NWIS ISSUES PAPER RESPONSE

Issued by Horizon Power

December 2017

Table of Contents

Table of Appendices

1. DEFINITION OF TERMS

The following table provides the working definitions of key terms Horizon Power uses in this submission.

Element	Definition
Ancillary Services	Services related to the provision of energy related service required to maintain a power system in stable operation. These services include *Spinning Reserve*, *Frequency Control*, *Balancing Energy*, *Reserve Capacity* and Network Control Services.
Balancing	Where each generator dispatches generation to match the load it is contracted to provide in each interval.
Balancing Energy	The energy provided or absorbed in an interval by a generator as the result of another generator not *Balancing*.
Code / *ENAC*	Electricity Networks Access Code 2004.
Covered	The legislative mechanisms by which a *Network Owner* is required to provide network transport services to third parties. This could be under the *ENAC* or other legislative mechanism.
Economic Dispatch	The outcome of generation being dispatched to deliver the lowest operating cost across an interconnected system.
Effects Test	Changes to the market power prohibition in the competition law require companies with substantial market power to not engage in conduct that has the effect of substantially lessening competition in a relevant market, irrespective of whether the conduct has an anti-competitive purpose.
ETAC	Electricity Transfer Access Contracts.
Frequency Control	The online reserve of electrical generation that is capable of responding immediately to small changes in system frequency in real time. *Frequency Control* is the first of a suite of controls to maintain system frequency within predetermined limits.
Full Access Regulation	With regards to network access agreements, the form of regulation where a full access arrangement setting out terms of access, including pricing, must be submitted and approved by a regulator and in the event of dispute the arbitrator must apply the approved access arrangement.
Horizon Power ETAC	Horizon Power's draft *ETAC* developed following extensive negotiations with Alinta Energy.
Horizon Power Network	The Horizon Power owned and operated network assets that comprise a portion of the NWIS.
ISO	Independent System Operator. An independent body tasked with providing some, or all of the network services to *Users* in the Pilbara. The provision of many of these services such as *Ancillary Services*, system operation and *Network Owner*ship may be outsourced to meet the *ISO*'s requirements.
ISO+	An *ISO* which takes advantage of the unique opportunities present in the Pilbara to provide value adding services above the traditional *ISO* role.
Issues Paper	The *Issues Paper* titled "Improving access to, and operation of, the Pilbara electricity network – the North West Interconnected System" published by the Public Utilities Office Department of Treasury on 14 November 2017.

Light Handed Access Regulation	With regards to network access agreements, all terms of network service are open to negotiation between the service provider and the User with the ability for binding arbitration if the parties cannot agree an outcome.
NEM	The National Electricity Market that exists on the East Coast of Australia
Network / Asset Owner	The owner and maintainer of network assets on the NWIS. Currently Alinta, BHP, FMG, Horizon Power and Rio Tinto are *Network / Asset Owner*s.
Objectives	The objectives for electricity industry reform defined in the *Issues Paper*.
Participants	The collective of *Network Owner*s and *Users*.
Pilbara Access Regulation	The suite of regulatory change that will deliver against the *Objectives* in the Pilbara.
Pilbara Net	Horizon Power's proposal for the implementation of an *ISO+*.
Questions	The questions detailed in the *Issues Paper*.
Reserve Capacity	Installed generation capacity required to meet the maximum load on the system plus a margin to account for generation failures and variations in load forecasts.
Spinning Reserve	The online reserve of electrical generation required to respond to credible contingencies on the system.
Technical Rules	The set of rules that a *Network Owner* develops or adopts which addresses the matters specified in Appendix 6 of the *Code*.
Users	*Users* of the NWIS that use services provided by *Network Owner*s, including generators, retailers and large consumers. Because of the vertical integration of *Network Owner*s in the NWIS, *Network Owner*s can also be *Users*.
UTP	The Uniform Tariff Policy of the state government that has all *UTP Customers* charged the same price as all other customers.
UTP Customers	Customers that consume below 4380MWh p.a. in regional Western Australia.
WEM	The wholesale energy market that exists in the South West of Western Australia.

2. SUMMARY OF SUBMISSION

2.1 Background

Since its inception Horizon Power has supported regulatory reform for the electricity industry in the Pilbara. Over this time Horizon Power has:

- been engaged in a range of studies and discussions on potential solutions;
- attempted to work with *Asset Owner*s to introduce reform through cooperative structures; and
- engaged in extended negotiations for open access to its network with multiple parties.

Through these processes it has established a detailed corporate knowledge of the key issues related to effective reform in the Pilbara.

Horizon Power welcomes the publication of *Improved access to, and operation of, the Pilbara electricity network – the North West Interconnected System- Issues Paper* (*Issues Paper*) as a constructive step to establish reform in the Pilbara that has the potential to deliver real benefits to the region. Horizon Power will support the Public Utilities Office (PUO) in its regulatory framework design with the knowledge it has established over since inception.

This submission is provided in the context to Horizon Power's response to the application to cover Horizon Power's network in the Pilbara under the *ENAC*. Horizon Power has sought to avoid duplication between this submission and its response to the *ENAC* coverage application of its network and these two submissions should be read together.

Horizon Power looks forward to supporting the implementation of a regulatory framework that will, over time, achieve the objectives detailed in the *Issues Paper*.

2.2 Submission Summary

Horizon Power is a State Government-owned, vertically-integrated generation, transmission and retail energy corporation established under the *Electricity Corporations Act 2005* (WA), providing electricity across regional and remote Western Australia.

Horizon Power supports the *Objectives* detailed in the *Issues Paper*, in particular the focus on delivering increased efficiency from the electricity industry in the Pilbara. The current approach to the NWIS inhibits investment and does not support secondary industry and smaller scale mining development despite the prime economic conditions in the Pilbara. Reform will drive economic growth, which will benefit all *Participants* and the state. In fact, it is Horizon Power's position that true competition in the energy sector in the Pilbara can not exist until such point in time that effective regulation has been established.

Horizon Power has provided a detailed response to each of the questions in the *Issues Paper* **(**the *Questions***)**. In Horizon Power's view the following factors will be critical to the success of the reform process:

- **Scope of the *ISO*:** Many of the challenges detailed in the *Questions* are made more difficult to resolve due to the division of responsibility for delivery of electricity services between an Independent System Operator (*ISO*) and multiple existing *Network Owner*s. Horizon Power has previously proposed that an *ISO* be established to take responsibility for the key facets of delivering reliable and efficient

electricity services to *Users* of the network, including transport services, and this approach is proposed as a solution to many of the issues raised in the *Questions*. This scope of the *ISO* is discussed in more detail in the following section.

- **Third party network investment:** Reform in the Pilbara must deliver a mechanism to support efficient development of electricity infrastructure to meet regional growth requirements. Horizon Power has limited capacity to fund the required multi-user network assets. Horizon Power remains of the position that reform in the Pilbara must deliver a simple pathway for third party investment in efficient multi-user network assets.

- **Participation of all *Network Owner*s:** Horizon Power believes that reform in the Pilbara would best deliver against the *Objectives* if all *Network Owners* were *Covered* (required to provide network transport services to third parties) under an *ISO*. If at inception some *Network Owners* are not *Covered*, but remain connected to the NWIS, they will receive benefits from this connection (including system operations services). Through their connection they will be technically interdependent upon all network *Participants*. The proposed reform should address this circumstance through the centralised application of technical requirements (*Technical Rules*) and the coordinated management of *Ancillary Services* to all network *Users* and *Network Owners* through their participation with the *ISO*.

- **Correct balance in economic regulation:** Horizon Power considers that Light Handed Regulation and *Full Access Regulation* represent solutions at two ends of a spectrum. Horizon Power considers that there may be merit to having at least some key terms of access, including pricing methodologies, pre-approved by an independent regulator. In addition to increasing regulatory and commercial certainty for all parties, such an approach may effectively mitigate the risks inherent for *Network Owner*s in providing open access under the *Effects Test*, which was recently introduced into section 46 of the *Competition and Consumer Act 2010* (Cth). Finally, Horizon Power considers that any regulatory solution should allow *Network Owner*s to wholesale transport services to the *ISO* for on-selling to end users.

3. FUNCTION AND IMPLEMENTATION OF THE INDEPENDENT SYSTEM OPERATOR

Horizon Power considers that establishing an *ISO* in the NWIS has the potential to resolve many of the challenges identified in the *Issues Paper*. The functions and powers of such a body, as well as the correct implementation can mean the difference between a successful reform program and one that further exacerbates existing issues, including by increasing the costs of the existing *Participants* and complicating service provision to customers.

As in other open access jurisdictions, the *ISO* should be established with appropriate regulatory protections from litigation to allow it to effectively undertake its role. This position is required independent of the scope of the *ISO* discussed further in this section.

Throughout this submission Horizon Power refers to an *ISO+*. This proposed body would be responsible for all aspects of system reliability and service provision to open access customers. The concept of the *ISO+* should not be confused with scope of *Network Owner*s that are required to provide network transport services (are *Covered*) as the *ISO+* can fulfil its function without all *Network Owner*s being *Covered*. This situation does occur in other networks such as the South West Interconnected System (SWIS) with large uncovered networks connected to the *Covered* network but still required to follow the instructions, and to contribute to the funding of, the market and system operator. An example of this is the transmission systems owned by Nickel West and Karara on the SWIS. However, the situation is not completely analogous as these networks do not operate in parallel with the *Covered* networks (which creates additional technical and regulatory challenges).

The following discussion details Horizon Power's understanding of the traditional *ISO* role, and proposes some additional functions/mechanisms that the new *ISO* could employ to improve the likelihood of success.

3.1 Summary of *ISO* Functions

Figure 1 overleaf provides a summary of the key technical functions required to support an open access network and competition in the Pilbara. These functions have been classified into Core Functions, Ideally Placed For and NWIS Unique Opportunities. The Core Functions are the minimum functions the *ISO* must perform to add any value to the security of operation on the network. The Ideally Placed For function are those that, if the *ISO* exists, could deliver in the most effective and efficient manner compared to the other options available. The NWIS Unique Opportunities are those that, if the *ISO* delivers, will greatly simplify the network customer experience, simplify commercial arrangements, support third party investment in the network and reduce the cost burden of being *Covered* on the *Covered* networks.

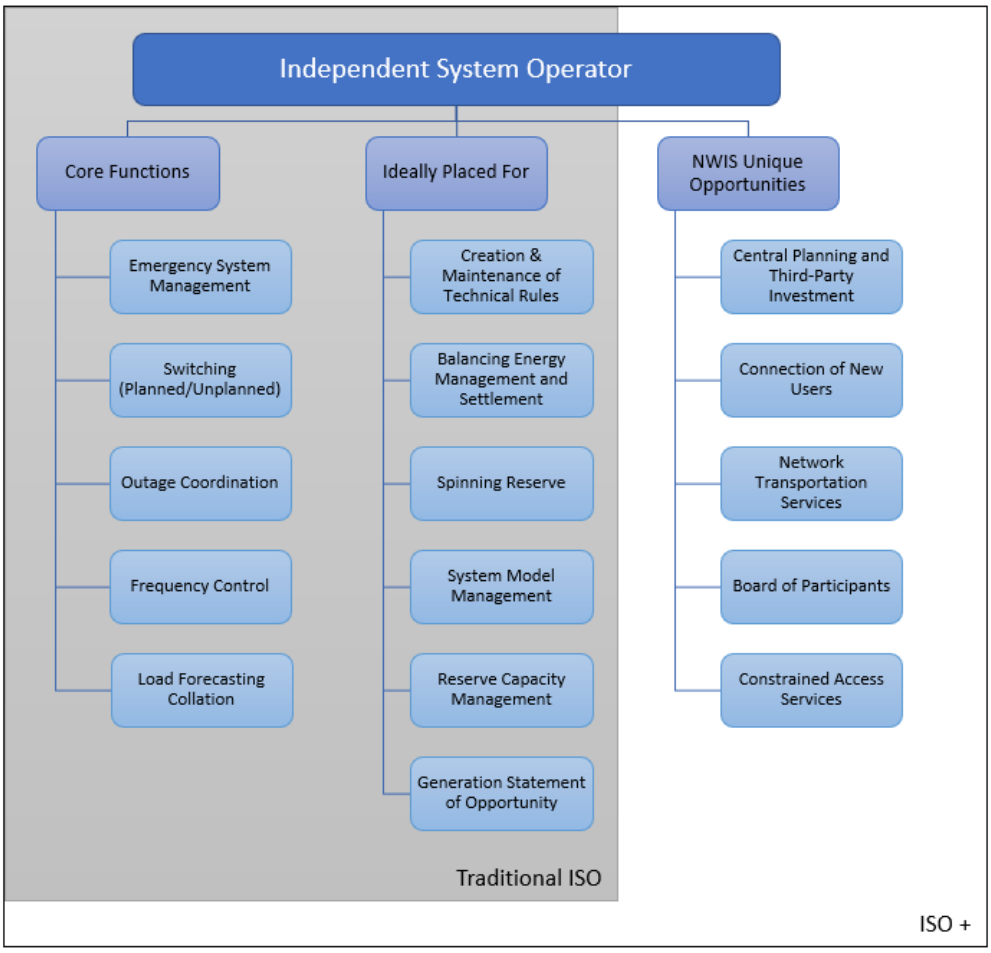

Figure 1: Functions of the proposed *ISO*

To aid in understanding, each of the functions are discussed briefly below.

3.2 Core Functions of an Independent System Operator

The core function of the *ISO* should be the maintenance of system security and system reliability in respect of the NWIS.

The ultimate goal of implementing an *ISO* in the NWIS is to ensure that interfacing and communication issues resulting from providing services through a multi-*Network Owner* operated interconnected system are removed or mitigated to the benefit of all *Participants*. In order to achieve this, Horizon Power consider there are a core set of functions that the *ISO* must fulfil as a minimum for there to be any value in its establishment. These functions relate to ensuring the safe and consistent operation of *Participants*' assets in a way that ensures that system stability and reliability are given the highest priority. Therefore, should emergency or contingency events occur, the *ISO* must have all necessary functions and powers to direct the use of *Participant's* assets to ensure the overall system remains as stable as possible.

While the imposition of an *ISO* at times directing the use of a *Participants* assets may not be desirable, Horizon Power considers it to be an essential part of the reform process as it will ensure system stability for all *Participants*, and is an acceptable exchange for the prevention of black-out events that can result from the lack of consistency and communication between *Asset Owner*s.

Emergency system management
In order to maintain the reliable and secure operation of the NWIS, the *ISO* may at times be required to intervene in the network operation (switching) and generation dispatch of *Participants*. Should faults occur on one or more generators, resulting in overall system instabilities, the *ISO* must have the authority to direct other generation *Participants* in the use of their assets as required to restore system stability.

Switching (Planned / Unplanned)
The *ISO* must have necessary functions and powers to implement the necessary switching programs on both transmission and generation assets to maintain system stability during planned and unplanned events. In this respect, the *ISO* must be permitted complete control of switching activities on all assets of all *Participants* connected to the NWIS.

This will ensure that, particularly during emergency events, all necessary measures are able to be taken to ensure as much of the NWIS is kept stable as possible.

Outage coordination
The NWIS consists of multiple *Network Owner*s being supplied by a variety of generators, across networks that act in parallel and support each other. A lack of coordination between these parties, in particular regards to the timing of their outage activities can leave the NWIS unacceptably vulnerable to instabilities in terms of security and reliability of the system. Thus, it is critical that the *ISO* be responsible for coordinating these outages through consultation with each of the *Participants*.

Participants would need to obtain the *ISO*'s approval before intentionally taking an asset offline for planned maintenance. Prior to granting approval for planned maintenance, the *ISO* would be required to coordinate outages to maintain system security.

Frequency Control
Frequency Control is currently procured by Horizon Power through negotiated bilateral contracts. A function of the *ISO* would be to procure *Frequency Control* services on the basis of pre-determined and uniform parameters across *Participants*. The resultant costs of this service could then be distributed across all *Users* (not just those connected to the *Horizon Power Network*) on an equitable basis.

If a generator provides *Frequency Control*, it cannot also meet the *Balancing Energy* obligations required by the absence of a wholesale electricity market. These *Balancing Energy* obligations require electricity generated and sent out to be equal the load of the generator's customers or other commercial obligations, plus electrical losses, for each "trading interval". Further, the absence of a wholesale market means the provider of *Frequency Control* is also effectively the sole provider of that out of balance energy. Therefore, given the Pilbara market is likely to be too small to support the cost of a wholesale electricity market in the first instance, it makes sense to combine the procurement of *Frequency Control* services with the procurement of out of balance energy services.

Collation of load forecasting
Load forecasting is a common tool used by network operators to ensure sufficient generation is being dispatched to meet commercial requirements. Similar to a full system model, this data could readily be collated by the *ISO* for use in system wide events such as black-outs.

In the instance of outage event, the *ISO* would need to know forecast load present on the NWIS at all relevant times in order to determine the most efficient approach to recovering the system.

3.3 Network functions benefiting from a central independent body

Once established to perform its core role of ensuring stability within the NWIS, the *ISO* will be in a prime position to offer additional services that leverage off its central nature and the statutory functions and powers it must have in place in order to operate effectively to meet its core functions. Most of the following services are simplified if procured or managed centrally for technical reasons and the *ISO* is ideally placed to facilitate this outcome.

Creation and maintenance of Technical Rules

Currently there is no agreed set of *Technical Rules* that apply consistently across the NWIS. Horizon Power applies the Horizon Power *Technical Rules* to some of the *Users* connected to the *Horizon Power Network* but not all. The lack of consistently applied *Technical Rules* is a result of historic transport and interconnection agreements and general resistance from larger *Participants*. Other *Network Owner*s apply their own versions of *Technical Rules* to varying degrees of rigour which can at times conflict with those used by Horizon Power. Some examples of the technical risks of inconsistent application of *Technical Rules* are:

- inconsistent load shedding regimes: if load shedding regimes are inconsistent across interconnected networks, there is a higher likelihood that networks with more stringent load shedding regimes will incur more frequent and more material instances of load shedding than would otherwise bet the case if there was uniformity across regimes. This can be the case even if the event that gave rise to the need for load shedding occurred on the interconnected network with the least stringent load shedding regime. For example, there have been circumstances where the majority of the load on the *Horizon Power Network* has tripped and failed to maintain stable system operation whilst the load on the more heavily loaded networks has not tripped to the same extent; and

- inconsistent approaches to *Frequency Control*: Technically, only one generator control system can provide *Frequency Control* on a system at any one time. This is because the high-speed response required from *Frequency Control* providers results in any two control systems providing this service on a single system acting against each other, resulting in frequency instability on the system. Presently conflicts arise when, for example, Alinta assumes isochronous[1] operation at 49.50Hz (as a result of obligations within its electricity transport contract) whilst Rio Tinto provides *Frequency Control* . This has resulted in situations where the Alinta generators and the Rio Tinto generators compete for *Frequency Control* resulting in the need for emergency manual intervention by Horizon Power.

The creation and implementation of an overarching set of *Technical Rules* is a critical component to improving the operation of the NWIS. Being responsible for the reliability and security of the NWIS, the *ISO* must establish and maintain these rules, and have the ability to ensure participant compliance.

[1] A control mode of a generator where the generator is responding instantaneously to system frequency rather than a set point output that is referred to as droop mode.

Procurement of Ancillary Services
Centralised *Ancillary Services* procurement has the potential to offer financial and operational savings to *Participants*.

