networks with high system strength.*

One particular issue that has emerged, locally and internationally, through grid transformation towards renewable sources of generation, is the problem of low short circuit ratio (SCR). This stems from the introduction of inverter based resources (IBR) and specifically, grid-following inverters (GFL), as used in large-scale solar and wind developments.

It should be understood that not all IBR technologies require assessment of SCR in the same way required for GFLs. For example, grid forming inverters (GFI) actually enhance system strength, effectively increasing the assessed SCR. Overall performance must still be examined via simulation for accurate assessment of performance and potential interactions with other power electronic devices and existing power system plant.

To ensure that network operations are compliant to the Technical Code, assessments of system strength have to be determined through computer simulation of the existing network with detailed models added for any new plant being proposed for connection. For dynamic performance, detailed models need to reflect a full unbalanced representation and be suitable for both RMS and EMT methods of simulation

Q3. Do the draft Model Guidelines provide sufficient detail regarding model validation and accuracy requirements?

Given the small size of all three regulated networks in the NT, it can be anticipated that any new generator connection may be significant in proportion to total dispatch, so during the compliance testing process there is generally more impact on the network than may apply in other jurisdictions such as the NEM or WEM.

This makes model validation more challenging because of the higher impact on power system. In order to validate the model to the required accuracy, it may be necessary to consider conditions in the network beyond the connection point during test. As a standard practice during a test campaign, the Network Operator (Power and Water System Operations) may need provide trend data from the EMS (for pre-test dispatch and load condition) and also trigger high-speed recorders in other parts of the network to assist the model validation process.

For the Modelling Guidelines, we comment against specific sections as follows.

<u>2.1.4.1 Model configuration requirements</u>

"Where various loads are represented as a single lumped (static) load, they must be modelled with complex load parameters based on the constituent loads (VSD's, induction machines and other loads), and with suitable voltage dependent parameters.

Simplification of load model representation should be consistent with the requirements of AS 3851 and good electricity industry practice to ensure that equipment fault level contributions are appropriately represented."

We suggest adding *frequency* in addition to *voltage dependency*.

Furthermore, the term '*good electrical industry practice*' is presented in italics but is not defined in the document. Given the term has only been used once in the Modelling Guidelines, rather than apply a definition, a focus should be on the required outcomes given that the use of this legal term will likely not lead to consistency across submitted models.

2.1.4.2 Modelling motor starting

"Explicitly modelled motors connected at 11 kV or more must have starting method parameters defined in the model (e.g. direct online, soft-starter)"

It is unclear why only motors at the 11kV voltage level must be explicitly modelled with their starting method defined however DIgSILENT assumes the intent is to assess the starting impact (i.e. flicker) of large motors on the Power and Water network. If so, the classification threshold of *Large Motors* should be defined as an appropriate ratio of system fault level to motor apparent power rather than as a voltage threshold.

2.1.4.3 Other model requirements

"Explicitly modelled motors connected at 11 kV or higher must have harmonic current emissions modelled."

As per our prior comment in 2.1.4.2 this should apply to *Large Motors* not just 11kV motors. In practice however only motors supplied by variable speed drives will have any adverse impact on network power quality due to harmonics.

We suggest that wording of the paragraph is adjusted as follows:

> "*Where Large Motors are supplied by variable speed drives or utilise power electronic converters for slip energy recovery, the harmonic emissions must be assigned in the part of the model relevant for network power quality analysis (via harmonic load flow), across the range of partial load set-point to full load, as may apply in normal operation*"

Section 2.2.1 RMS Model Format

In *PowerFactory*, a thorough development of a plant model should enable both RMS and EMT simulation to be conducted on the same model definition. Overall, this saves time, effort and cost of model development, model assessment, model comparison, model integration and model management. From a modelling point of view, 'one model suits all' is always a preferred approach for efficient application in analysis and in *PowerFactory* this should be expected at a minimum for conventional synchronous plant models.

