



Innovation and non-traditional solutions allowance application: Functional Isolation – Urban Intelligence resilience explorer trial

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1. Summary of Powerco allowance and INTSA applications

A summary of the proposed recovery in this application is provided in Table 1, along with a cumulative allowance recovery through the DPP4 period. Powerco's Innovation and Non-Traditional Solutions Allowance (INTSA) allowance limit is \$20.1 million with 25% of that for collaborative projects only. These totals and the information in Table 1 accounts for Powerco's allowance only, prior to accounting for Firstlight INTSA allowance.

The purpose of this application is to seek Commerce Commission INTSA approval (collaborative) to trial Urban Intelligence's Resilience Explorer (REx) platform as a resilience planning capability for Powerco.

Table 1: Recovery proposal and total allowance.

	Description	Purpose	FY27 recovery proposal		FY28 recovery proposal	
			Capex	Opex	Capex	Opex
Resilience Explorer trial	The software platform we are trialling.	To assist with resilience planning and test functional isolation.		\$231,000		\$65,000
Recovery in this application			\$296,000			
Allowance recovery previously approved – Powerco			\$8,548,575			
Allowance recovery previously approved – collaborative			\$965,000			
Remaining allowance – Powerco			\$6,526,425			
Remaining allowance – collaborative			\$3,658,000			
Total allowance			\$20,100,000			

This application is for 100% of the forecast project costs.

2. Introduction

2.1 Purpose of this report

This report presents Powerco Limited's ("Powerco", "we") application for an INTSA project planned to commence in FY27 and continue across FY28.

Under the Default Price-Quality Path Determination, EDBs may make an application to the Commission for approval of recovery of the allowance under Schedule 5.3 of the Determination¹. This report is guided by the requirements in Schedule 5.3. We have provided a checklist against Schedule 5.3 in Appendix 1.

2.2 Reason for the project

Over the coming decades, as more customers make choices of technology to serve their energy needs, the changing needs for the service that our networks provide also needs to evolve. Through our Climate Adaptation & Resilience Plan (2024), we recognise in all plausible scenarios there is a growing frequency and

severity of climate-related hazard events, and there is a continuing need to incorporate intelligence around impacts to networks and the customers we serve from these events. Traditional approaches of a more reactive approach to faults are becoming less effective in providing that service. As a result, greater emphasis is now being placed on proactive resilience planning. Powerco's approach is for investment solutions that improve the ability of the network to be less affected and recover more quickly from hazard events.

While we have developed GIS-based asset vulnerability-centric approaches through the work above, an understanding of what communities most value during major events, and how interdependencies in infrastructure factor into that are important – such as a bridge failure impacting ability for lines crews to access and repair network, flood management systems disrupted by loss of power, or communications or EFTPOS systems being disrupted during prolonged power outages

This application seeks use of INTSA allowance for a trial project of Urban Intelligence's Resilience Explorer (REx) in collaboration with Orion & Electra. REx is a Software-as-a-Service (SaaS) solution offering a GIS visualisation platform and computational risk engine integrating multi-hazard data (including that from local and regional councils, Government agencies, infrastructure owners and international organisations), cross-sector asset information, infrastructure interdependencies, and community vulnerability information.

The project has two phases. The first is to successfully incorporate the Powerco network infrastructure in the Thames-Coromandel District and Hauraki Plains into REx, alongside available hazard models. This will improve our understanding of shared vulnerabilities and other sectors' infrastructure in a hazard scenario. We will check in on the project's likely success/outcome at the end of phase 1.

Secondly, once the platform is successfully deployed, test the following outputs across the business:

- Shared infrastructure risk hotspots
- Infrastructure and hazard data inventory and gap assessment
- Upstream and downstream cascading infrastructure impacts:
 - Communities prone to extended outages
 - Implications for customer value of reliability
- Outage consequence analysis to inform reliability and reliance investment
- Support and inform Powerco's Climate Adaptation and Resilience Planning programme
 - Integration with operational system for improved data sharing
 - Powerco's Climate Adaptation and Resilience Community Engagement Plan
 - Advancement in climate risk modelling approaches across the sector
 - Information sharing publicly in an updated version of Powerco's Climate Adaptation and Resilience Plan.