Balancing energy services and associated settlements
In the absence of a wholesale energy market, each generator must dispatch its generation to meet its commercial obligations in each interval. To the extent it does not do this, another generator is providing or absorbing the energy imbalance (*Balancing Energy*). The cost of providing / receiving this energy must be settled amongst generators at an agreed price. If the agreed price for this *Balancing Energy* is set competitively and reasonably frequently, the opportunity for this mechanism to be used by generators in place of dispatching their own generation on an economic basis is increased. The most detailed competitive arrangement for setting *Balancing Energy* price is to establish a full set of bids and offers in every trading interval, such as exists in the STEM and *Balancing* Markets in the *WEM* and *NEM*.

However, it is likely the setup and ongoing costs of the mechanisms required to support such a wholesale market would not be justified by the increased efficiency at this time in the Pilbara. Horizon Power therefore does not believe a wholesale energy market with bids and offers for each trading interval is currently justified in the Pilbara. However, the *ISO* can run a transparent competitive process on a regular basis (multiple times per year) to select the *Frequency Control* provider and set the price for *Balancing Energy*.

Horizon Power currently undertakes this function on an informal basis and has sought to run a more competitive and defined process but has been unsuccessful to date due to lack of engagement from *Participants* and impending coverage / reform processes.

With the *Balancing Energy* provider defined for a given duration the *Balancing Energy* settlement calculations (between the generators) must be completed. The *ISO* is ideally placed to undertake the balancing settlement calculations resolving any ring fencing or confidential information requirements.

Spinning reserve
The online[2] reserve required to respond to credible contingencies (e.g. loss of the largest generator / transmission line) on the system is referred to as *Spinning Reserve*. Spinning reserve is partially met by the upward deviation required for *Frequency Control* but there is a quantum that must be maintained across the system above this.

In contrast to the *Frequency Control* upward deviation requirement, *Spinning Reserve* can be provided by all generators, including those that are directly dispatching to their commercial obligations (balancing mode).

Spinning reserve on the NWIS is typically met as a function of generators meeting their commercial obligations. In less common instances, maintaining *Spinning Reserve* requires one party on the system to bring a generator online. Rather than an arbitrary unit being brought online, through its relationships with the generators the *ISO* can select the generator offering the lowest cost to connect an additional unit, resulting in economic benefits for all *Participants*.

[2] Online refers to generation that is currently synchronised with the system and exporting some level of power.

Currently, there are no formal arrangements for maintaining *Spinning Reserve* on the NWIS. Formalising the requirements, including the process for procuring and funding *Spinning Reserve* would improve system security and reliability on the NWIS.

Reserve Capacity

In the absence of a gross pool wholesale market such as the *NEM*[3], there are no price signals for generators / retailers to maintain adequate capacity to meet their customers peak load plus a portion of reserve to address contingencies. Generator/retailers are commercially driven to fully utilise capacity (minimise *Reserve Capacity*) and if they have inadequate capacity to meet system peak they can rely on other providers through the balancing mechanism. Further, the consequences of inadequate generating capacity cannot technically be isolated to the customers of the generators that fail to maintain adequate *Reserve Capacity* and are shared across all customers through load shedding and rotation.

Through negotiations with Alinta, the parties agreed to include a term that required the Electricity Transfer Access Contract (*ETAC*) user maintain adequate capacity to meet peak loads. The *ISO* can centrally and independently contract for, and monitor compliance with, a *Reserve Capacity* obligation similar to that in this *ETAC*.

This will ensure there is adequate installed capacity to meet the requirements of the system at peak load, hence maintaining the security of the system.

Importantly, it also allows generators to share *Reserve Capacity* to the minimum required level, providing opportunity to reduce the large proportion of *Reserve Capacity* currently on the system to a more efficient level over time. For example, this could allow the peak load in the Pilbara region to grow by 20-30%[4] without need for additional investment in generation.

Full system computer model management

Each *Network Owner* has a model of their electrical infrastructure which can be used for system studies or assessing the impacts of future connections/expansions. However, because of commercially sensitive information within the models, these models cannot be shared between *Participants*[5]. Given that an interconnected network functionally operates as one unit, any changes made by one party introduces material risks to other *Participants*.

Being an independent entity, the *ISO* would be ideally situated to maintain such an overarching model, making full use of its benefits without compromising *Participant's* commercial interests. Having such a model would also complement the *ISO*'s role of assessing credible system contingency events and identifying areas of future improvement.

Generation Statement of Opportunity

By trending collated load forecasts, the *ISO* would be in an ideal position to assess the suitability of currently installed generation capacities. Once load growth in the Pilbara exceeds predetermined capacity margins, the *ISO* can release a statement of opportunity,

[3] In the *NEM* the federal government has recently established a policy of requiring retailers to contract for adequate installed capacity to meet their peak load requirement recognising the price signals required in the gross pool market to trigger capacity investment result in pricing that is to volatile.
[4] Depending on which loads and generators become interconnected over time. 20% for current connections, 30% for all loads and generators interconnected.
[5] The engineering firm Jacobs currently holds a coordinated model for the NWIS *Participants* making them a monopoly provider for studies.

advising developers to begin discussions with customers about their future power requirements to determine the viability of new generation projects.

3.4 Unique nature of the NWIS and *ISO+*

The *ISO* functions discussed thus far are typical of similar *ISO*'s in operation across Australia. The NWIS however is a unique interconnected system, lending itself to a number of potential opportunities that Horizon Power believes will benefit both current and future stakeholders of the NWIS. The inclusion of these opportunities in an *ISO* role will lead to a solution that increase the benefits to the Pilbara. Horizon Power refers to this scenario/option as *ISO+*. This *ISO+* approach is to deliver a greatly simplified network customer experience, reduce complexity in commercial arrangements, support third party investment in the network and reduce the cost burden of being *Covered* on the networks.

Central planning and third party investment
Horizon Power believes a mechanism to support centrally coordinated third party investment in the networks in the Pilbara is critical to support growth of industry in the Pilbara.

The current approach presents significant cost related barriers to entry for new developments and has resulted in the inefficient evolution of the NWIS as a whole.

Through central planning of NWIS development, the *ISO+* would be responsible for assessing the need for future network investment. As occurs under the *ENAC* 2004, some of this investment in network reinforcement will be funded by the customer and should not deliver a return on asset to the ultimate *Asset Owner*. The assets created through these consumer funded investments will need to be maintained and operated by a *Network Owner*, and this party should receive a return for these operational activities.

For investments that deliver benefits to multiple parties or the broader user base (for example where incremental revenue significantly exceeds incremental cost, or there is another net benefit), the regulatory regime should allow for third party investment and ownership of these new assets. The creation of these new multi-user assets could be planned and specified by the *ISO+* in a prospectus[6] style arrangement. Potential *Network Owner*s could then "bid" on key terms (such as RAB requirement and operating costs) to establish and operate the specified assets. Or, if constrained operation is an option, generators can bid to constrain the operation of existing or new generation assets.

This prospectus arrangement need not apply to sustaining capital or minor upgrade style investments on existing networks. Existing *Network Owner*s would be expected to make these investments and should receive funding accordingly.

Electricity transportation services
The NWIS is different from other Australian networks as multiple networks operate in parallel, and as such a generator may require the use of more than one network to transport electricity to a consumer. Therefore, with the introduction of open access defining service provision, the consumer would be required to make commercial arrangements with the generator dispatching their electricity, along with as many *Network Owner*s as may be required to have that electricity transported to the end user.

The inclusion of a standard *ISO* into this arrangement can therefore lead to a complex web of commercial arrangements (refer to Section 3.5). This can restrict the effectiveness of the

[6] In this context prospectus refers to an invitation to tender on the creation of an asset that has been technically defined by the *ISO+*

ISO, as well as lead to duplication of administrative roles across the varying *Network Owner*'s and result in cost increases.

Horizon Power proposes that a more efficient solution would be for the *ISO+* to contract with each of the *Network Owner*s for full use of their assets. This will result in the following benefits:

- *Network Owner*s will only need a single commercial arrangement for the full use of their asset, being paid by the *ISO+* for its use;
- Facilitate fair, reasonable, predictable and stable commercial access arrangements for the *Users* of the network through an independent party; and
- *Users* will only need a single commercial arrangement with the *ISO+* for their electricity transport needs, regardless of how many different networks are used. The User would then pay the *ISO+* for the use of the assets.

Board of Participants

The *ISO* in any form will have a critical role in the security and safety of the NWIS and will need to be independent in its day to day operations. Further, decisions regarding the balancing of competing cost, security and safety considerations that may be required to be made at a policy level by the *ISO* will have a material impact on the downstream operations of Owners and *Users*. The composition of the *ISO*, establishment of the charter and objectives and basis of control of the *ISO* are therefore important considerations in its establishment.

Horizon Power submits that the setting of *ISO* policy that applies to all *Network Owner*s and *Users* equally, should be directed by key *Network Owner*s and *Users* to a defined charter. To achieve this, Horizon Power have previously suggested that the Board of the *ISO* be represented by key system owners. This would also have the potential to increase the number of *Network Owner*s willing to participate as they will continue to maintain a level of influence over not only their assets, but the NWIS as a whole.

To assist in clarity, an example of the policy positions referred to above would include issues such as:

- the level of *Spinning Reserve* to be maintained;
- the quantum of upward and downward deviation required for *Frequency Control*; and
- all central *Technical Rules* parameters such as settings for under frequency load shedding and islanding schemes.

Constrained access

Given the technical nature of the NWIS and the changing technical nature of efficient new entrant generation (rise of renewables), constrained access should be supported by any new regulatory framework from inception[7]. Horizon Power believes this can be delivered through *ISO+* as it inherently addresses the significant barriers to introducing constrained network access in the SWIS, such as:

[7] Constrained access refers to commercial arrangements to constrain the operation of generation outside its commercial commitments in order to address limitations in the network and therefore avoiding or delaying investment in the network

- no impediment from historic access contracts[8]. Access contracts (entered into with the *ISO+*) will include, from inception, clarity about the basis on which the *ISO* can constrain (on or off) generation or load in response to network events. This removes the impediment historic access contracts represent to implementing a more effective constrained network access regime in the SWIS. The trade-off between network investment and constraint of generation and loads can be addressed in the access contract at inception. Further, the prospectus process discussed in Question 25 can include opportunities for non-network solutions that, if deemed to be the most cost effective, can be implemented through the single access contract with the *ISO*; and

- avoiding complexity that comes with the division of responsibility between Western Power and Australian Energy Market Operator (AEMO). Making the *ISO+* the *ETAC* holder removes the complexity associated with implementing constrained access where the access contracts are with the *Network Owner* (Western Power) but the day to day interaction with generators in the energy market and independent system operator (AEMO).

3.5 Contractual arrangements traditional *ISO* vs *ISO+*

In all cases an *ISO* must direct the operation of assets that it does not own. Therefore, the *ISO* requires agreements with all of the *Asset Owner*s. At a minimum these arrangements must deliver the following:

- agreements with *Network Owner*s to switch and otherwise operate their network assets consistent with the direction of the *ISO*. To achieve any benefits from an *ISO* this will need to include all networks within the NWIS (even if they are not *Covered*); and

- agreements with generators for the delivery and payment for *Ancillary Services* that must be delivered centrally (such as *Frequency Control*) and to allow the *ISO* to direct generators in the event of emergencies.

If the *ISO* is not the provider of network transport services to *Users*, *Users* will be required to contract directly with *Network Owner*s for transport services. To ensure the security and safety of supply, each *Network Owner* will be required to ensure that each connection meets the requirements of centralised *Technical Rules*. Thus, there will need to be connection contracts between *Network Owner*s and the generators / consumers connected to their network. Further, *Users* will require separate contracts with any other *Network Owner* required to transport electricity from the generator to the consumer.

The resultant commercial outcomes of an *ISO* operating as a separate service provider to those providing network transport services is summarised in Figure 2. In this example, the commercial arrangements are:

- the *ISO* has commercial arrangements with all generators and networks;

- Generator 1 is connected to Network 3 through a connection agreement;

- Generator 2 is connected to Network 2 through a connection agreement;

[8] Two of Horizon Power's three existing access or interconnection agreements will terminate at or around the implementation of reform.

- Generator 3 is connected to Network 3 through a connection agreement;
- Retailer 1 is purchasing from Generator 1 and selling to customers using Network 2;
- Retailer 2 is purchasing from Generator 1 and 2, selling to customers on Networks 2 and 3 but requires Network 1 for a secure supply to the customer on Network 3;
- Consumer 3 is on Network 3 and purchasing from Generators 1 and 3; and
- Network 4 is not required to provide transport services (transport power between third party generators and the consumers) and therefore only has a relationship with the *ISO* (i.e. this is a self-contained network generator using its own power but getting *Ancillary Services* and backup transport services from the other networks).

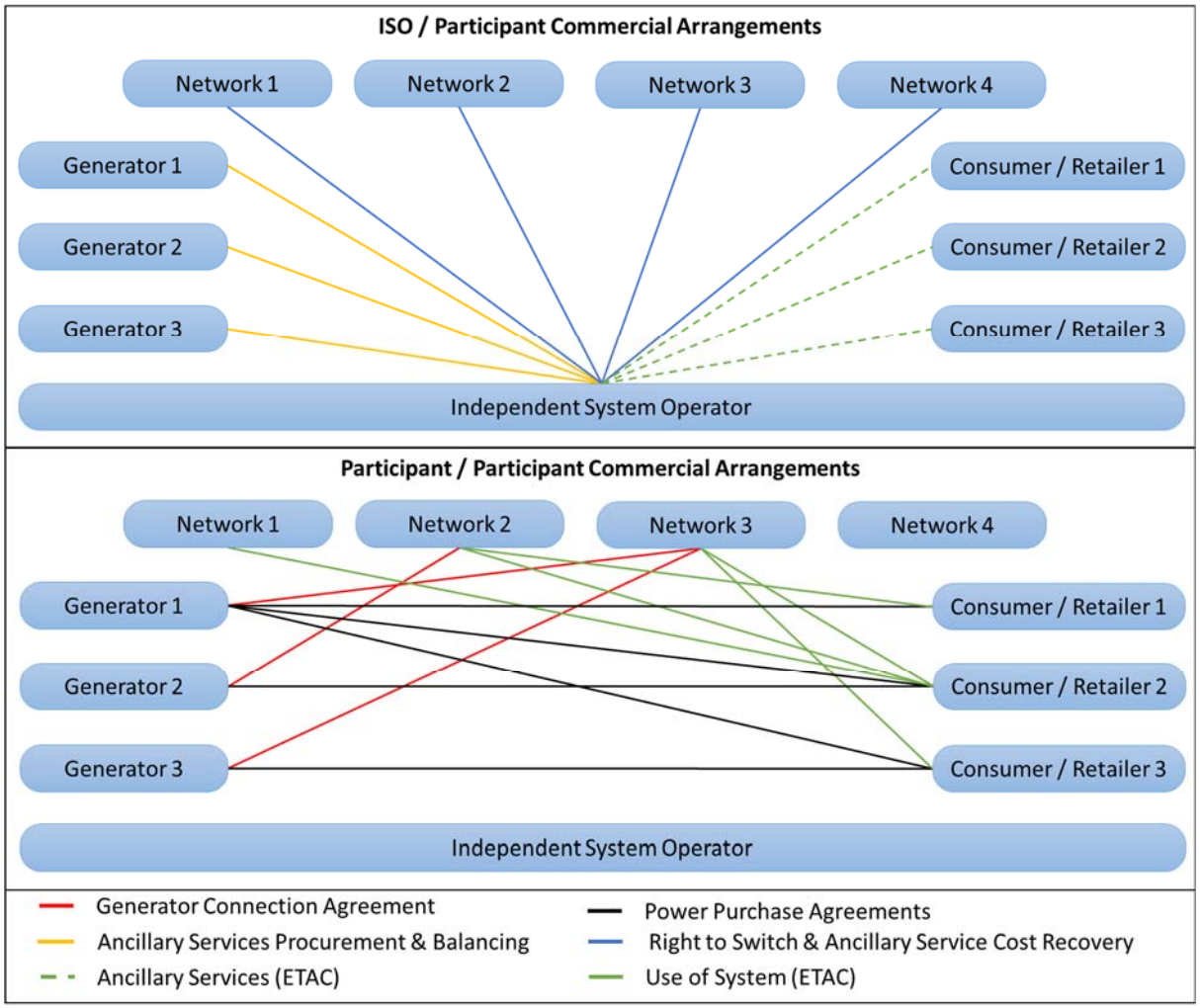

Figure 2: Depiction of contractual arrangements required for a traditional *ISO* operating as a separate service provider to those providing network transport services.

Thus, in a simple 3 x generator, 3 x consumer / retailer market, a separate *ISO* requires a highly complex set of arrangements, particularly for the *Users* of the services. All of these arrangements must be designed to deliver an appropriate risk outcome to each of the parties

involved[9]. Further additional complexity arises should a new participant enter the market, potentially requiring a re-evaluation of the predetermined risk outcomes along with a suite of new contractual arrangements. The responsibility for planning for network expansion in this complex array of agreements is uncertain.

However, this scenario assumes that the *ISO* is working with a clean slate. In reality, the Pilbara network has been operated as a set of private networks since its inception, with the establishment of power supply agreements and wheeling agreements between *Participants*. Whilst this has been successful to date as Horizon Power has funded or provided technical shortfalls at no cost to other *Participants*, however this is not a sustainable basis on which to proceed. The transition to an *ISO* would require changes to these contracts, ranging from minor amendments through to complete redrafting. Likewise, it would require buy-in from all network *Participants* including large load customers. The complexities of the amendments could disrupt the effective establishment of an *ISO*.

Horizon Power's alternative proposal (detailed in Appendix A – *Pilbara Net*) has the customer contracting with the *ISO+* to significantly reduce the complexity of the required commercial arrangements.

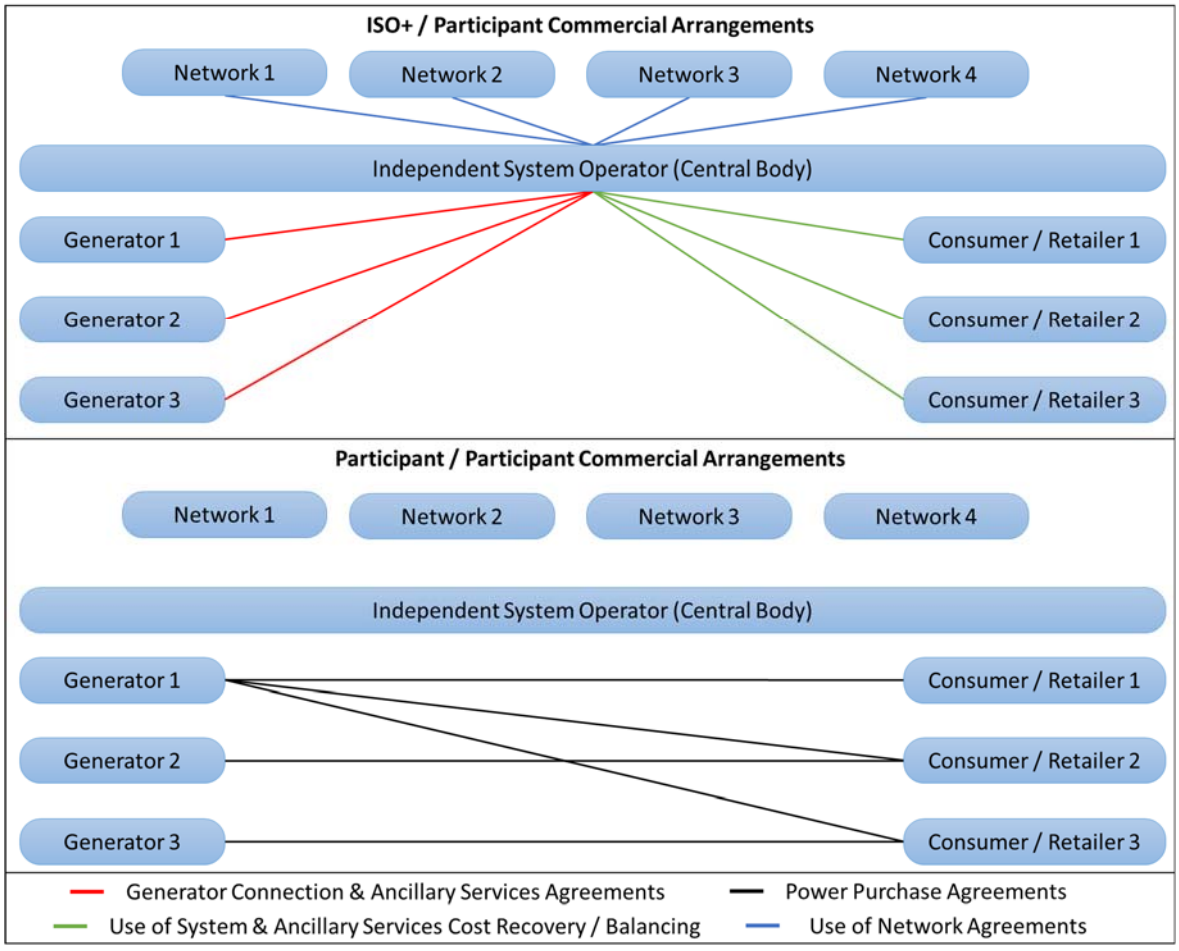

Figure 3: Depiction of contractual arrangements required for *ISO+* operating as a combined service and transport provider.

