PAST CAPITAL EXPENDITURE SUMMARY – SMALL PROJECTS[1]

NETWORK PROJECTS

Easement Projects (including Substation Site Acquisitions)

Throughout the current regulatory period Powerlink expects to undertake approximately 40 easement/substation site acquisition projects at a total estimated cost of $67.49 million. About half of these easements were acquired for between $1 million to $10 million, and half for less than $1 million.

Powerlink must secure transmission line easements and substation sites to allow network additions to be completed in time to meet forecast demands on the grid. In some areas, such as the growth areas in South East Queensland, rapid urban development and official government infrastructure plans mean that Powerlink must strategically acquire easements and sites well in advance of system needs. Nine strategic easement acquisitions were made during this regulatory period. For example, the easements acquired for high capacity 500kV lines between Springdale and Tarong. This project was current at the time of, and included in, Powerlink's 2001 revenue determination.

Easement projects are determined after planning investigations and consultation with stakeholders, including a cost-effectiveness analysis of options for the safe, reliable and secure operation of the transmission network in meeting customer demand. The vast majority of easement projects undertaken during this regulatory period emerged in response to the need to address emerging network limitations, requiring the construction of new transmission lines.

Some of the major easement acquisition projects were:

- Millmerran-Middle Ridge (CP.1034), required for reinforcement of the transmission network in the Darling Downs area which involved construction of a 330kV double circuit transmission line between Millmerran and Middle Ridge (CP.762);

- Blackwall-Greenbank (CP.863), required for reinforcement of 275kV supply to Belmont (CP.771);

- Middle Ridge-Greenbank (CP.1100) easement widening considered necessary in anticipation of reinforcement of the transmission network between south west and south east Queensland, originally expected to be needed by late 2008 (as a consequence of higher load growth, this line is now needed by late 2007); and

- Springdale-Halys (CP.704), acquired to preserve a high capacity corridor between Halys (originally Tarong) and south east Queensland.

[1] Note that all project and total costs included here are exclusive of FDC.

Augmentations

Approximately 70 augmentation projects are forecast to occur during this regulatory period at a capitalised cost of $656.25 million. In dollar terms, only 21% of these represent projects capitalised at less than $10 million.

Augmentation projects can be further disaggregated in terms of:

- lines projects (including associated sub works);
- substation projects (including transformers); and
- capacitor bank projects.

Lines Projects

Lines projects (including associated substation works and transformers where appropriate) were required to meet forecast loads on the transmission grid, whilst maintaining required quality and reliability of supply standards, or to satisfy specific requirements of a particular customer. The requirements for these projects were determined through a joint planning process with the customer(s) on the basis of cost-effectiveness analysis. Where relevant, projects were assessed in accordance with the Regulatory Test and included in Powerlink's Annual Planning Reports.

All but three of Powerlink's lines projects fall into the >$10 million category and were discussed in the project summary relating to large capital projects. The remaining projects (including the Queensland-NSW Interconnector, South Pine/Upper Kedron Reinforcement and Calvale/Tarong Reinforcement) incurred total capitalisations during this regulatory period of less than $3 million and represent the "final completion works" of projects commissioned prior to the start of this regulatory period.

Substation Projects (including transformers)

Substation projects are predominantly associated with delivering additional transformer capacity required to meet growing demand on the transmission network. Transformer capacity needs to be provided at all voltage levels. Where relevant, projects were included in Powerlink's Annual Planning Reports.

During this regulatory period, approximately 25 projects were undertaken which largely related to substation establishments and/or transformer reinforcements. A number of these are discussed in the past capital expenditure summary for large capital projects (>$10 million). Of the remaining projects, the following were completed at an outturn cost of between $5 million to $10 million:

Nebo 275kV Transformer Augmentation (CP.891)

Nebo is a major 275kV injection point supplying the regional 132kV network from two 275/132kV, 220 MVA transformers. Without corrective action, Powerlink considered that, by late 2004, plant thermal ratings would be exceeded in the event of a transformer outage at Nebo during peak demand. This project was commissioned in November 2005 at an outturn cost of $9.66 million.

Rocklea 275kV Transformer Augmentation (CP.567)

Consistent with joint planning studies, in 1999 the Powerlink Board approved the installation of a second transformer at Rocklea substation as part of a revised strategy to reinforce the 110kV transmission network supplying the greater Brisbane area. The project was commissioned in March 2002 at an outturn cost of $7.12 million. This project was a current project at the time of, and included in, Powerlink's 2001 revenue application.

Loganlea 2nd 275kV Transformer Stage 2 (CP.892)

Powerlink planning studies forecast that the Belmont transformers would overload in the summer of 2004/05 in the event of loss of the single 275/110kV Loganlea transformer. Installation of a second 275/110kV transformer at Loganlea was assessed as having satisfied the Regulatory Test. The project was commissioned in November 2002 at a cost of $6.74 million.