An additional part of this project is a joint sector working group around specific Electricity Distribution Business (EDB) impact functions. The goal behind this part is to work with other EDBs in a collaborative effort to develop vulnerability curves around specific hazards and asset classes. This gives us the opportunity to test industry alignment around resilience, allowing for an approach that can then be replicated across other EDBs.

2.3 Building climate resilience with proactive planning and innovative tools

With the Powerco network consisting of many long rural lines, hazard events (such as cyclones, flooding or storms) can have a serious effect on Powerco's infrastructure, impacting our customers. Powerco has been placing more emphasis on resilience assessment and response measures. This is done in two ways: a reactive and proactive approach. Historically, the primary focus has been a reactive approach to address immediate or known impacts on our customers, as the necessary data and tools haven't been there for a more proactive approach.

Powerco began working with publicly available hazard data and internal GIS-based tools to complete exposure

and damage assessments across the network, which then informed Powerco's Climate Adaptation & Resilience Plan (2024)¹. The next stage of this work is to increase its understanding of interdependency impacts on asset exposure and damage, as well as maintaining a system that is capable of these functions, where multiple full-time equivalents (FTE) would be required. This led to Powerco exploring an alternative market-based solution.

Powerco is scoping this project with the REx platform to assist a proactive approach to hazard identification and response. With the integration of multiple infrastructures, we can begin shifting from a network perspective to a customer perspective in our investment decision-making as we consider other infrastructure (such as roading, water piping, communication towers) through the platform's information.

3. Project information

3.1 Project overview and purpose

Powerco is experiencing an increasing number of climate-related and natural hazard events - across 2025/26 alone our Network Operations has needed to operate in Coordinated Incident Management System (CIMS) 11 times (averaging once every two months). In 2024, we published our first [Climate Adaptation & Resilience Plan](#), carrying out vulnerability analysis work to understand climate impacts (fluvial and coastal flooding, slips, storm impacts) to network, as well as proposing a number of areas to continue development to better understand the community impacts of prolonged network outages, particularly related to interdependencies between infrastructure, as well as developing an improved understanding of customer/community value of resilience.

To support our customers in adapting to climate impacts, there is an increased need to:

- Continue to proactively identify network and customer vulnerabilities
- Strategically identify areas of network of increased impact due to climate impacts
- Work alongside communities & wider sector to improve resilience to these areas

Supporting our areas of strategic focus, the [recently released \(draft\) resilience principles](#) from the Commerce Commission also identified interdependencies as a relevant matter – "Accounting for interdependencies", "Consideration of Distributional impacts" as well as "Clearly defined asset criticality".

REx integrates hazard information along with multisector, network infrastructure datasets into a single, comprehensive modelling and visualisation platform, extending beyond direct impact analysis carried out to date. This enables Powerco to better understand how hazards affect its own network assets and the communities and their services that rely on the assets. Examples of this is how failures in network assets, roading, telecommunications, water, and other infrastructure can affect customers and restoration efforts. Such a platform supports the shift in resilience planning from a traditional asset-focused approach towards a customer-focused approach by identifying:

- Vulnerable sections of the network
- Communities exposed to prolonged service disruption due to cascading failures (e.g. road outage impacting power restoration)
- Cascading impacts across interdependent forms of infrastructure
- Improved quantification of community impacts of hazard events.

An additional component of the project involves collaboration with other EDBs to develop and improve impact functions and vulnerability methodologies for electricity distribution assets. This tests a wider industry application of hazard assessment, and could contribute to a more consistent resilience assessment approach across New Zealand.

The project's expected benefits include:

- Improved resilience planning
 - Better targeting of resilience investment

- Better understanding of the impact and vulnerability of existing assets.
- Enhanced climate adaptation and resilience planning
 - Assessing potential future direct and indirect impacts across multiple hazards
 - Considering multiple interconnected infrastructures
- Better understanding of customer consequences during hazard events
 - The effect of network infrastructure and restoration times
 - The effect of other sector infrastructure and the interdependencies between sectors
- Improved decision-making for both network and non-network solutions

While the project has significant potential, the benefits remain uncertain and require testing and validation, as this type of modelling requires cross-sector inputs traditionally carried out in on-off hazard impact exercises, such as similar work carried out by [Wellington Lifelines - Regional Resilience Project \(2019\)](#). As such, Powerco considers it an appropriate candidate for INTSA support, with the intention that lessons learned will be shared with the wider electricity distribution sector.