[9] It is expected that this is particularly difficult given the *ISO* will have valid regulatory protections that may not be made available to the *Network Owner*s.

The contracts between the *ISO*+ and the networks could fall into two categories

- contracts for networks that are *Covered* that will allow the *ISO* to on-sell network capacity, paying the owner for the use of the asset on the basis that it manages the networks within thermal and voltage parameters; and

- contracts with networks that are not *Covered* that will require the network to apply a common set of *Technical Rules* and resolve funding for centrally procured *Ancillary Services*.

The above set of commercial arrangements delivers:

- the resolution of confidentiality issues between vertically integrated competitors removing the need for significant ring fencing and the associated costs / inefficiencies.

- a much simpler commercial regime for *Users* and consumers;

- clear responsibility for the safe reliability of electricity supply, and the authority to deliver against this responsibility; and

- clear responsibility for planning of expansion on *Covered* networks.

4. RESPONSES TO QUESTIONS RAISED IN THE *ISSUES PAPER* DATED 14 NOVEMBER 2017

Horizon Power's responses to the questions raised in the *Issues Paper* are detailed below.

4.1 Industry structure – the retail sector

Q1. Would customers outside Horizon Power's network benefit from competition?

Yes, Horizon Power considers they will.

Currently all customers in the Pilbara are open to competition from solutions that do not require an integrated network. Indeed, islanded power solutions of various scales dominate the electricity provision market in the region.

From the context of the question, Horizon Power assumes this question is referring to customers outside Horizon Power's network, but within reasonable proximity to other existing networks that are not owned by Horizon Power. The ability to economically connect to an existing electrical network delivers the following benefits to any development in the Pilbara.

a) Access to electricity generated from plant with larger economies of scale delivering:

    a. Lower capital cost for installed generation;

    b. Lower levels of required *Reserve Capacity*; and

    c. Higher fuel efficiencies.

b) Ability to purchase from renewable energy developers who can operate with higher levels of renewable penetration without a requirement for energy storage. This is due to the manner in which integrated electricity networks aggregate load and reduce variation in demand over

These access and scale benefits sit largely outside of Horizon Power's network. To put this into perspective, excluding the transmission-connected load, the peak load supplied by the Horizon Power distribution network is less than 117MW and has a minimum load of 19MW with an average of 58MW. This peak demand of less than 117MW supplied by the *Horizon Power Network* (not including BHP and FMG) is only a fraction of the total electrical loads in the Pilbara region which exceeds 1500MW (see Figure 4 overleaf). That is, Horizon Power's share of the Pilbara transmission and distribution market represents less than 8% by volume of the peak load, meaning this is an extremely small electricity market. Horizon Power notes that it is not aware of any other energy market of a similar or smaller size which has been opened to competition in isolation of the broader potential market.

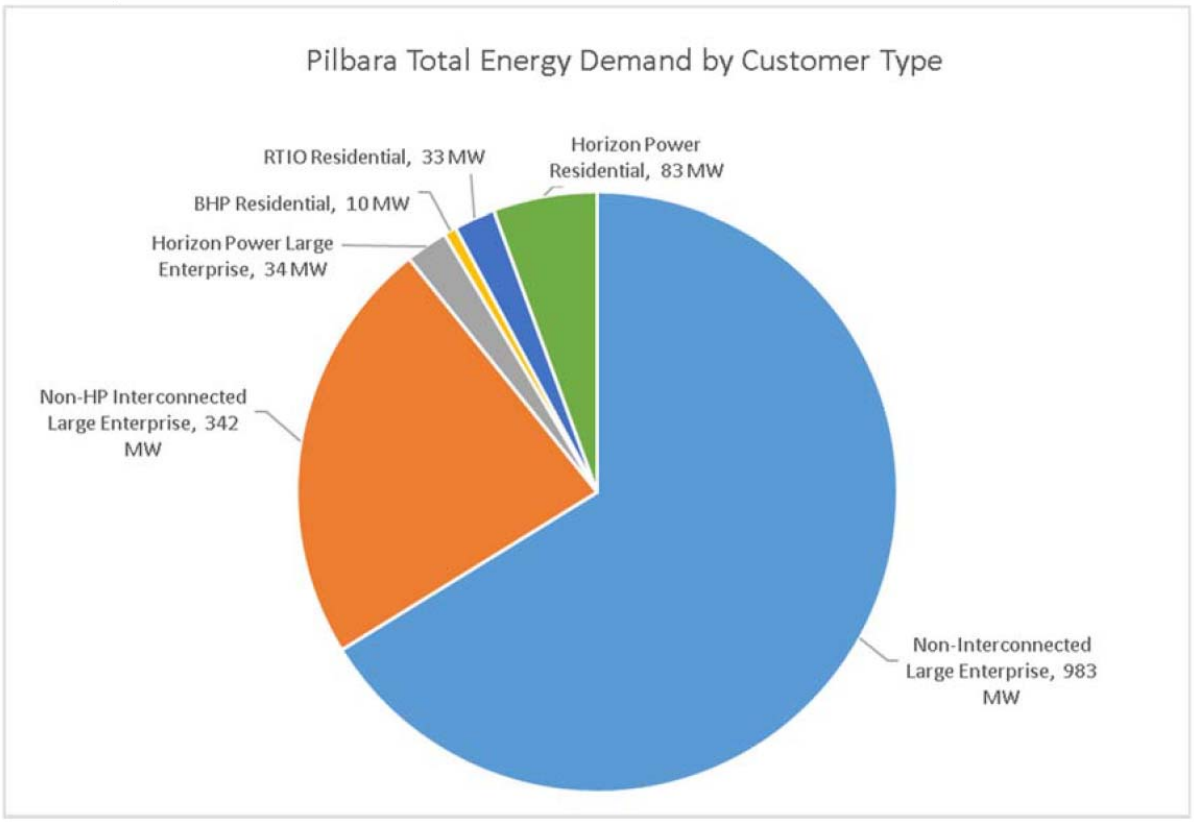

Figure 4: Total Pilbara current energy demand, by customer type

Limiting competition and restricting access to Horizon Power's network would be detrimental to current and future energy users in the Pilbara. It would limit their ability to assess their options and determine the best energy provider to suit their needs. This would commercially disadvantage those customers as they may still be required to participate in a monopolistic market or be required to install costly non-interconnected generation. Allowing access to Horizon Power's network only enables the incremental benefit for incumbent energy providers without enabling a whole of Pilbara approach and benefit sharing. This approach would greatly reduce the likelihood of investment and viability of new small to mid-tier projects. Additionally, it wouldn't incentivise energy providers to improve service provision outside of Horizon Power's network, which would not realise one of the key benefits associated with competition. However, a broader integrated network would enable universal access to more cost effective generation, allowing *Economic Dispatch* to occur on the basis of a hierarchy of the most efficient generation on the system and for greater penetration of renewables.

As part of its environmental scanning, Horizon Power has previously commissioned the report completed by Pantheon Mining, attached in Appendix D. This report details all the mining tenements within proximity of the existing Pilbara network. For projects identified in the report as not yet having commenced, the opportunity to connect to a secure integrated grid with competitive options for the generation of electricity will improve their financial viability and their prospects of successfully achieving a final investment decision.

Further to this, the majority of Horizon Power's networks are located in cyclonic coastal regions. While the Pilbara region is a prime location for solar generation, the additional costs associated with constructing a facility that can withstand these high wind loads can make the projects unfeasible. However, this barrier does not exist on all networks within the NWIS and

having the opportunity for a solar developer to connect to an inland transmission site would significantly increase the likelihood of these projects being realised.

Q2. Does the lack of a coordinated approach to electricity infrastructure in the NWIS present a barrier to entry for junior miners and renewable energy projects?

Horizon Power submits that the lack of a coordinated approach to electricity infrastructure in the NWIS presents a barrier to entry for junior miners and renewable energy projects.

Horizon Power considers the Pilbara to be an area having great potential for the development of secondary industry. Presently, particularly in comparison to the period of the mining boom, there are low labour costs, low accommodation costs and low gas costs (ideally leading to a low cost of energy). Despite this, the costs involved with developing a new project in the Pilbara remain high. As illustrated in Figure 5 below, the majority of existing large customers have been established via non-interconnected methods, in which these customers addressed their energy needs through the development of dedicated power stations. This is an expensive endeavour considering that an interconnected system exists close by.

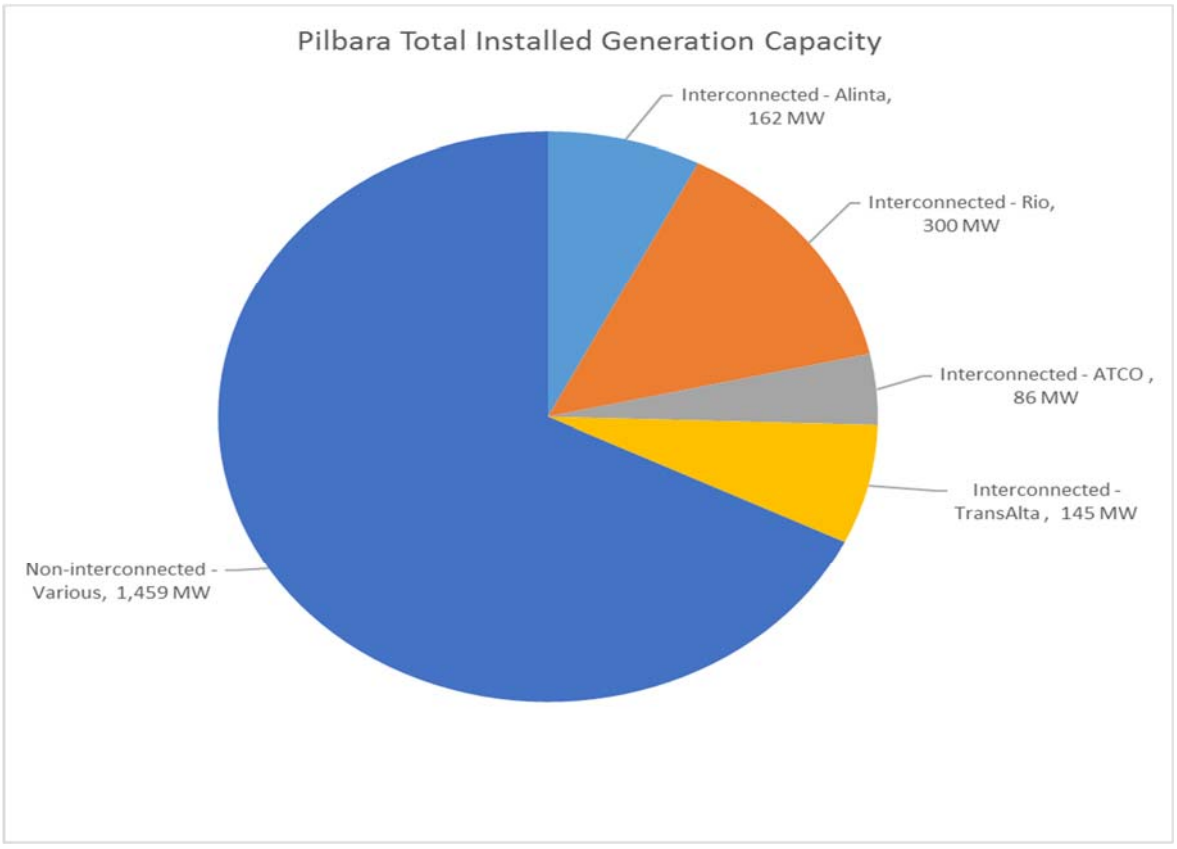

Figure 5: Total Pilbara installed generation capacity

Horizon Power argues that the reason for this, assuming that commercial arrangements could have been negotiated with nearby *Network Owner*s, is that the NWIS is deficient in the following areas:

- there is a lack of coordination across the NWIS;
- there is no one central body looking after the network in its entirety;

- the network is technically deficient and is expensive to operate due to its fragmented nature; and

- the network cannot support future development in the Pilbara with is current regulatory regime (or lack thereof).

While each individual project, their location and their proximity to current electrical infrastructure would require their own cost benefit analysis, based on previous experience Horizon Power submits that capital costs and ongoing operational costs associated with inefficient, small scale generation would be a significant cost barrier to new projects. Horizon Power suggests the PUO investigate records that the Department of State Development may have regarding projects that have sought to develop in the Pilbara but have not proceeded.

The misalignment between the Pilbara region's growth aspirations, and the high cost associated with accessing electricity supplies serves as a major barrier to achieving the region's potential. If these barriers to entry were reduced, then this would have a major flow on benefit to the surrounding townships which have been established as cost effective options for residential workforces, and in essence would serve as a major driver for regional development.

Renewable Development

Renewable energy projects would benefit significantly from being able to position their infrastructure away from the cyclone prone coastal strip, while still having access to a system that aggregated loads to improve economies of scale and penetration. This system would ideally continue to aggregate coastal and inland loads and add loads that are not connected to the system over time.

Despite some significant economic drivers to invest in large scale solar and exceptional solar resources, it should be noted that there has been no large scale renewable development in the Pilbara. This largely relates to the restrictive, unregulated and uncoordinated nature of the Pilbara network which compromises the ability for such projects to supply customers.

Q3. Is there economic benefit to a consolidated approach to coordinating development of electricity assets in the NWIS? Provide examples where possible.

Yes, based on previous reports[10], Horizon Power believes there is economic benefit to a consolidated approach to coordinating development of electricity assets in the NWIS.

The Pilbara is a good example of the inefficiencies created by a lack of coordination in the provision of electricity supplies. BHP, Rio Tinto and Citic Pacific have all constructed large scale power stations, that have been built to accommodate future growth, and are currently significantly underutilised. Each of these power stations operate in isolation, maintaining their own *Spinning Reserve* and N-1 capacity (full redundancy) allowing for maintenance and emergency response. The aggregated impact of fuel consumption based on poor planning creates an economic and environmental detriment.

[10] *Power for the Pilbara Region*, The Allen Consulting Group, 2008.
Efficient Electricity Supply for the Pilbara – Opportunities, Barriers & Constraints: Electricity Infrastructure Development Scenarios, Sinclair Knight Merz, 2012.
Efficient Electricity Supply for the Pilbara – Opportunities, Barriers & Constraints: Options for Implementation, Sinclair Knight Merz, 2013.

Horizon Power understands that there is approximately 2150MW of installed generation in the Pilbara to meet a peak load requirement of approximately 1485MW. This situation suggests a significant opportunity for improvement.

There are significant benefits to a consolidated approach to coordinating the development of electricity assets in the Pilbara. Horizon Power is not submitting detailed planning reports or a cost benefit analysis but suggests that the following examples of historic lost opportunities be used as a guide:

The construction of the 132kV BHP line from Newman north crossing over the 220kV inland line
If this asset had been constructed at 220kV and interconnected with the existing 220kV line, significant investment in inland generation by Rio Tinto and BHP (in excess of $200 million) may have been avoided or significantly reduced.

Development by Roy Hill and FMG
The separate inland mine developments owned by Roy Hill and FMG have resulted in significant investment in generation, transmission lines and gas pipelines. A simple investigation of an alternative centrally planned solution may have identified significant opportunities for cost reduction if an appropriate multi-user infrastructure solution was in place.

Existing backup each of the systems provide to each other
The existing networks (owned by different parties) reinforce each other at various locations in the network. The result of this is that any one *Network Owner* cannot currently provide a traditional network service (consistent with its own *Technical Rules*) in the areas of its network that it receives reinforcement from the other networks. For example, if the *Horizon Power Network* only was to be *Covered*, it would need to consider the following investments to deliver network services consistent with its current *Technical Rules*:

1. Duplication of connection to Dampier at either 132kV or through a 33/22kV distribution interconnection; and

2. Further reinforcement in the Port Hedland network area to respond to the inability to rely on backup from the BHP, Alinta and FMG networks.

Horizon Power could either make these investments or apply to have the existing supporting networks *Covered* to avoid the additional investment cost.

4.2 Recent attempts to gain third party access

Q4. What process should be used to determine which networks and related assets should initially be subject to the arrangements?

Horizon Power proposes that analysis similar to that previously undertaken is the best way to determine the benefits of different coverage policies in the NWIS. This analysis involves the development of an optimised technical development plan, detailing the investments required to meet a defined set of future loads for a range of coverage scenarios and would underpin a cost benefit analysis.

The coverage scenarios would at least include Coverage of the *Horizon Power Network* only and Coverage of all networks. The defined set of future loads should include a no load growth scenario and a scenario that sees significant load growth, both inland and on the coastal system over the next 10 years. The technical development plans can use standard

cost building blocks and apply standard *Ancillary Services* policies to deliver like for like service delivery outcomes across the scenarios.

Such an analysis could estimate total investment costs for different network coverage scenarios, and hence determine the expected total optimised cost of electricity supply under each scenario. This effectively quantifies the impact of the policy position on coverage to the total costs of electricity provision in the region.

Q5. Under what circumstances should other networks in the NWIS become subject to the regulatory arrangements at a later date? Should this be on a voluntary (i.e. 'opt-in') or mandated (i.e. 'deemed') basis?

Horizon Power believes all interconnected networks should participate in the *ISO* and/or *ISO+* from inception to support the secure operation of the interconnected networks moving forward. However, this does not necessarily require all networks to provide transport services at inception.

The outcome of the analysis detailed in Question 4 above may or may not support all *Network Owner*s to provide transport services (be *Covered*) at inception. If all networks are not *Covered*, Coverage could be considered when it will avoid a material increase in cost or could support the effective connection of a new customer that would materially increase competition in other markets. The tests under the *ENAC* appear to be an effective basis for this assessment. Any legislation should support this staged approach to coverage.

Voluntary versus Mandatory

Given all the *Asset Owner*s in the Pilbara are in competition with at least one other *Asset Owner* or new developer, in at least one market[11], it is unlikely that voluntary application of regulatory arrangements would deliver the required benefits. This is because, even though Coverage may create a net benefit and individually benefit each party, it may not be in the commercial interests of parties to voluntarily reduce the barriers to entry that are in place for new entrant competitors. That is, on an individual basis, the savings in electricity costs, as a consequence of Coverage will be dwarfed by the risk to revenue of additional supply in the *Network Owner*'s core market (e.g. commodities).