Even where there may be a need for differentiating the RMS model and EMT model due to intellectual property concerns or convenience, having both models on the same platform like *PowerFactory* will reduce the modelling and study cost significantly given the EMT and RMS models can be used on the same identical primary network model having:

- cables, lines, transformers, switchgear, generation, loads, reactive controls;
- voltage/frequency control strategy model;
- model input/output arrangement;
- study-case setup;
- model management procedures and version control.

In addition, result cross-check/overlay for benchmarking between simulation domains in *PowerFactory* is extremely convenient and effective as there is no need to export result data from one platform and import to the other. It is literally a single selection within a dialog box to choose the basis of dynamic calculation as either EMT or RMS.

Section 2.3.4 EMT Model Specific Requirements

"EMT models must:

- *allow model re-entry to facilitate integration into larger system studies"*

This requirement may need additional clarification if *PowerFactory* is selected for EMT. For example, in *PowerFactory*, this requirement is met with a feature called "Save Snapshot" as follows:

- When carrying out simulations in *PowerFactory*, it is possible to save the current simulation state for later use. This can greatly increase productivity, especially if the simulation state has been obtained as a result of a time-consuming simulation.
- The Save Snapshot as well as the Load Snapshot actions can be performed easily from the Simulation RMS/EMT toolbar. The snapshot can either be saved in memory, in which case the information lost once *PowerFactory* is closed, or in an external file, such that the simulation state can always be recovered at a later date.

"EMT models must:

- *support multiple-run features to facilitate iterative studies;"*

This requirement may need additional clarification if *PowerFactory* is selected for EMT as it has been written around PSCAD™ definition of features. In this case, *PowerFactory* would use Task Automation and is flexible with the necessary automation via scripting and parallel computing across unlimited CPU cores. Scripting can be used to sequence multiple simulation studies. Scripting can also be used to determine progress (i.e. stable/unstable) so that study parameter refinement can then be implemented and simulated.

"EMT models must:

- *allow multiple instances of the model within the same simulation;* "

This requirement may need clarification. In *PowerFactory* it is already strict that the definition of a model, or part thereof, is a library object. The software allows for multiple instances of a definition used in simulation. It is thus possible to have one inverter model used many times in the same simulation to represent installations at different locations.

"EMT models must:

- *be capable of self-initialisation, with initialisation to user defined terminal conditions within three seconds of simulation time;* "

Although we have no objection to this requirement, we would expect this time should be as short as possible because all EMT simulation time is very expensive. To minimise this impact, a model in *PowerFactory*, can solve initial conditions for both RMS and EMT directly from a load flow. With this unique feature, which is not available across most EMT software products, the requirement of 3 seconds can be easily reduced to less than 0.4 seconds (i.e. 20 cycles). Furthermore, an experienced modelling engineer could expect to achieve flat-starts in less than 0.08 seconds (80 milliseconds) of time into a new run.

In *PowerFactory*, if any model takes as long as 3 seconds from start of simulation time in order to settle at terminal conditions (i.e. flatten), it is an indication for required improvement in model definition, declaration of initial conditions and/or model interface with external code.

So should *PowerFactory* be selected for EMT, this section can be streamlined to reflect model requirements only and remove reference to specific software features.

<u>Section 2.3.4 Multiple voltage disturbances</u>

"Note that these requirements apply only to EMT models as the simplifications of RMS plant models may result in inaccurate activation of fault ride-through mechanisms for unbalanced faults."

This statement holds true for RMS positive-sequence-only model (software other than *PowerFactory*) and seems be carry-over from the PSS®E use for RMS analysis at AEMO.

A PowerFactory model, with full RMS representation, is not at all subject to such limitations and should accurately activate fault ride-through (FRT) on the basis of individual voltage magnitudes. Hence, we recommend this is paragraph is removed.