Strathmore 275kV Reinforcement (CP.382)

Powerlink considered that the capability of the Nebo-Ross 275kV link would be exceeded by summer 2001/02, taking into account forecast load growth, additional demand by the new zinc smelter in Townsville and reactive power demands at Ross. Establishment of the Strathmore 275kV switching station was the least cost option to reliably supply the growing load. The project was commissioned in November 2001 at an outturn cost of $5.15 million. This project was current at the time of, and included in, Powerlink's 2001 revenue determination.

Woolooga Transformer Reinforcement (CP.55) and Palmwoods Transformer Reinforcement (CP.615)

Planning studies identified that, by summer 2002/03, an outage of the Woolooga transformer would cause power flows in the DNSP's sub-transmission network and the load on the remaining Woolooga transformer to exceed their emergency ratings. In addition, by summer 2002/03, an outage of the Palmwoods 275/132kV transformer would cause power flows through the 132kV network to exceed the emergency of rating of some Ergon 132kV lines and load on the Woolooga transformers to exceed their emergency rating. Powerlink considered that the most appropriate development of supply to the Wide Bay Burnett area would be a new transformer at the Woolooga substation and a second 275/132kV transformer at Palmwoods. The Woolooga project was commissioned in June 2003 at an outturn cost of $6.51 million. This project replaced the Gin Gin transformer reinforcement project, included in Powerlink's 2001 revenue determination. The Palmwoods project, identified as a scenario project in Powerlink's previous revenue determination, was commissioned in July 2003 at an outturn cost of $6.35 million.

Edmonton 132kV Establishment (CP.525)

Based on load growth forecasts, Powerlink determined that by late 2004, without corrective action, the existing transmission (and distribution) system in the Edmonton area would be unable to maintain supply voltages to customers within statutory limits and plant thermal ratings would be exceeded. Joint planning investigations with Ergon Energy determined that the establishment of a 132/22kV substation at Edmonton in 2004 was the most cost effective solution to this issue. The project was commissioned

in January 2005 at an outturn cost of $9.68 million. Powerlink's 2001 revenue application identified the Edmonton 132/22kV Substation Establishment in the scenarios.

Strathmore 132kV Reinforcement (CP.868)

Subsequent to the approval of CP.382 (above), further investigations confirmed that additional benefits in terms of reduced transmission losses would accrue by extending the Strathmore switching station to include a 132kV bus, 275/132kV tie transformer and switching of a Collinsville-Clare 132kV circuit. Following appropriate consultation, this project was implemented at an outturn cost of $9.90 million. Project commissioning occurred in November 2002. Project CP.868 was identified as a current project in Powerlink's 2001 revenue application.

Swanbank Transformer Replacement (CP.821)

In 1999 the Board approved a revised strategy to reinforce the 110kV transmission network supplying part of the greater Brisbane area. Consistent with joint planning studies, this strategy included the replacement of an existing 275/110kV transformer and 110kV underground cables at Swanbank, largely to prevent exceedance of the bus-tie capacity at Swanbank. The project was commissioned in July 2002 at an outturn cost of $5.04 million.

Capacitor Banks

Powerlink has an ongoing programme of shunt capacitor bank installations to address the reactive losses in transmission lines and transformers, and to maintain satisfactory control of system voltages in order to maintain reliable supply to customers. Projects are determined from a cost-effectiveness analysis of the options to meet forecast customer demand with the required level of quality and reliability of supply. Where relevant, projects were included in Powerlink's Annual Planning Reports.

By regulatory period end, about 30 capacitor bank projects are expected to occur (mostly in southern Queensland) at a total cost of $42.46 million across the following regions:

- Northern Queensland – at Nebo, Townsville, Alligator Creek and Chalumbin;
- Central Queensland – at Lilyvale, Wurdong, Gladstone, Rockhampton and Blackwater; and
- Southern Queensland – in areas such as Blackwall, Belmont, Palmwoods, Loganlea and Molendinar.

Provision for capacitor banks were included in Powerlink's 2001 revenue determination in both the projects current at the time as well as in the scenarios.

Secondary Systems

Development of the primary transmission network must be accompanied by the installation and upgrade of secondary systems for the control, protection and monitoring of the power system. Secondary systems projects are determined from a cost-

effectiveness analysis of options to meet the need for the safe, reliable and secure operation of the transmission system.

Approximately 70 projects of a secondary systems nature will be undertaken over this regulatory period at a total capitalised cost of $77.44 million. With the exception of the SVC 132kV Secondary Systems Refurbishment project discussed in Powerlink's past capex summary for large projects, all projects were implemented at less than $5 million with close to 70% at less than $1 million. Some of the more significant secondary system projects undertaken include:

- northern Queensland – the North Queensland Communications Reinforcement and Moranbah-Collinsville Fibre Optic;
- central Queensland – the Rockhampton and Blackwater Secondary Systems Replacements and Calvale-Baralaba Fibre Optic;
- southern Queensland – Brisbane Area Fibre Optics; and
- system wide – the Network Switching Centre.