Therefore, Horizon Power does not believe a voluntary approach to participation in reform will deliver the *Objectives*.

Ultimately, the benefits associated with the *Objectives* accrue to the state of Western Australia through increased employment and revenue. Thus, analysis should be completed at an aggregate regional wide level when considering state based policy positions.

[11] For example, BHP, FMG and Rio Tinto are in competition in one or more commodity markets.

4.3 Barriers to competition

Q6. What barriers do you see to increased competition in the NWIS?

Horizon Power has identified the following barriers to competition in the NWIS.

Costs of Market Mechanism to Support Competition on Small Customer Base
The Horizon Power market has a customer base of under 16,000 customers and approximately 470GWh per annum. This limited customer base and small volumes reduces the benefits that could be realised. Additionally, the cost to establish required market mechanisms are forecast to be quite significant on a cost per customer basis.

Without the appropriate regulatory regime (including rationalised transmission infrastructure and mechanisms by which competition can drive more efficient dispatch of generation), competition is likely to only increase costs, and not deliver the hoped for economic benefits of a competitive market.

Inability to invest in network growth to support new entrants
Where new network elements are the most effective solution for a new entrant, there is currently no process to facilitate investment in these assets where such an asset will benefit more than one party. For example, when the incremental revenue exceeds incremental cost, reducing the cost of network service provisions for all parties.

Horizon Power is currently limited in its ability to invest significant funds in the transmission network to benefit other *Participants* in the Pilbara. Reform in the Pilbara should support third party, non-government investment that will facilitate network expansion to underpin network based competition to supply new customers.

The existing Uniform Tariff Policy (UTP)
The existing *UTP* subsidy mechanism (the tariff equalisation contribution) impedes Horizon Power's ability to compete due to the perverse incentives created, whereby Horizon Power receives higher revenues (via subsidy payments) when it loses customers, relative to when it competes for them. This structure requires reform and is the topic of a concurrent process being undertaken by the Department of Treasury.

Q7. Do stakeholders consider information asymmetry to be an issue in negotiating access? If yes, what additional information is required?

Information asymmetry can be an issue in negotiating access, however confidentiality issues amongst competitors can restrict the freedom with which parties can reasonably share the required information.

As a vertically integrated utility, Horizon Power is in competition with Alinta Energy and is a supplier to FMG and other major *Asset Owner*s and *Users*. In this context, much of Horizon Power's cost and revenue information is confidential.

In negotiations with Alinta, Horizon Power and Alinta have shared cost information, used to establish revenue and pricing models, through trusted third parties allowing them to assess the reasonableness of cost based information. However, this solution is not ideal as it is time consuming and costly.

Financial and operational ring fencing could assist in establishing an information base that could be shared more publicly. However, the Pilbara is Horizon Power's only interconnected transmission network. The evolution and challenges Horizon Power faces on its microgrid systems and consumer retail operations are materially different to those associated with

contracting for open access on an interconnected transmission system. In this operating context, ring fencing of the information and processes required to provide transparent information requirements for Coverage of the network will have an adverse impact on Horizon Power's costs and ability to operate efficiently

Horizon Power's preference is to have the *ISO+* manage network access contracts and for Horizon Power to receive a reasonable return for owning and operating the network elements.

With the *ISO+* being a trusted third party, its familiarity with the *Participants* would reduce the time involved with negotiations, provide its service at lower costs and be able to share relevant information without requiring access to confidential information.

Q8. What 'ring fencing' arrangements should be required of networks subject to the new regulatory framework to ensure access seekers are treated on an equitable basis? How should compliance with ring fencing arrangements be enforced?

Horizon Power's preference is for a *ISO+* to undertake all *ETAC*s for *Users* of the networks. Payment for return of, return on (depreciation) and maintenance and operation of the asset can be made on a transparent basis back to the *Network Owner*s, including Horizon Power. This structure addresses the ring fencing requirements without placing significant additional cost and inefficiency burdens on Horizon Power. It also avoids adverse impacts of ring fencing on other *Network Owner*s should they be *Covered*.

The significant additional costs and inefficiencies resulting from Horizon Power being required to ring fence include:

- duplication of administrative resources;
- separation of information systems including access; and
- additional rental costs if physical ring fencing is required.

Q9. What implications arise from the Uniform Tariff Policy with respect to any new regulatory framework in the NWIS?

Horizon Power's tariffs in the Pilbara are heavily subsidized through the Tariff Equalisation Contribution/Tariff Equalisation Fund as the cost of supply is significantly higher than the uniform tariff paid by customers and which are set as part of the Uniform Tariff Policy (*UTP*).

Removal of the uniform tariff will create a significant equity imbalance between Pilbara customers and customers in other areas of the State. On the basis that the *UTP* continues, Horizon Power will require ongoing subsidy, particularly if it has requirements of acting as the supplier of last resort to support the customers that competitors are unlikely to attempt to supply.

Further, in order to supply uniform tariff customers, Horizon Power has, in conjunction with the State Government, only recently invested in long term power purchase agreements. These fixed costs do not fall away with the removal of the uniform tariff or reductions in energy sold and will have substantial, long term financial implications with the introduction of competition in the Pilbara.

The interplay between the uniform tariff, the TEC and the current regulatory framework is such that Horizon Power is not incentivised to reduce prices below uniform tariff because when it does, its subsidy, required to cover the fixed costs of supply, falls away. This existing

arrangement has a significant adverse impact on SWIS customers and the taxpayer that is detailed in Horizon Power's submission in response to Alinta's application for coverage of the Horizon Power transmission and distribution network in the Pilbara.

Where the structure of the existing subsidy is addressed, the *UTP* will continue to impact any competitive market outcomes depending on how it is applied either as a cap or as a floor. Government may choose to implement it as a cap to protect vulnerable customers when a shortfall in generating capacity drives prices up, because Horizon Power is far from being cost reflective at the current uniform tariff and so has no incentive to lower prices, to support required new investment or; as a floor during periods of excess capacity when prices fall below average cost towards marginal cost increasing the subsidy paid by SWIS customers to benefit Pilbara customers. Both of the applications have negative impacts on the operation of any competitive market.

Any competitive market in the NWIS will most likely increase the subsidy requirement in the short term, given that potential volume losses to competitors will reduce the recovery on fixed costs of the commitments made in generation capacity. As the existing supply/demand imbalance caused by excess generation capacity in the Pilbara is resolved over time, this situation will be remedied.

The impact of the *UTP* and the supporting subsidy on transitioning to a more competitive market has been considered extensively in the SWIS. The impacts of the *UTP* and supporting subsidy in the Pilbara will be that more acute due to the smaller size of the market supporting less competitors.

Horizon Power suggests that the staged approach to contestability adopted in the SWIS and other markets, transitioning to full contestability, be considered for the Pilbara. For example, this staged approach could be implemented to reflect the customer take up proposed in Alinta's application for coverage of the Horizon Power transmission and distribution network. This will allow for realignment of the cost to supply in the NWIS as revised investment decisions would be based on the new quantum of load required to served.

Q10. What barriers do you see to the introduction of an independent system operator in the NWIS?

The NWIS has evolved with individual *Network Owner*s expanding the network with different priorities focusing on individual market needs. This has led to ad-hoc development and missed opportunities to realise the benefits of a centralised approach to developing the NWIS. Overcoming this trend, and attempting to develop a more unified approach in the NWIS through the implementation of an *ISO* is expected to encounter a range of barriers as discussed below.

Willingness of Participants

From prior experience, Horizon Power considers unified participant engagement in an overall governance scheme of the Pilbara networks to be a significant barrier. The existing *Network Owner*s all have different strategies, objectives and methods to operate and maintain their parts of the NWIS. They also have different sets of *Technical Rules* which guide them individually. This leads to inefficient operation of the NWIS as a whole and presents a missed opportunity for increased efficiency in the current system.

Secondly, there is a lack of willingness between competing *Network Owner*s as collaboration benefits all parties. This is due to the fact that the *Network Owner*s operate in a range of markets and hence have differing priorities with respect to their energy requirements. For example, mining representatives have different priorities to an energy provider and wouldn't

necessarily be concerned if their operations negatively influenced a competitor's network. Horizon Power currently sits in the middle of the *Network Owner*s and takes on the proactive role of the de facto System Operator, trying to maintain the security and reliability of the NWIS for the benefit of all *Participants*. Horizon Power proposes that the introduction of a *ISO+*, governed by a board comprising of market participant representatives, would mitigate this barrier for the following reasons:

- *Participants* would have active involvement in the governance of the *Covered* networks;
- all *Participants* (*Covered* or otherwise) would benefit from improved system stability and *Ancillary Services*;
- all *Participants* would benefit from third-party infrastructure investment, resulting in either increased system stability/capacity (new generator) or an increased consumer base; and
- only *Covered Participants* could collect revenue from the use of their assets by third parties via the *ISO+*.

Governance

The *ISO* in any form will have a critical role in the security and safety of the NWIS. It will need to be independent in its day to day operations, however, the cost / security / safety trade – offs that may be made at a policy level by the *ISO* will have a material impact on the downstream operations of Owners and *Users*. The composition of the *ISO*, establishment of the rules of engagement and basis of control of the *ISO* are important considerations in its establishment.

Setting of policy that applies to all *Network Owner*s and *Users* equally, such as risk appetite, should be directed by the *Network Owner*s and *Users*. To achieve this, Horizon Power have previously suggested that the Board of the *ISO* be represented by key System Owners.

As part of a Board individual members will owe a fiduciary duty to the charter and objectives of the *ISO* but will bring knowledge of the requirements the Participant that nominates them.

Horizon Power proposed this approach as a solution to the unavoidable tension between the need for individual participant control and a single approach to providing network services for all *Users* on an equitable basis. This approach may encourage network operators to participate in the *ISO* as they will continue to maintain a level of influence over not only over their assets, but the NWIS as a whole.

Authority to Deliver

If the *ISO* is not provided the authority to deliver centralised network management, provision of *Ancillary Services* and technical coordination across *Network Owner*'s (consistent application of *Technical Rules*) it will not deliver any significant benefits either to cost outcomes or the safety and reliability of the system.

Without the establishment of regulatory legislation which includes the authority to enter the required arrangements (discussed in Figure 2 and Figure 3) and legislated limitation of liability toward network operators, the establishment of an *ISO* would encounter significant challenges. It is important that the *ISO* be established through the regulatory legislation for the NWIS.

Complexity

Horizon Power submits that a significant barrier to the introduction and effective operation of an *ISO* is the complexity of the resulting commercial arrangements required to deliver any benefit to *Users* of the network.

If *Users* must enter a range of complicated interconnected agreements that do not clearly state who is responsible for the continuity of services they will be less likely to adopt this as a solution, even if it is economically more effective.

An *ISO* must direct the operation of assets that it does not own. It therefore requires agreements with all of the *Asset Owner*s. At a minimum these arrangements must deliver the following:

- agreements with *Network Owner*s to switch and otherwise operate their network assets consistent with the direction of the *ISO*. To achieve any benefits from an *ISO* this will need to include all networks within the NWIS (even if they are not *Covered*); and

- agreements with the generators for the delivery and payment for *Ancillary Services* that must be delivered centrally (such as *Frequency Control*) and to allow the *ISO* to direct generators in the event of emergencies.

If the *ISO* is not the provider of network transport services to *Users*, *Users* will be required to contract directly with *Network Owner*s for transport services. To ensure the security and safety of supply, each *Network Owner* will be required to ensure that each connection meets the requirements of centralised *Technical Rules*. Thus, there will need to be connection contracts between *Network Owner*s and the generators / consumers connected to their network. Further, *Users* will require separate contracts with any other *Network Owner* required to transport electricity from the generator to the consumer.

The complexity of the resulting arrangements for the *ISO* and *ISO+* models are illustrated in Section 3.5 on Page 16.

Q11. What operational and financial inefficiencies result from the current NWIS system operation model and could be addressed by introducing an independent system operator?

Previous consultants' reports have quantified the significant operational and financial efficiencies that can be delivered through a more coordinated approach to *Ancillary Services*, *Economic Dispatch* of generation and better emergency response. The following discussion details how the *ISO* can support these outcomes.

Ancillary Services

Frequency Control

An *ISO* would have the capacity to centrally procure *Frequency Control* services on pre-determined parameters. The resultant costs of this service could then be distributed across all *Users* (not just those connected to the *Horizon Power Network*) on an equitable basis.

The provision of *Frequency Control* means that a generator cannot meet *Balancing Energy* obligations as they are currently defined in the *Horizon Power ETAC* which means they are the provider of out of balance energy. Therefore, in the absence of a wholesale market, it is sensible to combine the procurement of *Frequency Control* services with the procurement of out of balance energy services.

Balancing Energy

The *ISO* can run a transparent competitive process on a regular basis to set the price for *Balancing Energy*. As discussed above, this technically integrates well with the *Frequency Control* service.

With the *Balancing Energy* provider defined for a given duration the *Balancing Energy* settlement calculations (between the generators) must be completed. The *ISO* is ideally placed to undertake the balancing settlement calculations resolving any ring fencing or confidential information requirements.

Spinning Reserve

Spinning reserve on the NWIS is typically met as a function of generators meeting their commercial obligations. In less common instances, maintaining *Spinning Reserve* requires one party on the system to bring a generator online. Rather than an arbitrary unit being brought online, through its relationships with the generators the *ISO* can select the generator offering the lowest cost to connect an additional unit.

Reserve Capacity

The *ISO* can centrally and independently contract for and monitor compliance with a *Reserve Capacity* obligation similar to that currently in the *Horizon Power ETAC*.

This will ensure there is adequate installed capacity to meet the requirements of the system at peak load maintaining the security of the system.

Economic Dispatch

An *ISO* cannot dispatch generation without a supporting mechanism to set a price and agreement from dispatched generators to sell, and loads to purchase, at that price.

Typically, this is delivered through the implementation of a wholesale market.

As an alternative, the *Horizon Power ETAC* allows for each entry / exit point to supply or be supplied under more than one other *ETAC* through an Allocation Deed arrangement. This mechanism allows for any consumer to be supplied by more than one generator or retailer, and for any generator to supply to more than one *ETAC* holder[12]. This approach has the potential to improve the liquidity of the resulting electricity market. As an example, this allows for the consumer to enter the following types of arrangements:

1. Purchase the required *Reserve Capacity* from one generator whilst purchasing energy from another on a short-term basis at particular times because it is cheaper on a spot energy basis; or

2. Purchase the required *Reserve Capacity* and shortfall energy from one generator whilst purchasing part of the varying output from a renewable generator.

The competitively developed arrangements under this framework can drive more *Economic Dispatch* of generation (including renewables) based on consumer / retailer purchasing decisions. The price impact of this more *Economic Dispatch* will be passed directly through to customers. This is particularly the case in the Pilbara where the load is dominated by a small number of very large customers.

[12] This is not the case in the *WEM*.

The customer driven *Economic Dispatch* resulting from the structure in the *Horizon Power ETAC* requires no active scheduling role from the *ISO* for dispatch in day to day operations. Each generator would dispatch to meet its own commercial load obligations.

The settlement of this process requires each party to allocate how much they are purchasing and selling in advance. These Allocation Deeds must be managed through the balancing settlement process. Much of this information may become commercially sensitive over time. Further, it requires payments, that may be significant, to and from competing parties. The *ISO* could effectively support the above process through a balancing calculation and settlement role.

The above requires the *ISO* to have contractual arrangements with all *ETAC* holders detailing the rights and obligations associated with the *Balancing Energy* settlement process.

Network Coordination Including Load Shedding and System Islanding Regimes
The implementation of load shedding and islanding regimes define the impact on all *Users* (whether on a *Covered* network or not) of the system response to significant contingencies. The proper development of the load shedding system response is prudent and necessary to minimise the impact of contingencies on system *Users*.

The definition of these system responses requires an accurate and centralised system model that may contain confidential information. Horizon Power believes the *ISO* is best place to determine the system load shedding and islanding responses and to manage and maintain the system model to do so. This would address confidentiality and ring-fencing concerns and provide a platform to deliver the optimal security of the system for the least cost.

The *ISO* would also have a greater visibility over all network operations in comparison to the current arrangement. This greater level of visibility could be used to improve the overall security and reliability of the NWIS by coordinating activities such as:

- System security constraints between networks owned by different operators (i.e. between Horizon Power and Rio Tinto);
- Long term network planning for the NWIS;
- Coordinating and carrying out real time contingency planning; and
- Coordinating outage management.

All of these lead to financial efficiencies on the long term, and would greatly benefit from regulation and the introduction of an *ISO*. Improving overall network coordination would also result in safety and reliability improvements. Currently there is no legislation or policy that dictates compliance to rules for operation. Therefore, through lack of communication and visibility, network operators can inadvertently cause system instabilities due to network operational conflicts, as well as cause potentially dangerous and unsafe conditions.

Additional Financial Considerations
Many customers may be locked into inflexible energy purchase agreements. The advent of a regulated network, along with increasing competition and market liquidity could perhaps allow consumers to capture opportunities to reduce cost by supporting more flexible purchasing arrangements. This is most relevant for large power users.

Q12. Are there significant foregone opportunities for providing more efficient dispatch of available generation resources in the NWIS, or for the integration of currently non-interconnected loads and generators in the region? What are the barriers?

Yes, as discussed in Question 11 above previous consultants' reports have identified and quantified these opportunities.

The abundance of existing non-interconnected generation is a significant lost opportunity to improve efficiency in generation dispatch on the NWIS. Better planning and regulation would have ensured a major benefit to junior miners and future customers to utilise the available generation capacity that is not connected to the NWIS. Having a planned, governed and consistent network from the start would have benefited not only the *Participants* currently connected to the NWIS, but the state as a whole through the creation of jobs from new projects, cost savings on electrical infrastructure and the potential for greater renewable energy penetration in a prime solar location.

For existing non NWIS connected generators / loads the foregone benefits of future connection are:

- The addition of fuel and machine run time that results from providing the required *Ancillary Services* on a standalone basis;
- The potential to utilise excess installed generation capacity to generate revenue from other consumers;
- Increased system security for all; and
- Lower costs for all through greater network and generation asset utilisation.

These are discussed further overleaf:

Cost of the Provision of Ancillary Services

Each non-interconnected load and generator must provide its own *Ancillary Services*. If the generator sizes are similar to those on the NWIS (defining the largest credible contingency) the cost of providing *Ancillary Services* for a non-interconnected system is similar to providing them for a larger integrated system. That is, each non-connected load with circa 35-40 MW generators is likely duplicating the cost of *Ancillary Services* to that of the interconnected system.

Potential to utilise excess installed generation

Existing isolated generation systems typically have significant excess reserve generation to meet standalone *Reserve Capacity* requirements. This excess generation could be utilised to provide electricity to other loads on the network creating a new source of revenue. This is particularly the case for those with lower fuel costs (Woodside / North West Shelf) and those with highly efficient generation (Citic Pacific).

Increased security

Typically, a well-managed larger interconnected system delivers a better security of supply than independent non-interconnected systems. Horizon Power expects that circumstances that may have caused outages on isolated systems would not have resulted in the same level of load lost if the systems were interconnected.

Better utilisation
Connection of the existing non-connected users on an appropriately planned and assessed basis will increase the utilisation of the network reducing the use of system costs for all. It will also make available existing generation capacity to support future growth in the region at limited incremental cost.

Barriers

Horizon Power submits the most material barrier for the connection of existing non-NWIS connected generators is certainty regarding reliability outcomes.

Certainty regarding the responsibility for the reliability of the NWIS
Based on discussions with non-interconnected loads in the past, the absence of any single party responsible for network security and stability has represented a significant barrier to connection to the NWIS.