Q4. The draft SSIAG requires an EMT model to be provided by generators to enable a full impact assessment. The Model Guidelines explain the accuracy requirements for such models. Two approaches are being considered by Power and Water regarding the development of EMT models:

a) The first requires the adoption of PSCAD™ as the preferred EMT modelling software for Power and Water's regulated networks. This approach would require that any User required to provide an EMT model for their plant and equipment provide a PSCAD™ EMT model.

b) The second requires the adoption of DIgSILENT Powerfactory as the preferred EMT modelling software for Power and Water's regulated networks. This approach would require that any User required to provide an EMT model for their plant and equipment provide a DIgSILENT Powerfactory EMT model.

We have attempted to confine our comments to our own software platform, but this question cannot be addressed without some comparison.

Cost Comparison:

New PWC Network EMT model versus Applicants' *PowerFactory* EMT model

Based on our knowledge of the advanced detail of existing generator models prepared in 2019, DIgSILENT Pacific estimate the direct cost of building a separate platform EMT-only network model in PSCAD™, to the same level of detail as the *PowerFactory* RMS/EMT model, for the Darwin-Katherine network would be in the order of AU $800k. In the Alice Springs and Tennant Creek networks, constructing new network modes in PSCAD™ is also expected to be very high ($210k and $140k) respectively, complete with benchmarking against prior test data.

The time taken to do this may be 9-18 months before any new applicant's project model in PSCAD™ could be used included in wide area studies.

Balancing that, the cost of any new applicant extending their already-compliant *PowerFactory* RMS model to include EMT, would be likely to cost AU $0k-$25k in specialist support from DIgSILENT or other consultants suitably experienced with the process. The time taken depends on OEM support but could be between 4-10 weeks once commercial arrangements are in place between the OEM and applicant.

The variance depends on the OEM/Vendor's approach for the unbalanced RMS model and whether they would target IEC model standards for RMS and EMT. That process would include benchmarking against other EMT models, such as PSCAD™, if required by any party.

This does not include the cost of any other underlying requirements, such tuning studies so as to demonstrate compliance, or the provision of detailed/aggregated project models, the cost of RUG and so forth.

Platform Comparison:

Single-platform, multi-analysis versus multi-platform, single-analysis

PowerFactory is a single software product that integrates a wide range analytical functionality than can be applied over a detailed power system model. Ethically and fundamentally, DIgSILENT supports the adoption and development of open standards for model exchange whereby vendors compete on their software capability, technical merit and performance, rather than firmly binding basic customer data into proprietary and inaccessible constructs. Obviously this must be balanced with data access security and protection of vendor IP, through encryption, in order to prevent accidental release and any malicious intentions, for example, such as threat actors pursuing IP theft.

PowerFactory's user interface and model management features have been the basis for the success of the product in combination with wide range of advanced analytical capability across study requirements.

With consideration that any given NSP, network operator or market operator has major study requirements covering load flow, security/contingency, short-circuit, power quality/harmonic, loss sensitivity, small signal stability, protection, RMS stability and EMT analysis, then for any additional software product, duplication of network models is clearly required.

All these models would cover the same primary network equipment of synchronous/asynchronous machines, transformers, switchgear, cables and lines (etc.) whereby protection, RMS and EMT models would also require representation of further primary characteristics and all secondary controllers.

With satisfactory benchmarking of analysis, acceptance of the software's usability and providing data can be exchanged with stakeholders, there is clear business case in any organisation to consolidate software functionality to manage fewer network models.

We emphasise here how significantly and importantly integrated model management should weigh in the decision given that the alternative to a single-vendor network data model would require a patchwork collection of third-party interfaces and in-house databases with dependencies on external software (i.e. including compliers). At best, any such fragile software ecosystem may achieve a short period of cohabitation after the implementation project dissolves but would inevitably, and quickly, come undone from inter-product conflicts when the separate systems expose their bugs, independently evolve and/or get left behind. The benefits of holding to account an established, proven and specialised software vendor, such as DIgSILENT, beyond initial model delivery are clearly axiomatic.