3.2 An innovative approach

REx is an innovative/non-traditional project for two key reasons:

1) It provides the ability to determine how natural hazards (such as landslips, flooding, wildfire etc.) may impact Powerco's network infrastructure, in addition to other lifelines infrastructure. This then allows for improved understanding of interdependencies between different infrastructure owners, and how disruptions may cascade through outages. This will support Powerco in shifting beyond direct network investment solutions where appropriate, to being able to assess a more cross-sector approach to understanding customer impacts of hazard events.



Figure 1. Current capabilities within Resilience Explorer, showing asset-level and portfolio-wide risk statistics and visualisations from hazards and climate scenarios under current and future conditions, as well as over extended durations.

2) With Powerco already investing in non-network solutions, such as the remote area power system (RAPS) programme for individual customers, and the PowerHub programme for communities, the REx platform has the potential to enhance these programmes of work. By identifying both the types of service disruption during hazard scenarios, as well as better understanding cross-sector factors that may lead to cascading impacts during infrastructure outages, we can ensure we select the appropriate solutions, further enabling our innovative non-network solutions.

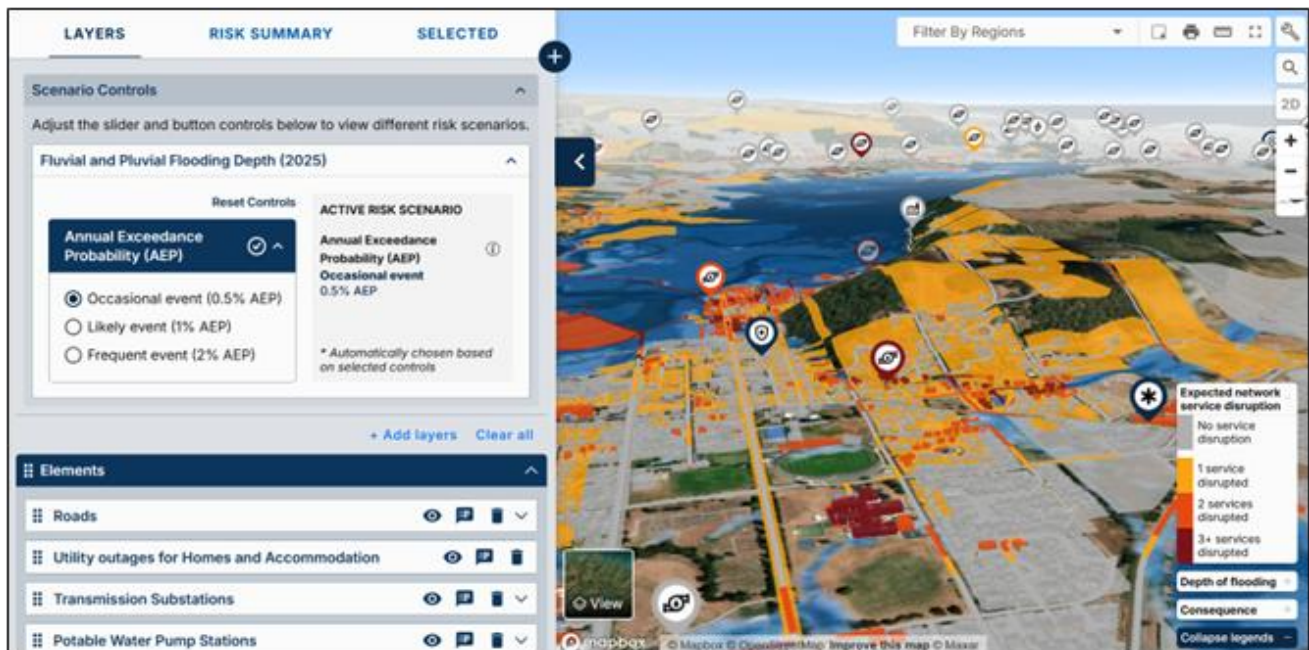


Figure 2. Land parcels experiencing utility outages from fluvial and pluvial flooding. Resilience Explorer supports risk-based asset management and adaptation planning against a comprehensive database of natural hazards, climate impacts, and national and council-owned infrastructure.