Rio Tinto Iron Ore (RTIO) owns and operates the most significant proportion of the NWIS. It is assumed that it would be highly unlikely that RTIO would relinquish any form of control of their network to an alternate *ISO* unless it was absolutely comfortable that this body would deliver better reliability outcomes than the existing arrangements.

4.4 Technical rules

Q13. What aspects of Technical Rules currently applied in the NWIS cause significant issues to loads/generators?

Currently there is no agreed set of *Technical Rules* that can be applied consistently across the NWIS.

Horizon Power's biggest challenge with respect to the *Technical Rules* is applying them consistently across all *Users* of its network as these rules are not enforceable under the Electricity Industry Act or other legislation. Horizon Power therefore relies wholly on existing contracts, being retail contracts, power purchase contracts, access contracts and interconnection contracts to implement the *Technical Rules*. Some of these arrangements are in excess of 20 years old and do not refer to the *Technical Rules*, or contain derogations based on historical arrangements. Typically, Horizon Power's newer contractual arrangements implement the *Technical Rules* more completely than the older contractual arrangements.

The second challenge is integrating with the technical parameters used by other *Network Owner*s. Rio Tinto and Alinta apply separate *Technical Rules* for the planning and connection of loads and generators to their networks. Examples of inconsistencies in *Technical Rules* is provided in section 3 of this submission.

To achieve the *Objectives*, compliance by all *Covered* networks to a common set of rules is essential to ensure the safety and security of the NWIS is maintained at all times.

Q14. What obligations to comply with a proposed new set of NWIS Technical Rules should be introduced?

As is good practice in all other interconnected and open access networks, all network *Users* and network operators should be required to comply with obligations in a common set of *Technical Rules*.

Without this requirement, the interaction between generation, load and network elements becomes uncoordinated and puts system security at risk. The penalty for non-compliance should be based upon impact, ranging from financial penalties through to disconnection of load or generator.

A uniform set of *Technical Rules* could be maintained and implemented by the *ISO* through the contractual arrangements it has with *Network Owner*s and generators.

There also needs to be a degree of flexibility to afford necessary changes to existing technical requirements as the network evolves over time. Network *Participants* must be aware of the requirements and they should be contracted to not unreasonably prevent changes for the benefit of the network. This is typically addressed by allowing the *Technical Rules* to be varied, within reason, over time.

4.5 *Ancillary Services*, reliability and security of supply

Q15. What barriers to cooperation and or the efficient provision of Ancillary Services are caused by the low number of large and diverse/competitive interests in the NWIS and under what circumstances?

The owners of electrical infrastructure in the Pilbara operate highly successful businesses by competing effectively in their core markets. For Horizon Power and Alinta the core market is associated with the provision of electricity. For all other *Asset Owner*s, the core market is related to the provision of minerals into commodity markets. For those not competing in electricity, any investment (time / effort / capital) in improving efficiency that benefits competitors is ultimately counter to their strategic interests.

For Horizon Power and Alinta, if reform does not deliver increased economic activity in the Pilbara, one party will benefit at the expense of the other.

These are the fundamental positions that have impeded cooperation on improved efficiency in the Pilbara to date. Ultimately, the benefits that flow from improving the efficiency of the electricity industry in the Pilbara are largely applicable to the state economic position by supporting increased economic activity in the region.

Movement to a more cooperative arrangement for *Ancillary Services* is further impeded by the existing contracts/agreement between Alinta / Horizon Power and Rio Tino / Horizon Power. Horizon Power has not been able to move any parties to a more consistent and sustainable treatment of *Ancillary Services*.

Currently, *Ancillary Services* can be provided by either Rio Tinto, Horizon Power or Alinta depending on the configuration of the network. Ideally this should be procured through the *ISO* giving the ability to choose different providers of the ancillary service based on the configuration of the NWIS at any given time. For example, if the 220kV Line between Cape Lambert and South Hedland is off, the NWIS will be split into 2 separate islands requiring 2 Ancillary Service providers for the 2 Islands.

It is important that robust agreements are struck in the provision of *Ancillary Services*. If a market were to be pursued for the provision of services, this would need careful establishment of commercial agreements to avert any perverse outcomes and unnecessary risks upon the NWIS.

4.6 A fit-for-purpose access regime

Q16. Are the National Competition Council guidelines for designing a fit-for-purpose access regime for the NWIS sufficient? Should additional guidelines or criteria be considered based on the specific circumstances of the NWIS?

Horizon Power supports the use of the National Competition Council Guidelines for designing a fit for purpose regime for the NWIS.

However, Horizon Power believes that the "light handed" regime being defined in the "Description" column of the table on pages 19 and 20 of the *Issues Paper* may not be fit for purpose for the Pilbara as determination by an independent regulator of at least some key elements of the terms of access (including price) in advance of negotiation may result in more effective outcomes. Further work is required regarding requirements that may flow from the application of the *Pilbara Net* approach to the scope of the *ISO* and network operators' responses to the changes in the Australian Competition Law commonly referred to as the *Effects Test*. These issues are discussed further in response to Question 19.

Q17. How should the costs and benefits of potentially moving to a new regulatory framework be assessed in developing the new framework?

Horizon Power believes the most effective way to consider the benefits of various policy positions is the approach taken by in reports most recently completed by Sinclair Knight Merz and before them by Worley Parsons that calculate the total cost of electricity production for a range of growth scenarios under the policy positions being considered. This total cost calculation typically includes:

1. the required capital investment for the infrastructure to be developed to meet each of the growth scenarios based on basic capital cost building blocks commonly applied to all cases; and

2. a determination of fuel and operating costs based on *Economic Dispatch* modelling.

The efficient costs established for each policy positions can be compared to ascertain the potential savings of each position for each growth scenario.

Costs of regulatory options can be established using existing precedence. Horizon Power can provide guidance as to the cost impact of negotiating an *ETAC* with a third party with limited regulatory guidance based on its recent experience with Alinta for input into the costs impacts of "Light Handed" regulation

Q18. If you are a generator or electricity retailer, would you be interested in seeking access to the services of the Horizon Power NWIS network, or any other Pilbara network now or in the foreseeable future?

While the discussion around competition focuses primarily on access to Horizon Power's network, Horizon Power itself will seek to gain access to other Pilbara based networks with the intention of expanding its service area, and offering the benefits of Horizon Power's proven customer service standards and regional focus and understanding.

The access to affordable energy is a key enabler for new projects in the Pilbara region with a positive flow on effect to the benefit of all Western Australia, and indeed, the nation. The constraints to access that exist in the region restricts the ability to capitalise on its natural economic advantages such as iron ore and solar resource. It creates a barrier to entry for new ventures and provides a competitive advantage to incumbents.

Opening access to the broader network could be a catalyst for private investment and could trigger significant secondary investment for the region. This would increase the population base and local employment opportunities, deliver on the strategic intent of building sustainable communities, and see a return on the Government's recent investment throughout the Pilbara region.

Q19. To what extent should access arrangements be based on negotiation between parties and to what extent should they be subject to imposed requirements on both parties?

Full Access Regulation, such as is detailed in the *ENAC* 2004, is based on a negotiate/arbitrate model under which the terms and conditions on which access to a service is to be provided, including pricing, is approved by an independent regulator as a point of reference for all parties. Under this model, the parties are free to negotiate terms of access different from those approved by the regulator but, in the event of a dispute, the arbitrator must apply the approved access terms in resolving any dispute.

In circumstances where the approved access terms will be applied in the absence of agreement, the approved access terms operate as a benchmark of minimum contract terms.

Other than through the arbitration process, it is also possible for certain elements of the access arrangement, such as the rate of return methodology or floor and ceiling pricing, to be the subject of a binding determination by the regulator in the interest of providing increased regulatory certainty and to reduce the incidence of disputes during the negotiation process.

The light-handed regime proposed requires the parties to negotiate terms of access in the absence of predetermined guidance. This could offer the parties increased flexibility in terms, but is also likely to increase the complexity of negotiations and the use of arbitration.

In determining the balance between freedom of contract and regulatory certainty, Horizon Power provides the following context based on its experience in negotiating access arrangements without any form of regulated point of reference.

Australian Competition Law obligations

In any future negotiations for access, a significant consideration for Horizon Power, as a vertically integrated utility, will be to ensure it complies with the obligations under Australian Competition Law.

Previously the prohibition on misuse of market power in the competition law would only be breached where a party with market power engaged in conduct which damaged a competitor or prevented competitive behaviour for an anti-competitive purpose. Under recent changes to the market power prohibition in the competition law, companies with substantial market power must not engage in conduct that has the *effect* of substantially lessening competition in a relevant market, irrespective of whether the conduct has an anti-competitive purpose.

In engaging in negotiations with different retailers, *Network Owner*s can inadvertently affect the relative competitive position of these retailers through granting differential terms of access. As a result, *Network Owner*s will need to carefully assess the competitive impact of their negotiated agreements in order to meet their obligations under the recently revised Australian Competition Law.

A relevant competition analysis will need to consider the market as it presently exists, including any "market imperfections" such as a small number of competitors, high concentration levels, lack of consumer choice or low levels of price competition. The market

assessment will underpin any assessment of the likely competitive impact expected to result from a proposed contract. In some cases, assessment of the competitive effect of particular terms may involve difficult technical and economic assessment.

Having some key terms determined in advance by an independent regulator and the application of these terms equally across all parties may be an effective mitigation of the risks inherent in providing network open access under the revised Australian Competition Law.

Interface with ISO

The key issue identified in negotiations to date is the absence of regulatory protections for the system operator and market settlement functions.

Under the *Pilbara Net* Proposal Horizon Power proposes to use *ISO+* as its agent for the provision of network services. Through this arrangement Horizon Power would seek a total revenue return for the use of its network and allow the *ISO+* to contract with customers as required. The *ISO+* would be charged with ensuring that parties using Horizon Power's network met *Technical Rules* requirements so that parties safely and securely connect to Horizon Power's network. Under this arrangement Horizon Power expect that its annual revenue requirement would be published. However, as parties will not necessarily be negotiating directly with Horizon Power, it may be considered appropriate to have the annual revenue requirement pre-approved by a capable and independent third party.

Q20. The National Gas Law and National Gas Rules provide a framework for the regulation of pipeline services. For a lightly regulated service, a more limited access arrangement can be lodged where the pipeline operator determines its own tariffs. The access arrangement provides a starting point for parties to negotiate access on commercial terms. In the event of a dispute, the National Gas Rules contain a dispute resolution mechanism.

a. What features of the framework for the regulation of pipeline services do you consider may be appropriate for the regulation of electricity network services in the NWIS?

The regulation of pipeline services implements a negotiate / arbitrate model. Horizon Power suggests that some terms of open access that are pre-determined in the Access Arrangements under the *ENAC* 2004 can be left open for negotiation and arbitration between the parties[13].

b. Are there features of the framework for the regulation of pipeline services that may not be appropriate for the NWIS, given its particular circumstances?

The activities of the *ISO* and the *Network Owner* are technically more integrated with network users in electricity than in gas. This is because of the need to exactly balance input and output at every point in time on an electricity network does not exist to the same extent on a gas network. This significantly changes the requirements of *Ancillary Services* and the time over which *Balancing Energy* can be calculated[14]. The need to maintain input and output balances at all times in-turn changes the level of control required to securely manage an electricity system as compared to an interconnected network. These technical differences

[13] It is possible this could be delivered through specific derogations from the requirements in the *ENAC*.

[14] *Balancing* is typically calculated daily on gas and every 30 min for electricity.

in the real time operation of the networks mean that mechanisms to negotiate terms under gas regulation may not suffice when establishing terms for electricity regulation.

Q21. If agreement on an access-related matter cannot be reached, how should disputes be resolved? What is the appropriate dispute resolution body?

Horizon Power believes any appropriately resourced, cost effective and capable body given the legislative right to bind third party organisations to the outcomes of decisions can fulfil this role.

Q22. Should guidance relating to the setting of electricity network access prices, such as the build-up of costs (e.g. asset valuation, cost of capital, operating costs) and tariff design (e.g. tariff structures, postage stamp pricing, etc.), be specified in the regulatory framework or should this be addressed solely via commercial negotiation?

Horizon Power is unsure how commercial negotiations for a quasi-monopoly service can deliver appropriate pricing outcomes without guidance or a competitive alternative[15]. For many of the light-handed regulatory regimes quoted in the *Issues Paper*, *Full Access Regulation* remains a fall-back position that provides the guidance to the parties to deliver negotiated outcomes. That is, negotiated outcomes are not delivered in the absence of specified alternatives that are well understood by the negotiating parties.

Under the light-handed model, without specific guidance, this alternative outcome may be established over time through various arbitration outcomes (in a process akin to the development of common law). However, without some form of guidance, this will drive higher levels of arbitration and cost in the early periods of coverage.

In the Pilbara context, where all *Asset Owner*s are competitors in electricity or some other market, clear and unambiguous guidance on the alternative to reaching a negotiated outcome is more necessary than in other markets. Historically, where this guidance hasn't existed, Horizon Power has found negotiating network access to be a highly time consuming and expensive endeavour for which little value is obtained by the parties involved, especially if the negotiations are unable to be resolved.

Q23. Should any regulatory oversight or monitoring of electricity network access prices on the NWIS be undertaken? If so, how and by whom?

Horizon Power submits that oversight and monitoring is less required if a pre-determined alternative outcome to achieve fair and reasonable pricing outcomes exists.

Horizon Power proposes that any monitoring or oversight requirements be addressed through the *ISO+* with its governing Board of Participant representatives. As the *Participants* are competitors in electricity or some other market, it would be in the Boards best interest to ensure obligations are being met by all *Participants*.

[15] For example, Horizon Power has negotiated terms of access to date against the alternative of being covered under the *ENAC* 2004 and has therefore used the requirements of this documents as a reference.

Q24. What is the period that parties are likely to seek to have network access prices locked in? Does this period vary between a framework with negotiated outcomes or one with stronger regulatory oversight?

Electricity load demands tend to fluctuate for a number of reasons, whether it be the connection/closure of a large load customer, or an increase in residential population leading to a higher average base load. From the perspective of both a retailer and an *Asset Owner*, Horizon Power would consider it fair and reasonable to have price reviews performed on an annual basis. This is because any longer period will result in corrections for actual volumes of service being used being larger resulting in more volatile network pricing.

Q25. How would capital expenditures and upgrades to the networks be addressed in the new regulatory arrangements, particularly with respect to price and service outcomes?

Horizon Power believes a mechanism to support centrally coordinated third party investment in the networks in the Pilbara is critical to support growth of industry in the Pilbara.

The current approach presents significant barriers with no party able to fund multiple user network infrastructure except Horizon Power. These barriers have restricted the growth of secondary industry, such as small to medium enterprises from taking advantage of the prime economic conditions. This aspect is therefore considered to be a critical component of effective reform in the Pilbara.

The Horizon Power *Pilbara Net* Proposal has the *ISO+* establishing the need for future network reinforcement and coordinating the required capital investment. A discussion of this was provided in section 3.

Q26. How should non-price considerations (such as security and reliability of supply and customer service standards) form part of a light-handed regulatory framework?

The current concern with addressing security and reliability of supply and customer service standard issues in the Pilbara is that no one party has the responsibility or the required rights for meeting these or the authority to make changes to deliver against any standard.

Reliability and security of supply on an interconnected system is delivered by the following activities:

- Maintaining appropriate and adequate *Ancillary Services*;
- Applying consistent technical obligations on all *Users* (generators and consumers) and on *Network Owner*s (Common *Technical Rules*). The technical obligations include the specification of equipment, equipment settings, maintenance and operational requirements; and
- Ensuring that all *Participants* conform to their obligations, as directed through protocols or instructions from an independent governing body. This body must have the authority to enact operational changes on the inter-connected system to ensure reliability and security of supply is maintained. An example of an operational change would be the disconnection of a generator / load from the network should it be posing a serious risk to system stability.

Horizon Power believes the *ISO+* is best placed to be given the authority to deliver on the above activities. If given this authority, the *ISO+* can assume the responsibility for delivering against security and reliability of supply and customer service standards. The *ISO+* will

require contractual and commercial arrangements with *Network Owner*s and network *Users* in all cases. Regulation will need only facilitate the actions above such that they can be built into these commercial arrangements. Splitting these activities amongst multiple competing *Asset Owner*s will result in no party being able to take responsibility for non-price outcomes.

As noted in responses to earlier questions, *Asset Owner*s are unlikely to be willing to relinquish control over their assets to an unproven/unknown entity. Horizon Power's *Pilbara Net* proposal addresses this concern via the implementation of a Participant based governing Board for the new *ISO+*. This will provide all *Asset Owner*s with the opportunity to review and approve any policies used to operate the inter-connected system, and will take advantage of the extensive experience of the *Participants* who have successfully operated their assets for years.

With respect to the framework itself, it should provide a robust basis for network security, reliability and quality of supply.

The regulatory framework should establish a baseline for network security in the wider interest of all network *Participants*. The planning criteria should extend to minimum configuration of line and substation and should prevent a compromised network. These elements currently exist in the *Technical Rules*.

Regulation or agreements with the *ISO+* could provide incentives to *Network Owner*s, *Participants* and generators to exercise prudent and efficient management of assets. Likewise, penalties could be applied toward *Participants* who fail to meet these requirements.

Q27. How should capacity constraints be addressed in the new regulatory framework? Should the networks be required to only offer an unconstrained connection (e.g. N-1)? How are constraints managed post connection?

Capacity Constraints

Horizon Power does not consider it to be a requirement for networks to only offer unconstrained connections in all instances. Such an approach incurs high capital costs and can create a financial barrier for developments such as remote renewable generation which require long transmission lines for connection. The basis of the *ISO+* is to provide prudent and efficient management of the NWIS. As described in Question 26, there should be a minimum network security provided under planning criteria.

The *ISO+* should be empowered to conduct joint integrated resource planning level with all major network *Participants*, both existing and future. The assessment should be done based on agreed planning criteria (e.g. N-1) for the main transmission backbone of the NWIS and this may differ for different parts of the network based on system constraints. The plans established in collaboration with stakeholder entities should provide a reasonable degree of certainty where load centres would develop. This should provide sufficient foresight for the development of a robust NWIS. The solutions identified to meet this planning criteria should include network investment and non-network (such as generator constraint) options.

When major customers or large power users are planning to connect to the network, the *ISO+* should be required to conduct sufficient planning studies to provide for appropriately secure connections that do not adversely impact the reliability of other *Users*.

Any investment required to provide transport services should be supported by any existing *Covered Network Owner* or any other third party investor hat is prepared to become a *Covered Network Owner* (as described in Question 25), with the most cost-effective party selected to undertake each investment.

Constrained Access

Given the technical nature of the NWIS and the changing technical nature of efficient new entrant generation (rise of renewables), constrained access should be supported by any new regulatory framework from inception. Horizon Power believes this can be simply delivered under the Horizon Power *Pilbara Net* Proposal as it inherently addresses the significant barriers to introducing constrained network access in the SWIS discussed in Section 3.

Q28. What issues do you see as contentious for access seekers or access providers that are unlikely to be resolved through commercial negotiation (e.g. liability and indemnity)? How could these issues be resolved without unreasonably impacting the property rights of Participants? Do other parties have a right to object to connections or material changes that might impact them?

As previously discussed, dividing responsibility for network service provision (network access) between the various *Network Owner*s and provision of *Ancillary Services* by the *ISO* results in no one party being responsible for the application of technical obligations and the reliability of the network. This could result in the same situation that currently exists which is that each *Network Owner* can make technical decisions that adversely impact the delivery of electricity on the other network *Participants* assets. Further, access seekers may require a range of access agreements with multiple *Network Owner*s, with the *ISO* to fund and receive the required *Ancillary Services*.

Centralised provision of network services (access and *Ancillary Services*) resolves many of these issues.

