Directlink Joint Venture

Revenue Proposal
Overview Document

For the regulatory period
July 2015 to June 2020

May 2014
DirectLink Revenue Proposal Overview May 2014.docx

Contents

Purpose

The purpose of this document is to provide an overview paper to Directlink's Revenue Proposal for the 2015-20 regulatory period, as required under Rule 6A.10.1(g) of the *National Electricity Rules*:

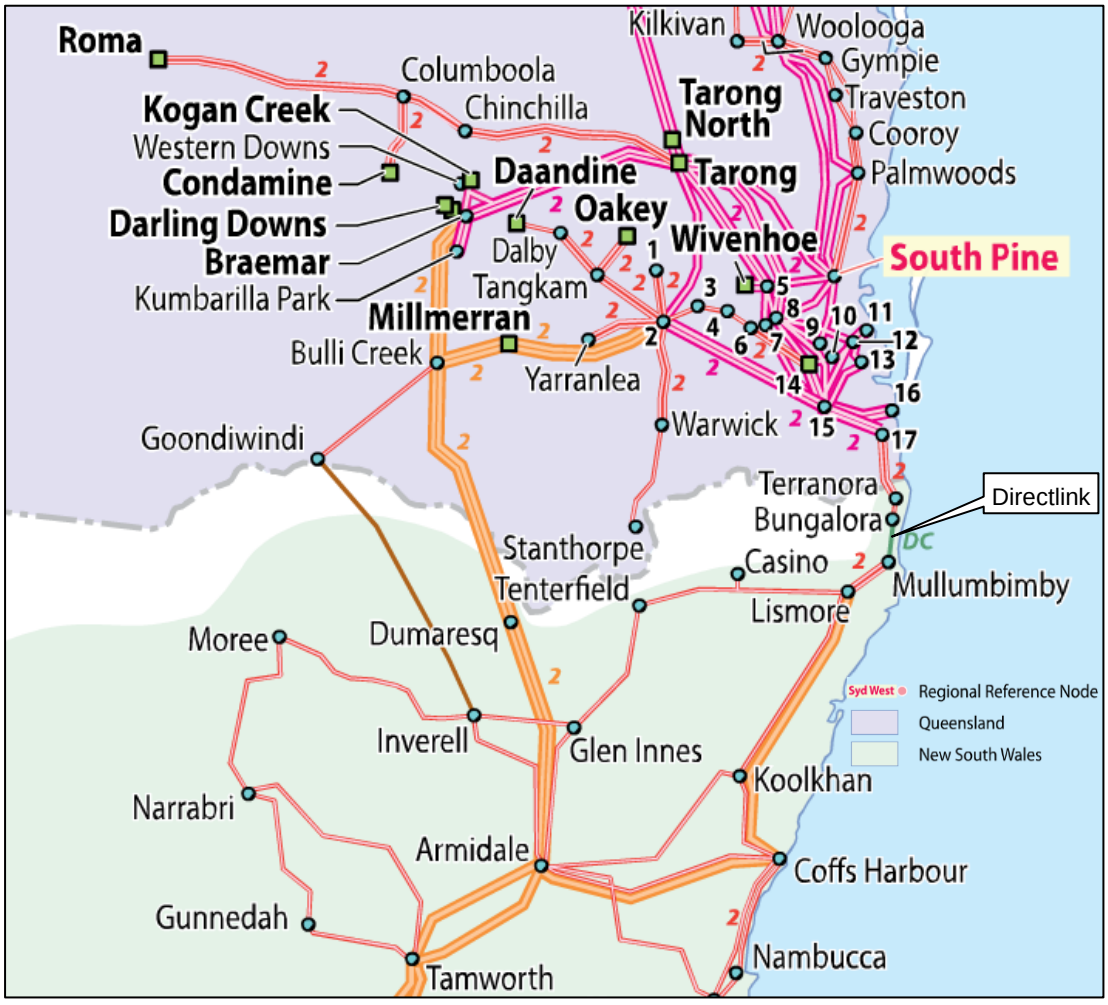
> **6A.10.1 Submission of proposal, framework, pricing methodology and information**
>
> (g) The *Revenue Proposal* must be accompanied by an overview paper which includes each of the following matters:
>
> (1) a summary of the *Revenue Proposal* the purpose of which is to explain the *Revenue Proposal* in reasonably plain language to electricity consumers;
>
> (2) a description of how the *Transmission Network Service Provider* has engaged with electricity consumers and has sought to address any relevant concerns identified as a result of that engagement;
>
> (3) a description of the key risks and benefits of the *Revenue Proposal* for electricity consumers; and
>
> (4) a comparison of the *Transmission Network Service Provider*'s proposed total revenue cap with its total revenue cap for the current *regulatory control period*.