The Case for *PowerFactory* EMT

Power and Water already have multiple RMS and EMT licenses in their PowerFactory license profile and are under a software maintenance and support contract. At a regional level, DIgSILENT Pacific have 34 full-time staff in Australia, spread out evenly across our offices in Melbourne, Brisbane and Perth.

With *PowerFactory*, NSPs, network operators and market operators have the option of efficiently maintaining their models in a single software environment whereby the model (and its managed variants) can cover everything from a dispatch interval, to day-ahead/week-ahead forecasts, then short-, medium- and long-term planning states. Within the same model, network variations capturing committed projects can be activated alongside design options, all adjustable along a timeline of when future changes come into service. In *PowerFactory* there is a model management framework of applying changes in operational state and expansion states together with interfacing to other related systems (i.e. state-estimation from EMS) and databases (i.e. PI historian).

Hence *PowerFactory* is a sophisticated platform; a claim we make not just due to the algorithmic performance and data management but also compliance to enterprise IT policies covering database storage, encryption/security, support of client-server architectures, OS support, user management, licensing and interfacing.

In terms of automation, *PowerFactory* supports both Python and DPL and has an API for interfacing to other software. It extensively supports parallel processing via task automation across multiple CPU cores, distributed computing and also an engine mode.

PowerFactory also has the native ability to co-simulate studies across partitioned network areas running multiple RMS and EMT studies executing up against each other. For any co-simulation, the basis of analysis can be balanced or unbalanced and combinations of both. Furthermore, in response to market requirements, *PowerFactory* can co-simulate with any other EMT software simulation tool that implements an interface via the IEEE C37.188 protocol.

The means, for example, should PSCAD™ implement such a platform-independent co-simulation interface to IEEE C37.118, as DIgSILENT GmbH was requested by the 4 German TSOs (50Hertz, Amprion, TenneT and TransnetBW), then the *PowerFactory* wide area model of the Darwin-Katherine system could co-simulate unbalanced RMS or EMT up against PSCAD™ EMT model of a future applicant.

Such options may provide a fast means of initial performance assessment if an applicant has access to a preliminary model in format other than *PowerFactory*. The same could apply to Matlab, EMTP-RV and others via their future support of a co-simulation interface.

So it is a very relevant factor that DIgSILENT GmbH holds an open view to multi-vendor co-simulation and compliance to open international standards for modelling.

We also wish to highlight that several options are available in *PowerFactory*, in terms of vendor models submitted by applicants, when it comes to assessing system strength via EMT analysis.

With EMT models there are generally two approaches that can be taken irrespective of software platform:

- Full representation of the primary and secondary systems, whereby the complete secondary control theory is native in the platform, generally as control block diagrams with Laplace transform representation in the S-domain.

- Black Box, whereby the primary system has full representation but the control secondary control entirely (or significantly) reverts to an external library running proprietary vendor code (i.e. black-boxed).

Not only can *PowerFactory* support both approaches for RMS and EMT but can also use the same model for both forms of analysis, providing that it is has been prepared accordingly. Additionally, *PowerFactory* supports solving of initial conditions natively (i.e. no third party software required), achieving capability for flat-starts in both EMT and RMS. This hugely reduces total simulation time for wide area models.

PowerFactory also supports external controller models complaint with IEC 61400-27-1 Annex F specification. This *IEC interface* can also be used for both RMS and EMT simulation types.

It is appropriate to note that OEMs, especially of renewable technology equipment, have been driving a standardised approach as it allows them to focus their software development on a single model that can be interpreted by any third party software, such as *PowerFactory*. This is very significant because in many cases, the code base within the black box model is same as the firmware compiled to the actual controllers, so via the *IEC Interface,* the complexities and concessions otherwise made in translating to a Laplace-based representation are eliminated.