The property rights of owners will be impeded to some extent by the need for consistent *Technical Rules* and *Ancillary Services* provision. To ensure the correct balance is struck in this regard, Horizon Power proposes that the Board of the *ISO+* be made up of key network *Participants* that will set policy level positions to be applied equally to all *Participants* assets. Thus, key network *Participants* retain a level of strategic control over the operation of the integrated system.

The selection of a Board as the governance mechanism for the *ISO+* is important, although board members will be representatives of other firms they will still have a fiduciary duty to the *ISO+* and its charter (that should be established in regulation). This allows different perspectives to be brought to the strategic direction of operation of the *ISO+* but requires all Board members to ultimately act in the best interests of all NWIS *Users* and any other objectives defined in the regulation that establishes the *ISO+* entity.

For example, a contentious issue in any Open Access regime is the connection of new *Users* including:

- The right for new *Users* to utilise existing spare network capacity; and
- The protection of the rights of existing *Users*, including the service level (i.e. the supply security and available capacity) they have from the network.

This is typically addressed through an Application and Queuing Policy working in concert with the *Technical Rules*. Horizon Power suggest that the *ISO+* develop and administer this Policy. This Policy would be endorsed by the Board of the *ISO*, being representatives of the key *Participants*. This policy will then be applied equally to all *Participants*.

Fundamentally, the new framework would have a set of obligations for all *Participants* which will set limits and boundaries that all *Participants* must comply with.

Q29. Should periodic reviews of a new regulatory framework be conducted to ensure the framework achieves the targeted objectives?

Yes, Horizon Power supports periodic reviews of the new regulatory framework.

Horizon Power's hope and expectation is that the Pilbara will grow into a thriving diversified economic region. As the scale and complexity of the electricity industry grows to support this, the opportunity will arise to deliver improved efficiency. Periodic review is essential as the network is evolving and regulations will have to be adapted to changes during such evolution.

A high frequency of reviews should be avoided as it could prevent the full implementation and consolidation of the regulatory environment. However, there may be benefit in the initial reviews being more frequent with subsequent reviews less frequent as confidence in the reform solution develops.

Consideration should be given to how *Participants* may trigger a review of the regulatory framework outside the scheduled review process.

Regular compliance and operational feedback from the *ISO+*, perhaps on a quarterly basis, should be implemented. This could be used to establish and build a log of changes required during the periodic reviews of the regulations.

Q30. What information requirements should be placed on Participants to ensure any new regulatory framework for the NWIS is operating as intended?

Horizon Power believes the *ISO+* will have available to it the KPIs to review the new regulatory framework. It will require real time operational information from *Participants* to undertake its role. Under all circumstances the regulatory framework should not duplicate the information requirements on *Network Owner*s in existing regulatory frameworks. Each of the above consideration is expanded below.

Information Obligations on the ISO+

The *ISO+*, properly implemented should be in a position to record a suite of information to support reviews of the effectiveness of the framework. This could include Key Performance Indicators (KPIs) such as:

- *Balancing* energy prices and participation;
- *Ancillary Services* prices and participation;
- Network use of system charges and prices;
- Feedback from new market entrants on the simplicity of the connection process;
- Standard reliability metrics; and
- Use of *Balancing Energy* in settlement processes.

The existing *Network Owner*s would need to provide very little additional information above what is collected by the *ISO+* in its core role.

Operational Information to be provided to the ISO
In order for the *ISO+* to successfully perform in its core role, *Participants* would need to share the following information with the *ISO*:

- Status of Available Generation;
- Status of all planned/unplanned outages on transmission networks with generation coordinated centrally via the *ISO*;
- Any impending works that will, or may, impact the security and reliability of the NWIS;
- Any commissioning work relating to generation and transmission assets between the key interconnection points of all *Participants*; and
- Any works that will impact the SCADA communications of network *Participants*.

Non-duplication of regulatory information obligations
Any definition of information requirements should consider the asset management and other information currently provided and audited by *Network Owner*s and generators as part of Electricity Licence or Licence Exemption requirements. Any of the information captured through these processes should not be duplicated in the reform framework.

4.7 Formalising system operation and management

Q31. What should the guiding objectives for the independent system operator be? Are the National Electricity Objectives appropriate for the NWIS?

Yes, the National Electricity *Objectives* are appropriate, however it is noted that the *NEM* is currently entering a period of reform driven by Federal Government Policy. It may be more appropriate to use the *WEM* objectives as a basis for developing the objectives for the NWIS at this time.

Noting that the NWIS is a unique network, any guiding objectives should be used as a base only. Horizon Power would suggest that the objectives be clearly established to maintain security, stability, safety and efficiency to a comparable industry benchmark.

Q32. Should the proposed independent system operator be granted statutory immunity that excludes, or caps, liability for damages claims from third parties? Should there be any exclusions from immunity?

Yes, the *ISO+* should be granted statutory immunity that excludes or caps liability for damages claims from third parties. Whilst there should be immunity, this should be limited to prudent operation for all *Participants* and where there is negligence or recklessness, then there should be penalties appropriate to the degree of violation.

The *ISO+* should be able to perform real time operational activities/actions in the best interest of system security without the threat of litigation from affected parties.

If immunity is not provided, it would be important to consider whom would fund the outcome of any claims as Horizon Power has studies that suggest any claims for poor system reliability / security outcomes could be significant.

Q33. Is there a preference for the independent System Operator functions to be held by a separate entity or ring-fenced within an existing network operator? Similarly, is there a preference for how the costs of an independent system operator should be recovered?

The *ISO+* should be a separate commercial body.

However, there is no reason this entity needs to own equipment and employ staff for the day to day system operation activities as these activities could be outsourced. Horizon Power's experience in operating the NWIS is that there is scope for these activities to be combined with other operational activities. Currently, the Horizon Power Control Centre operates the NWIS (in cooperation with other control centres) and Horizon Power's 38 non-interconnected systems. There are other existing electricity network control centres that could also provide day to day system operation services for the NWIS including Rio Tinto. Horizon Power would suggest the *ISO+* run a competitive process to outsource these services

Horizon Power notes that any day to day control system operator would require greater SCADA based visibility of the operational state of the network than Horizon Power currently has.

On the basis of Horizon Power's *Pilbara Net* proposal, the cost of the *ISO+* should be recovered through the charges the *ISO+* levies on all *Users* for the provision of services. For networks that are not "*Covered*", these charges would be levied through the agreements required for the procurement and provision of *Ancillary Services*.

Q34. What level of governance should be applied to the proposed independent system operator? What should the key features of the governance framework be?

Horizon Power propose that the *ISO+* be governed by a Board of key *Participants* and possibly a representative from government (for example the Coordinator of Energy). As discussed in Question 28 above the Board would have a fiduciary duty to the *ISO+* and its charter. The charter or similar should be defined in legislation and regulation that establishes the *ISO+* entity. The detailed governance structure for the *ISO+* should consider the following:

- The *ISO+*'s governance should be structured in a fair and non-discriminatory manner;
- A governance structure that includes fair representation of all types of *Users* of the system would help ensure that the *ISO+* formulates policies, operates the system, and resolves disputes in a fair and non-discriminatory manner;
- Key governance issues could be established by a sub-committee of the Board reporting back to the Board with recommendations;
- The *ISO+* and its employees should have no financial interest in the economic performance of any power market participant;
- The *ISO+* should have the primary responsibility in ensuring reliability of grid operations;
- The *ISO+* should have appropriate incentives for efficient management and administration, and should procure the services needed for such management and administration in an open competitive market;

- The *ISO*+'s transmission and *Ancillary Services* pricing policies should promote the efficient use of and investment in generation, transmission, and consumption;

- The *ISO*+ should make transmission system information publicly available on a timely basis via an electronic information network consistent with the regulatory requirements; and

- The *ISO*+ should establish a Dispute Resolution process to resolve disputes in the first instance.

Q35. How much visibility of the NWIS power system will an independent system operator require? How far should the visibility (and real-time data requirements) extend into generation facilities and the distribution network?

The *ISO* should have visibility of all generating assets of the NWIS to be able to perform its role in maintaining system security effectively.

The *ISO* should also have full visibility of the transmission network to perform its role effectively in maintaining the security and reliability of the NWIS. The required information would typically be MW, MVAr, Amps, Power flow direction, TX Tap Settings and Reactive Power Compensation devices. If required, Horizon Power can provide a detailed list of all the required information that would be required of a System Operator.

All market *Participants* must be required to provide visibility and control points for the *ISO* and they must be required to maintain these to pre-defined standards.

Q36. Will a more formalised approach to managing outages (planned and unplanned) benefit electricity users on the NWIS?

Yes, a more formalised approach to managing planned and unplanned outages will benefit all *Participants* by ensuring the impact of certain outages minimises the duration and extra cost incurred by all network *Participants*. This can have an impact on the provision of *Ancillary Services* and *Economic Dispatch* on the NWIS.

This would typically apply to generation and transmission outages only, and any outages impacting the safe, secure and reliable operation of the NWIS.

The *ISO* should be well positioned to facilitate a collaborative approach to outage management between *Participants*.

Each participant should be required to submit a proposed maintenance schedule to the *ISO* that can be negotiated and agreed with the *ISO* to schedule planned maintenance outages in a manner that maximises the security of supply on the system.

Q37. Should an independent system operator for the NWIS have powers to manage and investigate system critical events similar to that of SWIS system management? What dispute resolution mechanism is preferred?

Yes, this would ensure that there is a transparent approach to managing the safe, secure and reliable operation of the NWIS and the benefits are shared by all *Participants*, especially if improvements are required to prevent system critical events.

Similar dispute resolution as per the *WEM* Section 2.18 – 2.20 could prove sufficient (Refer to Appendix B).

Disputes could be managed through a Board sub-committee, escalated to the Board and then onto the arbitrator established in legislation.

Q38. Is there a reason why a system of Economic Dispatch of generation and constrained network access should not be introduced to the NWIS?

As previously noted, *Economic Dispatch* requires each generator dispatched to get paid for output at an agreed rate by consumers. This requires:

- A mechanism to establish the cost of generation during a period of time;
- Agreement for generators to sell at that cost; and
- Agreement for buyers to buy at that cost.

Typically, the above is delivered through a wholesale market and / or bilateral contracts. The *Horizon Power ETAC* allows for increased liquidity in the bilateral contract market that has the potential to delay the need to introduce a wholesale market.

The customer driven *Economic Dispatch* resulting from the structure in the *Horizon Power ETAC* requires no active role from the *ISO* for dispatch in day to day operations. Each generator would dispatch to meet its own commercial load obligations. However, the *ISO* would be best placed to undertake the settlement of energy imbalances (actual dispatch versus commercial obligations in any trading interval) between the parties.

This construct allows generators to supply any loads they are commercially committed to do so. It avoids the *ISO* or *ISO+* being involved in the commercial arrangements to buy and sell power (Refer to Figure 3). In this way, these arrangements can support the participation of non-covered networks in the *ISO+* by not impeding the *Network Owner*'s ability to supply its own loads, with its own generators.

Constrained Access
If *Users* contract with the single *ISO+*, Horizon Power can see no reason that constrained access cannot be implemented from inception with limited additional complexity.

Q39. If introduced, should the independent system operator include oversight of longer term planning and forecasting requirements that inform development of the NWIS?

Yes, under Horizon Power's *Pilbara Net* proposal, the *ISO+* would perform the long term planning function and establish a prospectus of opportunities for third party investors in network assets. The return for investment would be based on payments from the *ISO+* to *Network Owner*s / investors. The quantum of these payments could be established through a competitive process in response to the prospectus.

The planning process must be completed to establish the most efficient solution to meeting load growth requirements, without adversely impacting the service level received by all *Users*.

Q40. Are there additional functions to be included in the independent system operator role and when?

Yes, Horizon Power is of the position that the *ISO+* should fulfil the following functions / roles detailed in Figure 6.

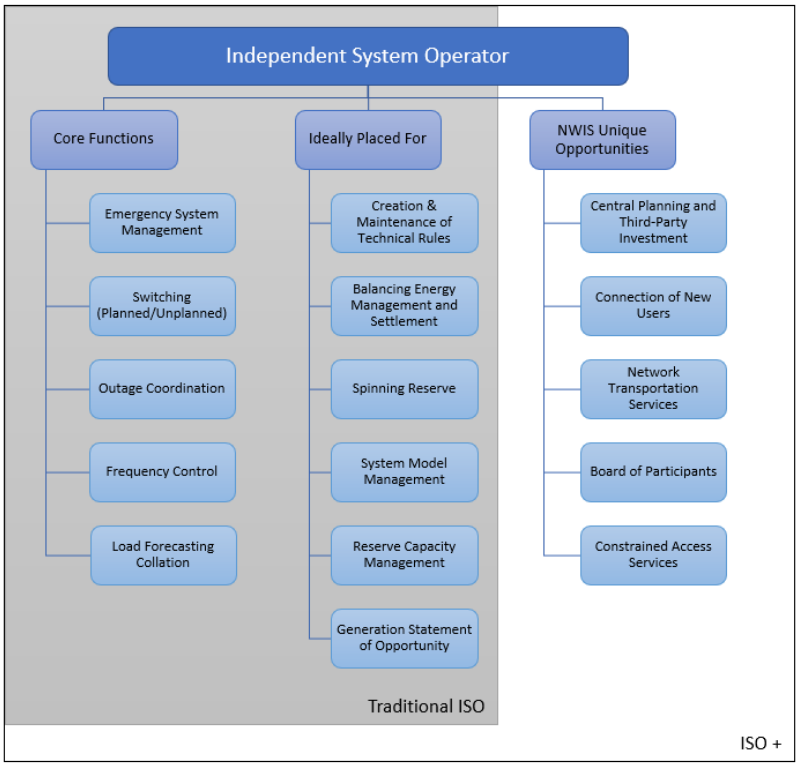

Figure 6: Functions of the proposed *ISO*

Q41. What are the potential costs of introducing an independent system operator?

These costs would include:

- Cost of establishing regulation;
- Cost of a small management team;
- Costs of providing day to day system operation functions – likely on an outsourced basis (this may remove existing duplication and result in a net cost reduction);
- Costs of engineering and planning services (this may remove existing duplication and result in a net cost reduction);
- Legal costs of negotiating contracts (Depending on the number of contracts and the level of customisation expected in each contract);
- Costs of consultancy for periodic review and consultancy arrangements; and
- Costs of establishing and maintaining energy settlement software and interfaces with metering data.

These ongoing costs should be funded by *Participants* through payments under the commercial arrangements detailed in Figure 3 in Section 3.5.

4.8 Guiding principles for a regulatory framework

Q42. Are the guiding principles listed above for the design of a regulatory framework in the NWIS complete? Should additional guiding principles be considered?

Horizon Power agrees with guiding principles noting:

1. The development of the regulatory regime should explore which key terms of access are best determined in advance of negotiations (through the approval of an Access Arrangement) and which are best left open to negotiation; and

2. Retaining strategic level control over the level of service delivered by the NWIS may be critical for *Network Owner*s, and this should be considered when establishing the governance structures.

Appendix A. *Pilbara Net* Proposal

Many of the issues facing the NWIS can be resolved through the introduction of an independent network co-ordination group for the Pilbara ("*Pilbara Net*").

Instrumental to the *Pilbara Net*'s structure and governance is the role of the independent system operator, as shown below.

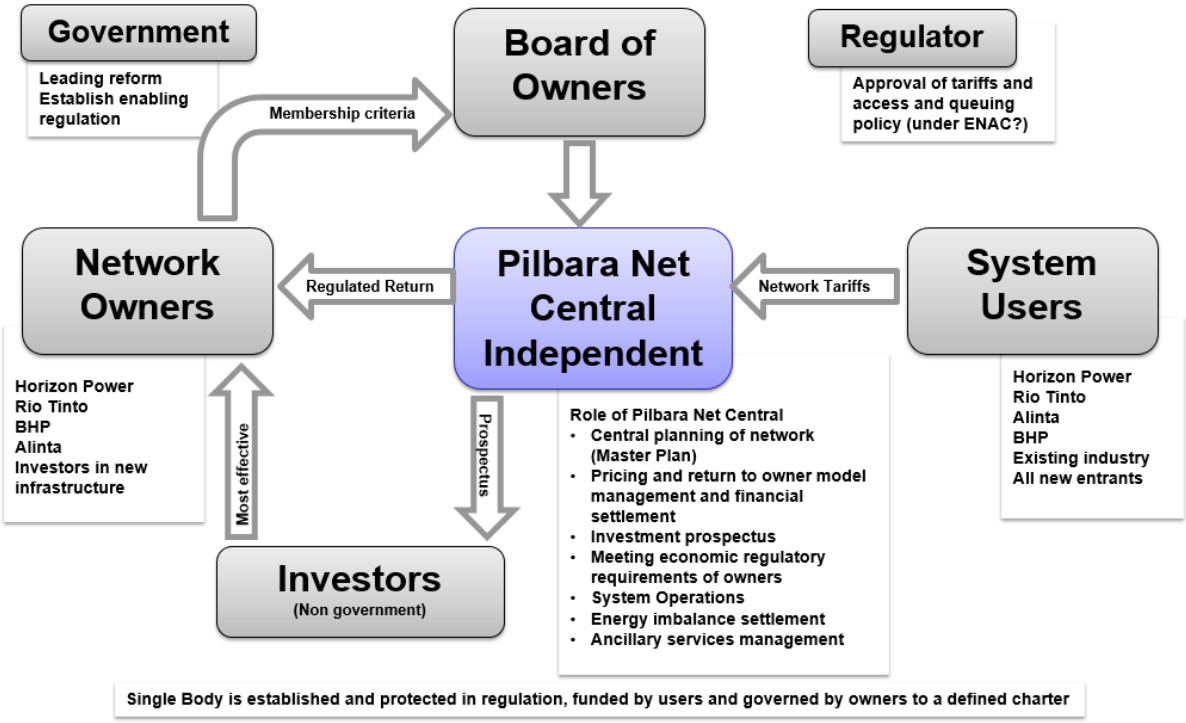

Figure 7: Proposed makeup, structure, and functions of *Pilbara Net*

Under the proposal, network *Users* would be charged tariffs for network services, and deliver regulated rates of returns to *Network Owner*s, thereby encouraging third party investment in network assets. To ensure separation of duties, the Economic Regulatory Authority (ERA) would determine the network tariff pricing. Consistent with current regulatory pricing models, as utilization of the network increases, network charges for individual customers would reduce. The *Pilbara Net* proposal would lower barriers to entry for small to medium sized resource developments by removing the requirement for investment in expensive standalone network and generation assets. This would then lead to the diversification of the business section in the Pilbara, which currently mostly consists of very large resource companies and small local businesses.

Pilbara Net would be governed by a Board comprising representatives from all the *Network Owner*s. The Government would set the regulatory framework for the operation of *Pilbara Net*. The regulatory framework would cover rights for the system operator, and obligations on network operators and *Users*, including for example, the obligation to comply with *Technical Rules*.

The *Pilbara Net*:

- Supports job creation and economic growth in the Pilbara without:
    - The need for material Government funding.
    - The sale of the *Horizon Power Network* assets in the Pilbara.
- Delivers cost-effective competition to all current and future *Users* in the Pilbara region.
- Allows *Network Owner*s to maintain control of their assets.
- Creates opportunity to improve Tariff Equalisation Contribution (TEC) returns.
- Resolves current problems in the NWIS, including lack of network open access, limited competition, and deficiencies in regulation.

A key feature of the *Pilbara Net* proposal is the establishment of a central body for the planning and operation of the electricity systems in the Pilbara that supports:

- Multiple *Users* of the electricity network with pricing and investment governed by regulation.
- Multiple *Users* of generation assets with pricing and development driven by competition.
- Multiple owners of network assets, with the ability for non-government investment in regulated assets.