Background

The Directlink interconnector

The Directlink interconnector is a 59 km, 180 MW High Voltage Direct Current (HVDC) interconnect running between Mullumbimby and Terranora in NSW.

Figure 1 – The Directlink Interconnector

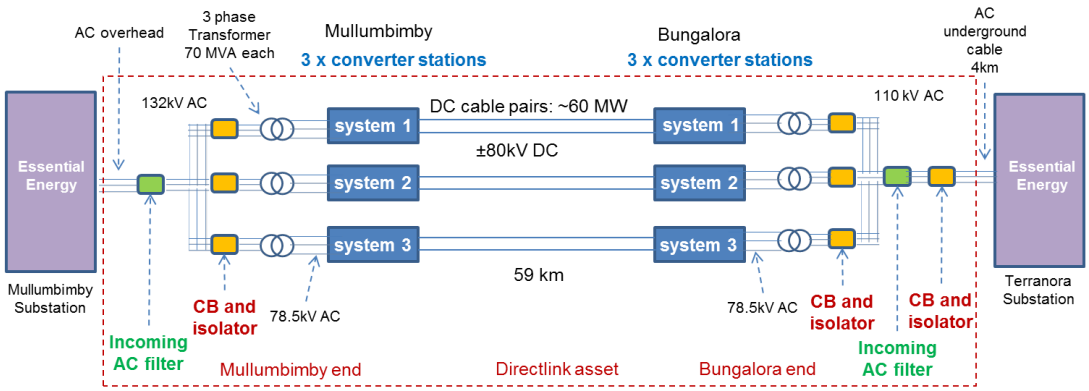


Source: AEMO

Directlink comprises six AC/DC convertor stations (three at each end) and the six cables (three pairs) that link them, making up three circuits of 60 MW each. It is made up of both primary equipment (the major components operating at high voltage) and secondary equipment (necessary for the operation of the primary equipment).

Diagrammatically, the Directlink interconnector can be shown as below:

Figure 2 – The Directlink Interconnector



Directlink has a number of unique features that distinguish them from the more conventional static transmission assets operated by other TNSPs:

- The cables are exposed to direct voltages, which imposes different stresses and potential insulation breakdown mechanisms, than alternating voltage cables.
- The cables have unusual installation approaches; Directlink cables are laid primarily underground, and partly in above-ground galvanised steel troughing (GST).

The convertor stations use what was, at the time of their installation, cutting edge HVDC Light technology.

The primary equipment at the convertor stations comprise:

- 132 kV power transformers;
- AC/DC convertor valve banks;
- harmonic filtering and power factor correction equipment; and
- busbars and switches.

Directlink has been in service for approximately 14 years. The expected service life of the primary convertor station equipment is 40 years. While the DC cables have a potential service life in excess of 40 years, their useful life will be limited to that of the convertor stations.

This primary equipment is supported by a number of ancillary systems, all of which are essential for the secure operation of the link:

- power system protection equipment;
- computerised control systems and communications;
- air conditioning systems (necessary for the control system equipment to function);
- power transformer oil circulation pumps and cooling fans;
- convertor valve water purification and cooling equipment;

- convertor hall air filtering and ventilation; and
- fire protection systems.

It is important to note that the service life of these ancillary systems is much shorter than that of the primary equipment. Various components of the ancillary systems (eg. motor contactors and bearings, fluid control valves) require major maintenance or replacement at intervals ranging from 5 to 10 years.