3.3 The outputs and consumer benefits

The primary output is the development of the geospatial platform REx, which contains:

- Powerco electricity network including (but not limited to): conductors and substations
- Local and regional council, and other lifeline-infrastructure data including (but not limited to): roads, telecommunication assets.
- Relevant external hazard and climate data.

The REx platform will focus on our Thames-Coromandel and Hauraki Plains area. Following development of the platform, the next important outputs would be the demonstration and validation of the platform through testing functional isolation and cascading impacts, as well as the exposure and vulnerability outputs.

Finally, the EDB joint sector programme will produce vulnerability and recovery curves for four assets against four hazard types. These can be used within REx and with our modelling processes.

Key customer benefits which the project could potentially support include:

- Improved resilience for communities exposed to severe weather events through better identification of vulnerability hotspots and targeted integrated mitigation planning.
- Reduced outage durations for remote and hard-to-reach communities, through improved understanding of access constraints and cascading hazard impacts.
- Better service to critical infrastructure services and dependent electricity users through enhanced interdependency analysis, reducing cascading failures across essential services.
- Improved affordability through evidence-based prioritisation of resilience investments, ensuring expenditure delivers the best value to customers and avoids unnecessary spend, which is what our 'Value of Customer Resilience project aims to achieve.
- Greater transparency and trust, with improved and more consistent climate-related risk reporting and disclosure of resilience plans and AMPs.

This project reinforces Powerco's [Customer Commitments](#) by:

- Providing clear and accessible information on climate-related impacts

- Demonstrating proactive long-term planning for climate impacts
- Supporting responsible, evidence-based investment decisions
- Enabling resilience investments to be more targeted to areas with the strongest customer need
- Enhancing transparency through improved disclosures and data-driven methodology.

3.4 Eligibility criteria

3.4.1 Relates to the supply of electricity distribution services

If this project is successful, it should improve Powerco's ability to identify, quantify and manage physical climate-related impacts to the electricity distribution network and its customers. The modelling will help Powerco better understand the range of services that customers access and therefore support engagement in understanding solutions that can better improve resilience, which is limited in our current GIS-based tools.

This project should introduce detailed interdependency modelling across electricity, gas, three waters, roading, and telecommunications networks, enabling more sophisticated assessment of cascading impacts to end users. The technical outputs of the project will directly support Powerco's long-term resilience planning and strategic prioritisation of climate resilience investment, linking directly to long-term consumer benefit.

3.4.2 Promotes the Part 4 Purpose of the Act

The project promotes the purpose of Part 4 by:

- Providing a tool to improve the resilience of electricity distribution services by informing investment that can appropriately support communities and key services exposed to natural hazards.
- Enabling reduced operational expenditure during storm response, as improved hazard insights could support better understanding of crew deployment to more efficiently work around areas expected to be made inaccessible by road washouts or flooding.
- Improved transparency and knowledge sharing across the sector and inter-connected infrastructure with advancement and alignment of climate-risk methodologies.
- Aligning with the [recently released \(draft\) resilience principles](#) from the Commerce Commission.

3.4.3 Unlikely financial benefit / sufficiently uncertain benefits

The project does not generate direct financial benefits for Powerco within the next five years. Resilience expenditure has already been approved as part of our DPP4 forecasts, and this work would not increase our capex requirements on top of that.

The primary value lies in providing the evidence base for long-term resilience investments which aim to reduce climate-driven infrastructure failure costs and prolonged outages to remote communities. Any financial impacts relate to avoided outages, avoided asset loss (RAB) or insurance replacement values from anticipated climate events, are inherently uncertain in timing and impact. These financial impacts are outlined in Powerco's climate-related disclosures (see page 53 in the wider [2026 Integrated Report](#)). Testing this software to address these risks does not provide short-term operational or financial returns.

The project introduces new modelling methodologies, including multi-infrastructure interdependency analysis and community-centric views of infrastructure impacts, which inherently carry a level of analytical uncertainty. While these are novel concepts, Urban Intelligence has a proven track record with natural hazard and climate adaptation for councils and infrastructure organisations, as well as recently published research demonstrating their expertise in domains including direct and indirect climate impacts, computational modelling of cascading failures, and natural hazard risk analysis.

While Powerco has developed some capability for vulnerability assessment, this project will test a new approach. The benefits of the project are dependent on the interpretation of evolving climate projections, and the identification of community-led resilience outcomes. These factors cannot be reliably quantified upfront based on the stage that our current internal GIS-based tools have been developed.