Horizon Power supports the *Pilbara Net* solution, because it will have the option to:

- Efficiently compete for additional large customers who will make full, effective use of long-term generation contracts and thereby increase revenue.
- Reduce generation costs through formalising *Spinning Reserve* and installed reserve sharing.

Both of the above points provide opportunities to increase profit and reduce TEC.

Appendix B. *WEM* Dispute Management

The following section has been extracted from the *Wholesale Electricity Market Rules* (31 May 2017):

2.18. Disputes

2.18.1. The dispute process set out in clauses 2.18, 2.19 and 2.20 applies to any dispute concerning:

(a) the application or interpretation of these Market Rules;

(b) the failure of Rule Participants to reach agreement on a matter where these Market Rules require agreement or require the Rule Participants to negotiate in good faith with a view to reaching agreement;

(c) payment of moneys under, or the performance of any obligation under, these Market Rules,

but does not apply to:

(d) any matter that is identified as a Reviewable Decision or is subject to Procedural Review; or

(e) a matter that arises under a contract between Rule Participants, unlessAEMO is a party to the contract and the contract provides that the dispute process applies.

2.18.2. For the purposes of these Market Rules, the "Dispute Participants" are the Rule Participants raising the dispute, AEMO and all Rule Participants named in a Notice of Dispute or joined to the dispute in accordance with clause 2.19.5.

2.18.3. At any time during the course of resolving a dispute a Dispute Participant may refer a question of law to a court of competent jurisdiction.

2.18.4. Dispute Participants must not agree to actions to be taken in resolution of a dispute that are inconsistent with the Market Rules.

2.19. First Stage Dispute Resolution

2.19.1. Where a Rule Participant wishes to raise a dispute with another Rule Participant concerning a matter to which this dispute process applies, it may issue a Notice of Dispute to each other Rule Participant that is a party to the dispute within 12 months of the matter giving rise to the dispute.

2.19.2. The Rule Participant raising the dispute may name any Rule Participant in a Notice of Dispute that the Rule Participant raising the dispute considers may be affected by the dispute or resolution of the dispute.

2.19.3. The Notice of Dispute must be in writing and must contain:

(a) the date on which the Notice of Dispute was issued;

(b) the identity of the Rule Participant issuing the Notice of Dispute;

(c) the identities of the other Rule Participants party to the dispute;

(d) the details of the dispute, including a description of the disputed actions, and the time and date when the disputed actions occurred; and

(e) the contact person for the Rule Participant issuing the dispute, and their mailing address.

2.19.4. A Rule Participant receiving a Notice of Dispute under clause 2.19.1 must supply a confirmation of the receipt of the Notice of Dispute within two Business Days of receipt of the Notice of Dispute, including details of a contact person and their mailing address.

2.19.5. Where AEMO receives a Notice of Dispute and it considers that a Rule Participant not named in the Notice of Dispute may be affected by the dispute or resolution of the dispute, it may, within 10 Business Days of receiving the Notice of Dispute, join the Rule Participant to the dispute by notifying the Rule Participant of the dispute and providing a copy of the Notice of Dispute.

2.19.6. The Chief Executive Officers, or their designated representatives with authority to resolve the dispute, from all Dispute Participants must make reasonable endeavours to meet on one or more occasions, and to attempt in good faith and using their best endeavours at all times to resolve the dispute.

2.19.7. A dispute must be escalated to the second stage dispute resolution process in clause 2.20 if the Dispute Participants have not resolved the dispute (as evidenced by the terms of the settlement being reduced to writing and signed by each Chief Executive Officer) within:

(a) a time period agreed by all Dispute Participants; or

(b) if no time period is agreed by all Dispute Participants, within 60 days of the date on which the Notice of Dispute was issued.

2.20. Second Stage Dispute Resolution

2.20.1. Where any Dispute is not resolved as provided for in clause 2.19 then the Dispute Participants must give consideration to resolving the dispute through mediation, conciliation, arbitration or alternative dispute resolution methods, using an independent body agreed between the Dispute Participants.

2.20.2. If any Dispute is not resolved as provided for in clause 2.19 and a Dispute Participant has given consideration to resolving the dispute in accordance with clause 2.20.1, then that Dispute Participant may commence proceedings before a court of competent jurisdiction in relation to the dispute.

Appendix C. Light-Handed Regulation Discussion

Horizon Power's experience suggests that the content detailed in Chapter 5 of the Electricity Networks Access *Code* 2004 (*ENAC*) is required to offer network access services. This content is required to manage risks inherent in providing network services to multiple competing parties in the context of the revised Australian Competition Law. Through its negotiation with Alinta, Horizon Power has established each of the required items below. The nature of the content for each is provided as a guide for what Horizon Power understands as the minimum documentation requirements of providing open access through negotiation.

Horizon Power suggests that it would be beneficial for the PUO to consider whether the minimal base content below would meet the Economic Regulation Authority's interpretation of the requirements of the *ENAC* as this may inform the need to introduce entirely new legislation for the economic regulation of network services. It may be possible to simply derogate some of the requirements of the Access Arrangement under the *ENAC* 2004 for *Covered* networks in the Pilbara.

Requirement	Nature of Content
Specification of the reference services.	Horizon Power has defined exit and entry services at each of its voltage levels
An access contract for each reference service.	Horizon Power has a standard *ETAC* that can be provided on request.
Service standard benchmarks for each reference service.	Horizon Power refers to the Electricity (Supply Standards and System Safety) Regulations 2001 and other Licence obligations to define service standard benchmarks
Price control.	Horizon Power has established a revenue cap largely consistent the requirements of the *ENAC* 2004
Pricing methods.	Horizon Power has a Microsoft Excel model that implement its pricing model that has been reviewed by multiple skilled independent consultants
Current price list and pricing years.	Produced by Horizon Power's Microsoft Excel model
Applications and queuing policy.	draft documents that largely implements a "first come first served approach"
Capital contributions policy.	The draft documents largely implements the requirements of the *ENAC* 2004
Transfer and relocation policy.	Horizon Power has not developed this.
Efficiency and innovation benchmarks.	Not required and do not developed
Provision for dealing with supplementary matters (i.e. balancing, *Ancillary Services*, metering, etc.).	Horizon Power have attempted to address these in its standard *ETAC*. Experience suggests that these are best managed the *ISO+*.
Provisions for dealing with any proposed future revisions to the agreement.	These are included in terms in the standard *ETAC*.
Provisions for dealing with any proposed trigger events.	These are included in terms in the standard *ETAC*.

Appendix D. Identification of Mining Projects within the NWIS

Identification of Mining Projects within the North West Interconnected System (NWIS)

(Pilbara Western Australia)

Report
Rev1
28 February 2014

Table of Contents

1.0 Executive Summary

1.1 Current Practice

Horizon Power (HP) currently provides power through its existing infrastructure in the Pilbara region servicing various town sites, and mining operations between Port Hedland, Karratha, Pannawonica, Tom Price, Paraburdoo, and Newman. The existing network was built over time on an "as required" basis, with the final product an "ad hoc" infrastructure unit, having the potential to further expand and improve efficiencies in the Pilbara region.

HP in addition to township power generation currently uses the existing infrastructure to supply BHP and FMG through the Port Hedland network. Since 2011, the large mining houses, with long term iron ore projects have built their own power stations in the Pilbara to support their operations and future expansion strategies. Each major mine operator (RIO, BHP, Atlas and FMG) have built their own power stations for various reasons including;

- In house control and reliability
- Limiting competition by other iron ore miners
- Avoiding government red tape and timing
- Quick and efficient maintenance on infrastructure assets

These privately supplied power stations meet the immediate need of the mining houses; however these are far less efficient and require a large capital prior to startup. Furthermore, these capital projects are a distraction to the core business of the mining houses, and only target one specific mining project at a time rather than a holistic approach for the region.

1.2 3rd party Supply Opportunity

The power supply model utilized by the major mining houses to supply their own power provides an opportunity for HP to provide power for upcoming juniors who will be unable to build their own power stations and or access the power stations constructed by the majors.

Even though the junior iron ore miners have various other obstacles such as (1) access to cash (2) access to water and (3) access to rail, there are other commodity focused companies which are not dependent on the requirements of heavy infrastructure but will require power supply to commercialize their operation.

The study carried out by Pantheon Mining consisted of **Stage 1** and **Stage 2**; with **Stage 1** targeting the tenement holders within a 50Km radius of the HP infrastructure and closely analyzing the power requirements of the projects being developed. The commodity spectrum identified includes, gold, PGM's, hematite, magnetite, base metals, magnesium and potash.

The **Stage 2** of the study targeted a corridor between Port Hedland and Newman, currently absent of any HP infrastructure but is heavily exposed to future commercial operations. This provides an opportunity which can generate significant revenue to HP by building an efficient power distribution network and expand its presence within the wider Pilbara region.

1.3 Stage 1 Findings and conclusion

Stage 1 of the study identified a total of seventeen (17) projects requiring power prior to commercial production. Out of the 17 projects, eight (8) projects have been identified as "Horizon power Primary Targets". Table 1 shows the respective projects and the possible time frames associated with each project.

It can be concluded that the 8 Primary targets recommended as part of the Stage 1 scope could require approximately 80 Megawatts of power per annum with an average life span of 10 years. Three (3) of these projects are in very close proximity to the existing HP infrastructure, namely [redacted] These 3 projects have a 40 Megawatts consumption profile per annum with a 15 year average mine life.

It is recommended that HP [redacted]

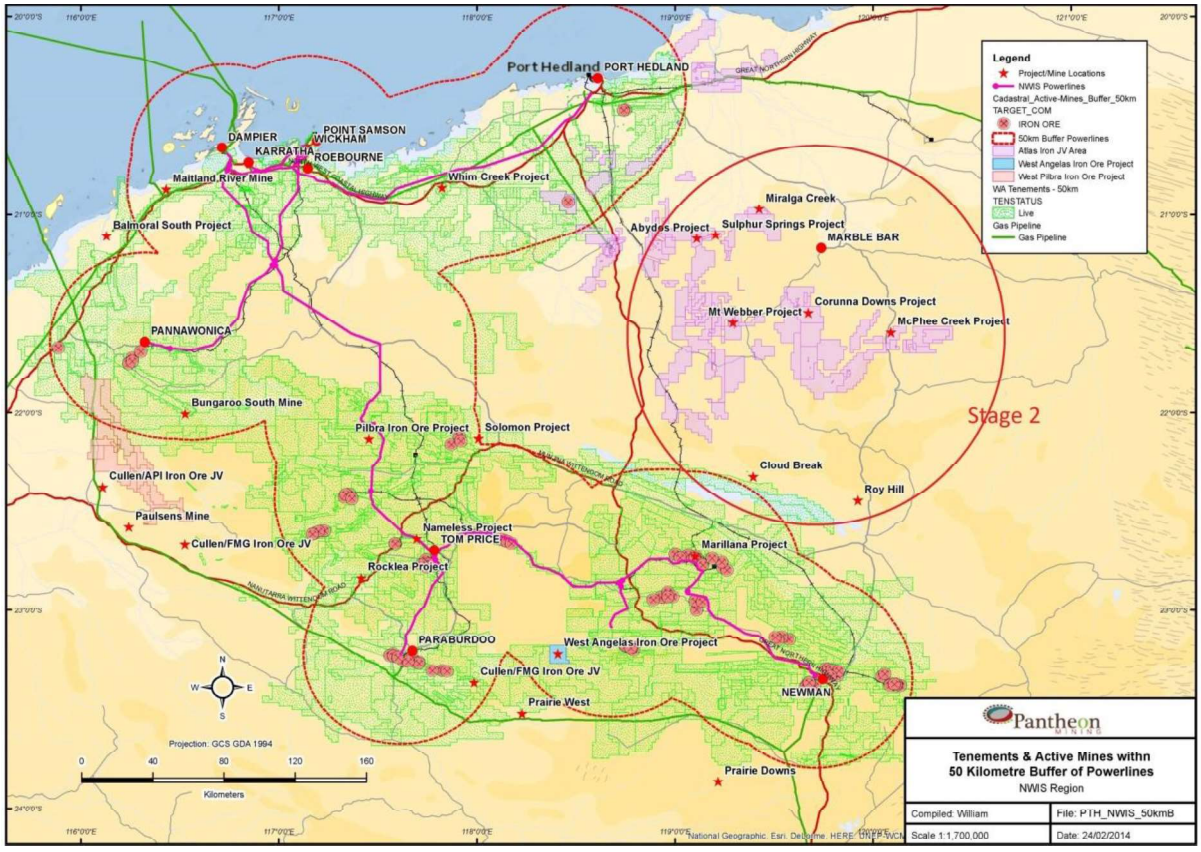

Figure 1, shows the area of tenements scrutinized for Stage 1 and 2 of this study.

1.4 Stage 2 Findings and conclusion

A total of ten (10) projects have been identified requiring power prior to commercial production. Out of the 10 projects, six (6) projects have been identified as "Horizon power Primary Target". Table 1, shows the respective projects and the possible time frames associated with each project.

It is recommended that HP initiate discussions with [redacted]

[redacted]

The 6 Primary targets recommended in Stage 2 of this study require approximately 87 Megawatts of power per annum with an average life span of 13 years. Once such a network is built, it is extremely likely that further opportunities will become available as the majority of the ground in the region consists of hematite and magnetite, which require large amounts of power for the beneficiation process of the mined mineral.

[redacted]

Stage 1

Project Name	Company	Commodity	Production Start	production (Mtpa)	Mine Life (yrs)	Power requirement (Megs)	Comments
[redacted]	[redacted]	Gold	in Production	0.5	<5	3	[redacted]
		DSO	2014 (15)	6	8	6	
		DSO	2014 (delayed)	30	20	10	
		Magnetite	2017	12	20	20	
		Hematite	2017	18.5	25	18	
		Hematite	2020+	8	15	12	
		Lead and Zinc	2020+	1	5	2	
		Lead and Zinc	2020+	1	10	3	
		DSO	2020+	15	5	10	
		DSO	2025+	15	10	10	
		Hematite	2025+	10	10	10	
		Hematite	2025+	10	15	10	
		Magnetite	2025+	10	10	15	
		DSO	2025+	15	20	10	
		DSO	2025+	15	20	10	
		DSO	2025+	15	20	10	
		Hematite	2030+	10	10	10	

Stage 2

Project Name	Company	Commodity	Production Start	production (Mtpa)	Mine Life (yrs)	Power requirement (Megs)	Comments
[redacted]	[redacted]	DSO	2014	3	5	2	[redacted]
		DSO	2013	10	20	8	
		DSO	2014	20	20	15	
		DSO	2014 (15)	6	8	6	
		Magnetite	2017	10	9	20	
		Magnetite	2025	12	20	25	
		Hematite	2025+	10	15	12	
		Magnetite	2030+	12	20	25	
		Lead and Zinc	2020+	1	5	2	
		Lead and Zinc	2020+	1	10	3	

Table 1: Stage 1 and 2 Identified Projects and Power requirements

2.0 Introduction

Pantheon Mining has been engaged by Horizon Power to identify future mining projects within close proximity to existing HP infrastructure, identify project life, and the estimated power required to commence production (stage 1).

The study targeted an initial 25km radius from the existing HP infrastructure, but was expanded to a 50km radius due to the majority of the land being locked in by the mining majors who have a systematic time line in bringing their projects on line, and have their own power plan to meet their production needs.

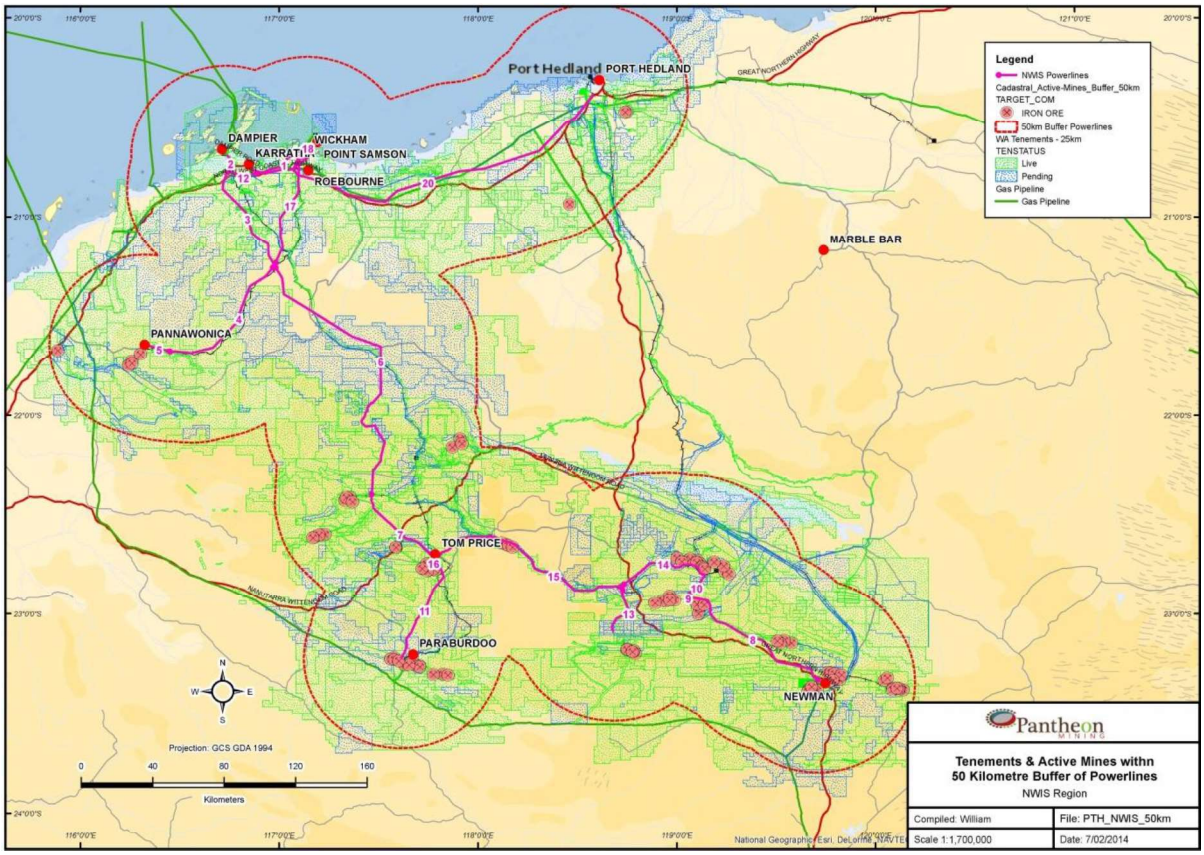

Figure 2, shows the area of tenements scrutinized around the existing HP infrastructure.

The commodity spectrum identified includes, gold, PGM's, hematite, magnetite, base metals, magnesium and potash.

The study also targeted a corridor between Port Hedland and Newman (stage 2), which does not contain any HP infrastructure but is heavily exposed to future commercial operations. This provides an opportunity which can generate significant revenue to HP and provide an operational foothold in the Pilbara.

3.0 Background

The Pilbara area of Western Australia is well known for its iron ore production servicing the ever growing Chinese, Indian and South American steel mills. Since the 1980's the iron ore price has risen from $10/t to the current price of $135/t. The escalation in price has seen BHP and RIO, being joined by the new age miners such as FMG, Atlas, and more recently Citic Pacific and Hancock prospecting.

Historically the tenement were targeted for direct shipped ore (DSO), but with an influx of exploration over the past 30 years has led to other commercial opportunities such as gold, base metals, natural gas, potash and complex iron ore products such as hematite and magnetite which require large amounts of power than the commonly mined DSO.