As an example, a major European solar inverter has recently already adopted that IEC standard on projects and are preparing models that can be compiled from controller firmware for their PV inverter platform and power plant controllers (PPC). This also receives the actual controller parameters applied to tune the inverter and deliver accurate models suitable for EMT and RMS analysis in *PowerFactory* via the *IEC interface*. This is the same approach they apply for PSCAD™ models other than the need for further adaption of C-code to handle the FORTRAN interface due to that programming language being the foundation of PSCAD™.

Irrespective of software platform selected for EMT, we recommend Power and Water support the *IEC Interface* approach going forward.

We wish also to address general feedback from system applicants that EMT models are only available in PSCAD™ format. In our experience, irrespective of software, there is no case that a high-accuracy model is simply available and ready to be applied. Each and every project has to overcome NDA/CA negotiation, then complete a model reflecting the design of all the plant, tune it against the network and meet technical requirements of the network and commercial requirements with the use of OEM data. Here we demonstrating a significant investment in time has to be made for any high-quality model. Is it also far more likely that OEMs develop their controller products on modern software platforms that are directly compatible with *PowerFactory's* C/C++ foundation that for other software having a FORTRAN codebase.

EMT studies have an associated level of detailed primary and secondary system modelling that is complicated and is a specialisation itself within the power system analysis field. The inverter equipment being modelled is inherently complicated in its control and the interpretation of results from simulation requires specialist training, acumen and experience. With all the issues that must be understood and managed, EMT performance is just one more factor. In doing so, it might also only serve to demonstrate the need for network reinforcement to increase system strength.

The time for preparation of an EMT model in the target format and the associated studies for tuning is a part of the applicant's requirements and something they need to arrange with their equipment OEMs. DIgSILENT regularly assists OEMs/vendors in this task and advances over the recent years with the flexibility via multiple pathways for modelling, including the *IEC Interface*, can offer an incremental approach for applicants.

That way, they can move through preliminary models when pursuing connection and address other requirements to specific network operators prior to commercial operation.

The difficulty experienced in the NEM in constructing wide-area models with their use of a single-purpose EMT tool demonstrates the value that can comes from extending an advanced network planning model, such is available in *PowerFactory*, with the additional level of detail appropriate for EMT. *PowerFactory* is a well-supported and has major releases annually from ongoing development that continues to expand the capabilities and introduce new features driven by user and industry requirements. The ongoing reinvestment demonstrates a strong commitment by DIgSILENT GmbH in *PowerFactory* which remains sustainable through positive earnings.

Summary:

- There are no fatal flaws in the draft *SSIAG* and *Model Guidelines* and our feedback on these documents flag some possible improvements for clarity, with the intention of yielding better outcomes for network participants.
- *PowerFactory* is an advanced, integrated, modern power system analysis software product with a single network model at its core, curated by sophisticated data management targeted specifically to the requirements of NSPs, network and market operators.
- There are several pathways for OEMs to deliver EMT-ready PowerFactory models and the DIgSILENT group of company both supports and prioritises these outcomes given that it ultimately does benefit all our software customers and users over time.
- DIgSILENT Pacific has been operating in Australia for 19 years, has 34 permanent staff across 3 regional offices and provides an unparalleled level of local support in this region and in our sector.
- Power and Water's regulated networks and majority of Territory Generations' power stations are already modelled in *PowerFactory* in a manner suitable for executing both balanced and unbalanced RMS and EMT methods of analysis. The additional expense to prepare another model in parallel to this, only for the single-purpose of EMT analysis in that legacy FORTRAN format, would be a case of the proverbial 'tail wagging the dog'. This would have orders-of-magnitude greater cost to the NT taxpayer than adopting *PowerFactory* for EMT given software licenses are already owned, the many advantages of the platform and the advanced state of existing network models.

Should any of the points raised in our response require further clarification, please contact the undersigned or any DIgSILENT Pacific office.

Yours Sincerely,

Peter Willis, Company Director

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