However, with the increasing frequency of climate-related events and more frequent activation of CIMS within the control centre, a Resilience Explorer for Powerco could provide significant operational and planning benefits, however the solution has not been fully tested and the extent of benefits is uncertain.

Delivery of this project requires external providers to supply a SaaS solution, a platform that evolves as new hazard and infrastructure data becomes available, alongside internal capability to implement Resilience Explorer. This shifts the cost profile towards operational expenditure, which Powerco is currently unable to prioritise against existing operational requirements.

While there is significant potential for REx to support investment decisions to improve quality outcomes for customers, there is uncertainty around the capability of the technology as well as integration into our systems. In addition, the modelling around customer functional isolation and cascading impacts from multiple lifeline utilities is currently under development by the vendor based on recently published and [peer-reviewed research](#) in select case study areas, which increases the uncertainty about whether these modelling approaches will be fruitful.

As such, without INTSA allowance support, Powerco would be unable to justify this project.

3.5 Project phases and forecast cost

The forecast costs, the year those costs fall, and timing across the project phases described in section 3.1 are:

	Cost (FY 27)	Cost (FY 28)	Timeline
Stage 1: Model development and system integration which consists of: - Workspace initialised and onboarding - Platform deployment - Getting all asset and hazard layers operational	\$95,000		Six months after project commences (Assuming November start November 2026 to April 2027)
Stage 2: Platform Access, Testing and Validation which consists of: - Ensuring platform access, hosting and support is established (for a year) - Ensuring all functions (function isolation, for example) are working as expected - Having workshops and user feedback sessions	\$85,000	\$35,000	12 months after Stage 1 is completed (Assuming May start May 2027 to May 2028)
Impact function review and development (Joint sector project)	\$31,000		May-Oct 2026
Powerco internal time - Estimate 8 hours per fortnight, 1x Engineer 1x GIS Technician over full project - Programme/project management	\$10,000 \$10,000	\$20,000 \$10,000	Throughout project
Total	\$231,000	\$65,000	

The forecast cost for stages 1 and 2, are based on contract costs from Urban Intelligence. Aswell as the forecast cost for the joint sector work, in which Powerco is collaborating with other EDBs (Orion and Electra) is also based on contract costs with Urban Intelligence. The internal costs are based on our calculated costing for specific positions.

Prior to engaging with Urban Intelligence about Powerco using of REx, we undertook market testing of options. The summary of our market testing is outlined in Appendix 2.

3.6 SAIDI and SAIFI

There is no expected SAIDI or SAIFI associated with this project.

3.7 Parties to this project and collaboration

This is a collaborative INTSA project. The main parties that would be involved would be the following:

1. Other EDBs (Orion & Electra) as part of the joint sector programme
2. Lifeline groups

Other EDBs have previously tested capabilities of the REx platform. Through discussion with some of them, REx has been able to provide useful network insight. This is due to a few different factors, but a prominent one is the use of the cross-organisation cascading infrastructure impacts. This is something that Powerco would not be able to perform internally without very significant resourcing. Note that other platforms act in a similar space to REx, such as Horizon Energy Rhizome GridADAPT project, however, these don't incorporate multi-infrastructure and are more tailored to addressing equipment outages.

4. Preparing this application and meeting schedule 5.3 requirements

4.1 Addressing the Schedule 5.3 criteria

In Appendix 1, we have outlined the criteria for the innovation allowance in Schedule 5.3. The table summarizes how each criterion is met, and/or where in this application the relevant information can be found. We are satisfied that all the criteria have been addressed.

4.2 Reporting on completed project and shared learnings

The Commission has emphasised the focus of the innovation allowance to encourage projects that will benefit NZ, and reporting on the projects and sharing learnings with other EDBs is an important part of the process. Should this application be successful, Powerco anticipates the following activities to share learnings:

- Prepare report as required by Schedule 5.3 (14). The report will be made available on our website.
- Share updates on our application, key findings and related reports on our website and social media channels
- Collaborate with participating EDBs through the joint sector programme to develop and share actionable insights relating to network vulnerability assessment, infrastructure interdependencies, and impact function development.
- Present an overview of the programme and key learnings to a suitable ENA or EEA or other industry forum to raise awareness amongst all EDBs. For example, an ENA Future Networks Forum meeting.