The remote location of the Pilbara creates a suite of complex infrastructure bottlenecks which provides a monopoly for existing majors already operating in the area and creates additional hurdles for up and coming junior mining companies with attractive mining projects. The complexity faced by upcoming projects can be segregated into:

- Water supply
- Rail access (logistics)
- Native title / Pastoral claims
- Power requirements

Whilst focusing primarily on just the power requirements of various projects, it is quite evident that the power infrastructure has been built on an "as required" basis with a visible disconnect between the government agency supplying the power and the private enterprise which requires the power. This has led to many large power stations being built in the Pilbara by private mining houses to supply their own power and commercialize their respective mining operations.

This practice of a "silo power supply" is not an efficient mechanism to supply and manage power within the Pilbara and this study is aimed at identifying future projects which can benefit from (1) the existing HP infrastructure and (2) if any new infrastructure is required in the Pilbara to prevent the past practice to continue into the future.

4.0 Stage 1

4.1 Tenement Analysis

The study targeted an initial 25km radius from the existing HP infrastructure, but was expanded to a 50Km radius due to the majority of the land being locked in by the majors who have a systematic time line in bringing their projects to a production ready status.

A total of 2,834 tenements were identified within the 50km radius of the existing infrastructure, consisting of miscellaneous licenses, exploration licenses, mining licenses, prospecting licenses and general purpose licenses.

For the purpose of this study, the 2,834 tenements were reduced to "Useful Licenses" consisting of exploration and mining licenses, reducing the number of tenements to 1,540. Both categories of tenements "live" and "pending" were also included in the study. The next step was to identify the holders / owners of these tenements, with 200 registered owners identified.

On further review the tenement holders / owners were separated into "Listed" and "Private", where "listed" holders were ASX listed with project information readily available. "Private" consisted of either individual holders or a sub entity of an ASX listed company. In total, 60 companies were identified as having projects within the 50km radius of the HP infrastructure as shown below.

HOLDER / OWNER	INFORMATION LINK	PROJECT DESCRIPTION
LEGEND MINING LTD	http://legendmining.com.au	Early stage exploration and priority is Cameron
NORTH WEST QUARRIES PTY LTD	http://northwestquarries.com.au	Mainly for small quarries to service existing contracts
ONEMET MINERALS LTD	http://onemetminerals.com.au	Early stage project, potash and magnetite
POLARIS METALS PTY LTD	http://polarismetals.com.au	Early stage exploration
ALDERSHOT RESOURCES LTD	http://www.aldershotresources.com	Early Stage - No data on Australian projects
ALLIANCE CONTRACTING PTY LTD	http://www.alliancecontracting.com.au	Early Stage - No data
AMEX RESOURCES LTD	http://www.amex.net.au	Early Stage - Priority is Fiji
ANGLO AMERICAN EXPLORATION (AUSTRALIA) PTY LTD	http://www.angloamerican.com.au	Early Stage - No data, priority is Queensland
APOLLO IRON ORE NO 1 PTY LTD	http://www.apollominerals.com.au	Early Stage - No data, priority is Africa
AMCI (IO) PTY LTD	http://www.aquilaresources.com.au	DFS - 30 Mtpa, 15 year mine life,
ARADON PTY LTD	http://www.aradon.com.au	Early Stage - No data, priority is gemstones
ATLAS IRON LIMITED	http://www.atlasiron.com.au	FS - Mt.Webber, 3 to 6 Mtpa, 15 years FS- Balmoral South project, 12MTpa Magnetite, 20+ years
AUSTRALASIAN RESOURCES LIMITED	http://www.austresources.com.au	
BGC CONTRACTING PTY LTD	http://www.bgc.cc	Mainly for small quarries to service existing contracts
BHP BILLITON MINERALS PTY LTD	http://www.bhpbilliton.com	Various projects and Horizon is a provider of power
NGARLIYARNDU BINDIRRI ABORIGINAL CORPORATION	http://www.bindirri.com	Very Early stage
BOADICEA RESOURCES LTD	http://www.boadicearesources.com.au	Early Stage - No data, priority is Fraser Range (nickel)
BORAL CONTRACTING PTY LTD	http://www.boral.com.au	Mainly for small quarries to service existing contracts
BROCKMAN IRON PTY LTD	http://www.brockmanmining.com	FS - Marillana project, 18.5 Mtpa, 25 years hematite
CAPE LAMBERT IRON ASSOCIATES	http://www.capelam.com.au	Early Stage - No data, priority is Africa
CHRYSALIS RESOURCES LIMITED	http://www.chrysalisresources.com.au	Early stage - exploration play
CSR LTD	http://www.csr.com.au	Mainly for small quarries to service existing contracts
CULLEN EXPLORATION PTY LIMITED	http://www.cullenresources.com.au	3 x early stage projects, PFS but have a reserve
DE BEERS AUSTRALIA EXPLORATION LTD	http://www.debeersgroup.com	Early Stage - No data, priority is diamonds
DE GREY MINING LTD	http://www.degreymining.com.au	Early Stage - secondary priority and scoping stage
DIGIROCK PTY LTD	http://www.digirock.com.au	Early Stage - scoping level
DRAGON ENERGY LTD	http://www.dragonenergyltd.com	FS- underway,182 Mt, 20 yr possible life
DYNASTY RESOURCES LIMITED	http://www.dynastyresources.com.au	PFS completed progressing to FS
FARNO-MCMAHON PTY LTD	http://www.farno-mcmahon.com.au	Early Stage exploration
FLINDERS MINES LIMITED	http://www.flindersmines.com/	PFS completed progressing to FS. 15MTPa
FMG PILBARA PTY LTD	http://www.fmgl.com.au	Construction in progress, not sure who supplies power
FOX RESOURCES LIMITED	http://www.foxresources.com.au	Care and maintenance project and early stage exploration
GASCOYNE RESOURCES (WA) PTY LTD	http://www.gascoyneresources.com.au	Early stage exploration
GLOBAL ADVANCED METALS WODGINA PTY LTD	http://www.globaladvancedmetals.com	Early stage exploration, targeting tantalum
HANCOCK PROSPECTING PTY LTD	http://www.hancockprospecting.com.au	Roy hill priority (outside scope), rest are exploration targets
HANSON CONSTRUCTION MATERIALS PTY LTD	http://www.hanson.com.au	Mainly for small quarries to service existing contracts
HELIX RESOURCES LTD	http://www.helix.net.au	Early stage exploration
HOLCIM (AUSTRALIA) PTY LTD	http://www.holcim.com.au	Mainly for small quarries to service existing contracts
IRON ORE HOLDINGS LTD	http://www.ironoreholdings.com	DFS, 2 x project, one requires power
LEGACY IRON ORE LTD	http://www.legacyiron.com.au	Early stage exploration
MINERALOGY PTY LTD	http://www.mineralogy.com.au	Balmoral project (mentioned above)
MINPROVISE PTY LTD	http://www.minprovise.com.au/	Mainly for small quarries to service existing contracts
MOBILE CONCRETING SOLUTIONS PTY LTD	http://www.mobileconcrete.com.au/	Mainly for small quarries to service existing contracts

HOLDER / OWNER	INFORMATION LINK	PROJECT DESCRIPTION
MODUN RESOURCES LTD	http://www.modunresources.com	Early Stage - focus is Mongolia
NORTHERN STAR RESOURCES LTD	http://www.nsrltd.com	existing mine, 2 year rolling mine life (max 5 years)
OROYA MINING LIMITED	http://www.oroya.com.au	Early stage, focus is Victoria
PRAIRIE DOWNS METALS LTD	http://www.pdz.com.au	Early stage exploration
PLATINA RESOURCES LTD	http://www.platinaresources.com.au	JORC resource and targeting PGM
PROCESS MINERALS INTERNATIONAL PTY LTD	http://www.processminerals.com.au	existing mine - Woodie Woodie fines operation, Private, gas powered
QUARRYTECH CONSULTING PTY LTD	http://www.quarrytech.com.au/	Mainly for small quarries to service existing contracts
RED HILL IRON LIMITED	http://www.redhilliron.com.au	West Pilbara Iron ore JV (previously covered)
RED RIVER RESOURCES LIMITED	http://www.redriverresources.com.au	Early stage Exploration
RIO TINTO EXPLORATION PTY LIMITED	http://www.riotinto.com.au	Various projects and Horizon is a provider of power
SHAW RIVER MANGANESE LIMITED	http://www.shawriver.com.au	Early stage exploration, focus is Namibia
SHEFFIELD RESOURCES LIMITED	http://www.sheffieldresources.com.au	Early stage exploration, close proximity to Atlas projects
SJ CRUSHING PTY LTD	http://www.sjcrushing.com.au	Mainly for small quarries to service existing contracts
TALISMAN MINING LTD	http://www.talismanmining.com.au	Early stage exploration
VENTNOR PILBARA PTY LTD	http://www.ventnorresources.com.au	Early stage exploration
VENTUREX PILBARA PTY LTD	http://www.venturexresources.com	FS - completed, will require power
VENUS METALS CORPORATION LIMITED	http://www.venusmetals.com.au	Early stage exploration

The 60 companies were then analyzed to identify projects which had an exploitable mining inventory, a project study underway or completed, followed by the power requirements in the future. BHP and RIO were completely ignored from the list due to their capability to meet their own power requirements and their power stations already in operation.

The final list of companies with promising projects consisted of 17 companies, targeting hematite, magnetite, gold, lead, zinc, nickel, PGM's and magnesium.

Once these companies and their projects were embedded on the map, it was evident that some of the projects fell outside the 50km radius this study was targeting as can be seen in Figure 3 below. This was primarily due to some of the projects being developed by a listed ASX companies not necessarily falling into the initial 50km radius targeted by Stage 1 of the project. Coincidently some of the projects fell into Stage 2 of the projected area.

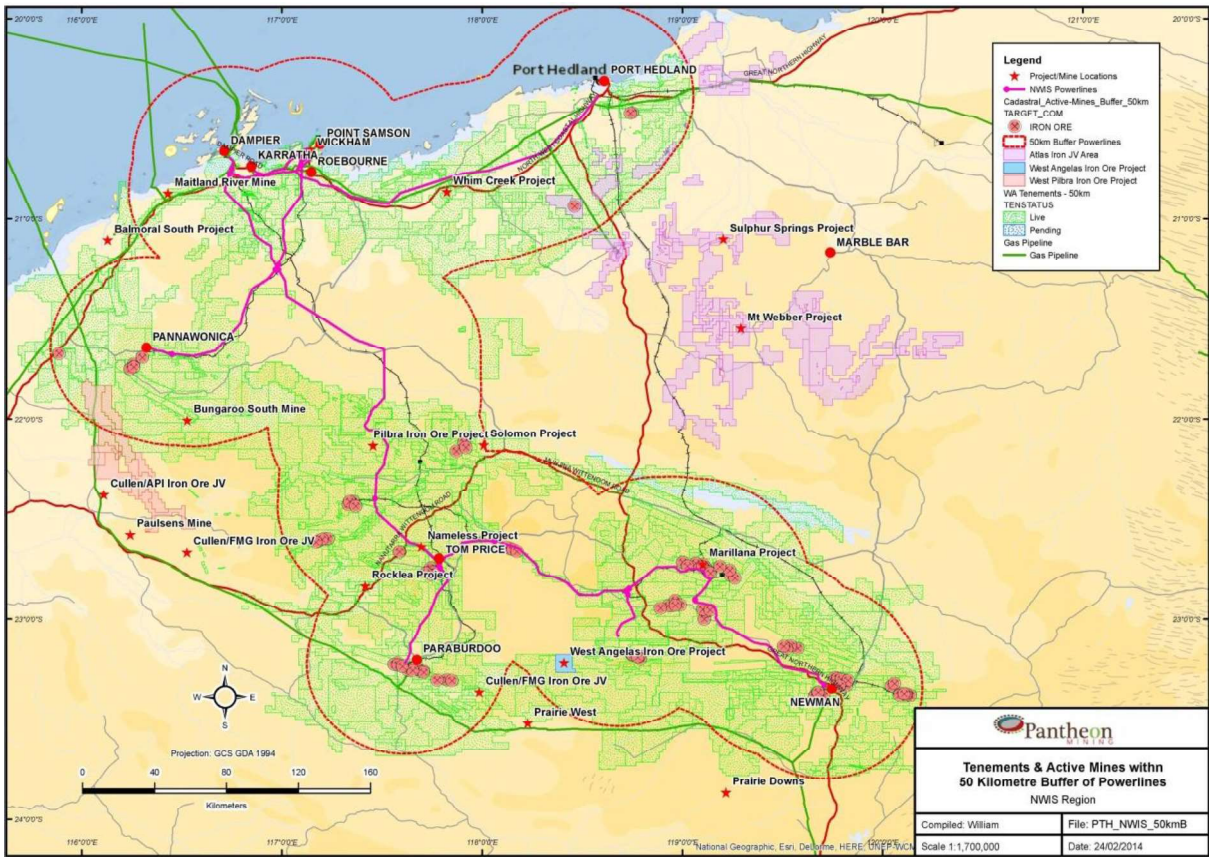

Figure 3, shows the area of tenements scrutinized around the existing HP infrastructure.

Even though some of the projects fell outside the 50km radius of existing infrastructure, these projects still require power to be commercially productive and hence the projects were further analyzed to give HP a better understanding of the power requirements in the region.

It was also evident from Figure 3 (above) the presence of the gas infrastructure closer to certain projects could make it commercially viable for a junior to construct their own power plants and continue the precedence of constructing “ad hoc” private power plants in the Pilbara. However it also provides an opportunity for HP to provide cheaper and cleaner power to these projects if deemed commercially viable.

4.2 Identified Projects and Information

A total of seventeen (17) projects have been identified requiring power prior to commercial production. Out of the 17 projects, eight (8) projects have been identified as “Horizon power Primary Target”. Table 2, shows the respective projects and the possible time frame associated to the respective projects.

Project Name	Company	Commodity	Production Start	production (Mtpa)	Mine Life (yrs)	Power requirement (Megs)	Comments
[redacted]	[redacted]	Gold	in Production	0.5	<5	3	[redacted]
		DSO	2014 (15)	6	8	6	
		DSO	2014 (delayed)	30	20	10	
		Magnetite	2017	12	20	20	
		Hematite	2017	18.5	25	18	
		Hematite	2020+	8	15	12	
		Lead and Zinc	2020+	1	5	2	
		Lead and Zinc	2020+	1	10	3	
		DSO	2020+	15	5	10	
		DSO	2025+	15	10	10	
		Hematite	2025+	10	10	10	
		Hematite	2025+	10	15	10	
		Magnetite	2025+	10	10	15	
		DSO	2025+	15	20	10	
		DSO	2025+	15	20	10	
		DSO	2025+	15	20	10	
		Hematite	2030+	10	10	10	

Table 2: Stage 1 Identified Projects and Power requirements

5.0 Stage 2

5.1 Tenement Analysis

Tenement analysis for Stage 2 of the study was identical to the process of Stage 1. Given that no HP infrastructure currently exists, an imaginary power corridor was drawn between Port Hedland and Newman to map out any commercially viable projects in the region.

With 2 of the projects from Stage 1 having fallen within the Stage 2 corridor, this was deemed to be a reasonable step in identifying potential projects between Port Hedland and Newman. In total, 10 projects are located in the corridor between Port Hedland and Newman. These projects are longer term projects and heavily dependent on power due to the nature of the commodity (magnetite and hematite).

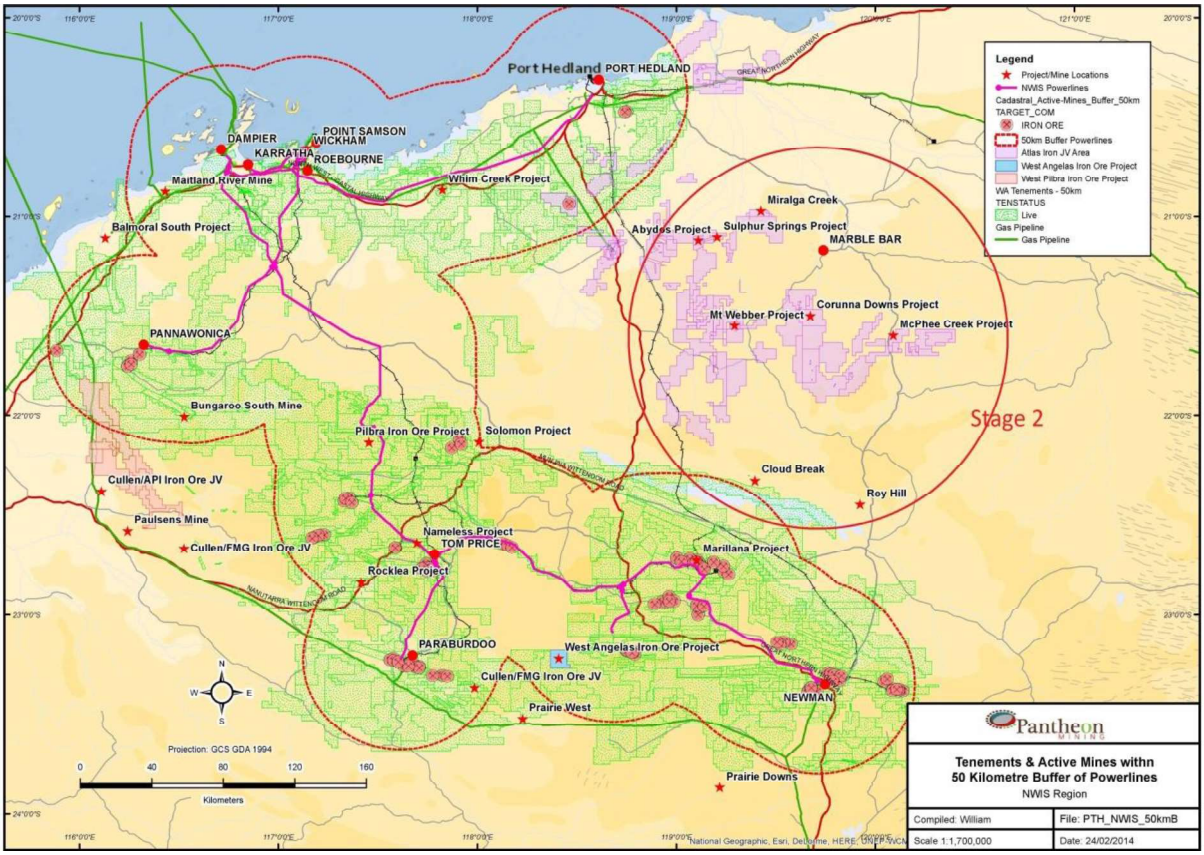

Figure 4, shows the area of tenements scrutinized around the future HP infrastructure.

5.2 Identified Projects and Information

A total of ten (10) projects have been identified requiring power prior to commercial production. Out of the 10 projects, six (6) projects have been identified as “Horizon power Primary Target”. Table 3, shows the respective projects and the possible time frames associated to the respective projects.

[redacted]

Project Name	Company	Commodity	Production Start	production (Mtpa)	Mine Life (yrs)	Power requirement (Megs)	Comments
[redacted]	[redacted]	DSO	2014	3	5	2	[redacted]
		DSO	2013	10	20	8	
		DSO	2014	20	20	15	
		DSO	2014 (15)	6	8	6	
		Magnetite	2017	10	9	20	
		Magnetite	2025	12	20	25	
		Hematite	2025+	10	15	12	
		Magnetite	2030+	12	20	25	
		Lead and Zinc	2020+	1	5	2	
		Lead and Zinc	2020+	1	10	3	

Table 3: Stage 2 Identified Projects and Power requirements

6.0 Appendix 1 (Company / Project information)

7.0 Appendix 2 (Digital dataset of tenements)

7.0 Appendix 3 (Various Maps Stage 1 and 2)