Provision for various communications, control, protection and energy management systems was included in Powerlink's 2001 determination.

Replacements (excluding secondary systems)

Powerlink is required under various legislation and legal instruments to make investments to ensure continuity of supply. These obligations include a program of capital expenditure to replace assets in order to maintain reliable electricity supply.

Over time, a number of Powerlink's assets are replaced due to end of life, obsolescence or safety requirements. This results in either new assets entering the asset base or an extension to the remaining life of existing assets. These projects are generally developed after condition assessment is undertaken and the appropriate course of action is determined following a risk and cost-effectiveness analysis of options.

Lines

A total of 8 lines replacement projects are to be undertaken during the current regulatory period at an estimated cost of $22.63 million. All but one of these projects came in at less than $5 million. The two largest line replacements have occurred in the Mackay/Proserpine/Pioneer Valley areas at a total capitalisation of $11.98 million. These lines are located in North Queensland and are subject to an aggressive tropical coastal environment. As a result, there has been significant deterioration in the galvanized steel structure components that make up most of the transmission line. These issues can be addressed by such methods as the replacement of tower members and bolts and repainting.

Substations

Powerlink plans to undertake fewer than 20 substation replacement projects by the end of 2006/07 at an estimated cost of $108.36 million. In terms of dollars, about 70% of these replacements were implemented at more than $10 million and are discussed in Powerlink's past capex summary for large projects. Of the remaining projects, the largest rebuild works occurred at Ingham, South Pine and Innisfail. These are briefly discussed below:

- Ingham substation was built in the early 1960s and hence the primary plant and infrastructure at the site was in excess of 40 years old. Repeated flooding of the site during the wet season also accelerated the deterioration of assets. Given the age and condition of the equipment, infrastructure and secondary systems, Powerlink considered that replacement was necessary;

- at the time of project approval, the South Pine transformers were assessed to be in poor internal condition requiring replacement in the near future. Powerlink considered that the least cost option for addressing the immediate transformer condition issue and a future emerging supply limitation was to install a new transformer; and

- Innisfail substation was built in the mid-1950s. A technical audit concluded that various plant was either obsolete or in need of replacement.

Substation replacement works at all three sites were identified in Powerlink's 2001 revenue application.

Connections

Regulated connections include projects for additional connection point capability between Powerlink and DNSPs. These projects are identified through joint planning with the relevant DNSP. Powerlink and DNSPs conduct annual strategic planning workshops as well as regular joint planning investigations to address specific needs as they arise.

During this regulatory period, Powerlink anticipates that 40 connection projects will occur. Some of the larger connection projects capitalised at less than $10 million include:

- QAL West 132kV Substation Establishment (CP.359) – involving the installation of two 132/11kV transformers and 132kV cable for Queensland Alumina Ltd;

- Bulli Creek 330/132kV Extension (CP.463) – works resulting from a Regulatory Test conducted by Country Energy to address forecast capacity limitations and outages in the Goondiwindi area;

- Bundamba 110kV Substation Establishment (CP.1079) – as a result of joint planning to address emerging limitations in the distribution system supplying the Bundamba area; and

- Blackwater Transformer Augmentation (CP.795) – to address the potential exceedance of the emergency cyclic rating of one of the transformers at Blackwater during an outage of the other.

NON-NETWORK PROJECTS

Business IT

Powerlink implements and manages its digital technology so as to promote standardisation and avoid duplication, and to enable the integration of information across the whole business.

Over the current regulatory period, approximately 60 Business IT projects are planned for implementation at a total estimated cost of $32.22 million

In terms of the annual desktop replacement program, Powerlink's strategy is for IT assets and associated peripherals to be replaced on a three-year cycle. This is typical for medium to large businesses. Powerlink's PC hardware platform replacement is driven by the rapid progress in the software environment. Larger, more functional software releases demand additional hardware capability not adequately met by PCs designed for earlier releases. Other IT assets such as servers and network infrastructure are similarly impacted by the growing demand for lower system latency and increased system capability.

The most significant IT project undertaken this regulatory period relates to the electronic document and records management system (CP.96502). The need for this project is largely aimed at achieving compliance with the Public Records Act 2002 – that is, to achieve the required level of compliance for Powerlink's paper based and electronic records and documents.

"Support the Business"

Powerlink anticipates that close to 20 "support the business" projects will be implemented during this regulatory period at a total estimated cost of $59.73 million. Major components of this category include the Virginia Office Complex (discussed in the summary of large capital projects), fleet and non-network buildings. Together, these three projects comprise more than 75% of total expenditure in this category.

For management accounting and reporting purposes, Powerlink has created one standard project number for the acquisition of all fleet units of plant and similarly for the capital cost of all non-network building works. A total of $13.05 million is the capitalisation forecast on fleet during this regulatory period, exclusive of proceeds from disposals. The estimated cost of all non-network building projects is $12.03 million.