5. Conclusion

Powerco has an active strategy to prepare us for the changes in the energy sector ahead. An underlying direction for our Strategy is to drive innovation, with Powerco taking an active role in identifying and testing non-traditional solutions and new technology. This will not only be an integral part of operating our future network, but it will also provide longer-term outcomes for our customers.

In Powerco's focus to minimise the effects of climate-related hazards, Resilience Explorer offers the capability to better understand and address these risks. By providing actionable information on network vulnerability, customer impact, and cross-sector infrastructure interdependencies, the platform could support the identification and justification of both traditional network and non-network resilience investments. The project aims to deliver both the software platform as the functional tool in which to gather all outputs but also the way of working required to embed resilience planning into future decision-making.

This project leads to a potential improvement in resilience investment decision-making across both network and non-network solutions. This could support a more reliable service for customers; however, it does require testing and validation. With the approach and insights yet to be tested, learnings from a trial will be an important pre-cursor to potential measurable network investment outcomes in the future. Therefore, Powerco considers this project to be an appropriate candidate for INTSA.

Appendix 1 – Check against schedule 5.3 requirements

Schedule 5.3 requirement	How the requirement is met
(2) A non-exempt EDB may at any point prior to six months before the end of the DPP regulatory period submit an INTSA proposal to the Commission.	This application is made before the stated deadline
(3) If a non-exempt EDB proposes to work together with 1 or more other EDBs to carry out the project or programme in an INTSA proposal, each non-exempt EDB carrying out the project or programme that proposes to recover any of the forecast costs from the non-exempt EDB's innovation and non-traditional solutions allowance must submit an INTSA proposal.	Refer to section 3.7
(4) An INTSA proposal must set out the following:	
(a) the purpose of the project or programme in the INTSA proposal, and the steps that the non-exempt EDB intends to take to achieve that purpose if the Commission approves the INTSA proposal	Refer to section 3.1
(b) the INTSA outputs and expected benefits of the project or programme for consumers	Refer to section 3.3
(c) the date by which the non-exempt EDB expects all of the INTSA outputs for the project or programme to have been delivered	Refer to section 3.5
(d) the forecast costs of the project or programme for each disclosure year up to the date by which the non-exempt EDB expects all of the INTSA outputs to have been delivered	Refer to section 3.5
(e) the proportion of the forecast costs of the project or programme that the non-exempt EDB seeks to recover from the non-exempt EDB's innovation and non-traditional solutions allowance (e.g., 75% of the forecast costs of the project or programme)	Refer to section 3.1
(f) an estimate of any anticipated SAIDI INTSA values or SAIFI INTSA values that the non-exempt EDB expects to exclude under Schedule 3.1 or 3.2	Refer section 3.6
(g) the cause or causes of the interruptions for the SAIDI INTSA values and SAIFI INTSA values referred to in subparagraph (f)	Refer section 3.6
(h) any steps that the non-exempt EDB has taken, or proposes to take, to reduce the likelihood or impact on consumers of any interruptions referred to in subparagraph (f)	Refer section 3.6
(i) whether the non-exempt EDB intends to work together with 1 or more other EDBs to carry out the project or programme in the INTSA proposal and, if so, how it intends to work together with the other EDBs	Refer to section 3.7

Schedule 5.3 requirement	How the requirement is met
(j) sufficient information to enable the Commission to decide under paragraph (7) whether the project or programme meets the eligibility criteria under paragraph (6)	Refer to section 3.4
(14) Within 50 working days of the delivery of all of the INTSA outputs for the project or programme in a non-exempt EDB's INTSA proposal that the Commission has approved under paragraph (7), the non-exempt EDB must submit a closeout report to the Commission	We will deliver a report within 50 days of completion of outputs. We do / do not request an extension to the time for submitting a close-out report, but reserve the opinion of making this request at a later time. Refer to section 4.2
(19) Subject to paragraph (20), the limit on the innovation and non-traditional solution allowance for each non-exempt EDB for the DPP regulatory period is specified in Table 5.1	Refer section 1
(21) Where a non-exempt EDB considers that it has a right to confidentiality in any information that it provides to the Commission under this Schedule and the non-exempt EDB does not waive the right, the non-exempt EDB must— (a) include that information in an appendix; and (b) clearly mark the information as confidential.	This application does not contain any confidential information

Appendix 2 – Market testing