As shown in the map above, Directlink is a small asset relative to the high voltage transmission system making up the NEM, and its total revenue requirement is small relative to the transmission networks on either end of the interconnector.

In terms of the interconnected NSW and Queensland system, Directlink makes up less than 1% of the total cost of the transmission network:

2014/15 Revenue Requirements	$million	%
TransGrid (NSW)[1]	845.4	46.8%
PowerLink (Queensland)[2]	949.2	52.5%
Directlink (Interconnector)[3]	13.6	0.8%
Total	1,808.2	100.0%

Regulatory history

Directlink first came into operation on 25 July 2000 as an unregulated *Market Network Service Provider*, earning revenue from the National Electricity Market by providing a market network service between the NSW and Queensland power grids. In March 2006, Directlink converted to a regulated interconnector (i.e. a "prescribed service" under Rule 2.5.2(c)) following application for conversion to the Australian Energy Regulator ("AER") and an AER determination allowing conversion of Directlink to a regulated interconnector.

The AER's decision established the Regulated Asset Base, and the revenue cap for the ten-year regulatory control period ending on 30 June 2015. Directlink collects its

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1 AER, *TransGrid, Transend - Transitional transmission determinations 2014–15*, March 2014. Table 1.1. http://www.aer.gov.au/sites/default/files/AER%20transitional%20decision%20-%20TransGrid%20and%20Transend%202014-15%20-%2028%20March%202014_0.pdf

2 AER, *Powerlink Transmission determination 2012–13 to 2016–17*, April 2012. Table 1.1. This amount will be adjusted for outturn inflation. http://www.aer.gov.au/sites/default/files/Powerlink%20-%20Transmission%20determination%20-%20April%202012.pdf

3 AER, *Directlink Joint Venturers' Application for Conversion and Revenue Cap, Decision* 3 March 2006. Table 4.4. This amount will be adjusted for outturn inflation. http://www.aer.gov.au/sites/default/files/Decision%20%283%20March%202006%29.pdf

revenues from TransGrid, acting in the role of Coordinating TNSP under the National Electricity Rules.

Directlink's role in the National Electricity Market

As a result of the conversion to a regulated interconnector, Directlink is registered with the Australian Energy Market Operator as a Transmission Network Service Provider.

The link is dispatched by AEMO, in a similar manner to a generator, to control flows between the NSW and Queensland regions of the National Electricity Market (NEM) and thereby minimise the costs of generation in the NEM.

Significant events in the prior regulatory period

Operating framework

In the first years of operation, the Directlink interconnector was operated under a comprehensive outsourcing arrangement.

From 01 July 2012, this arrangement expired. Directlink then moved from the previous comprehensive maintenance resourcing strategy to a model comprised of outsourcing some specialised functions and insourcing the general maintenance functions.

Mullumbimby converter station fire

In August 2012, pole 1 of the Mullumbimby converter station experienced a catastrophic failure and fire, destroying that pole of the converter station and taking that circuit completely out of service. The cause of the fire was indeterminate and may possibly have been due to vermin or a flashover. While reconstruction processes are in train, the converter station and circuit are not expected to return to fully operational status until mid-2015.

Circuits 2 and 3 disconnection

Following a routine inspection of converter stations 2 and 3 in August 2013, carboniferous tracking was found in the converter stations. As the cause of the converter station fire was indeterminate, Directlink took the remaining two circuits offline while precautionary repair options were investigated.

Work was undertaken in late 2013 and early 2014, and these two circuits returned to service to serve the 2013/14 summer peak. Further work is anticipated that will bring these two circuits temporarily offline again, as a permanent solution is implemented.

Summary of the Revenue Proposal

The key aim of the Revenue Proposal is to allow Directlink to operate the Directlink Interconnector safely and reliably in the interests of NSW and Queensland electricity users.

In order to do this, Directlink must be able to fund the operation of the Interconnector, including normal operating and maintenance costs of the asset. In addition, Directlink must be able to earn a sufficient return on its capital in order to be able to attract the capital to undertake necessary investment in the Interconnector to ensure its long term safe and reliable operation.

The Revenue Proposal adopts the AER's "building block" approach, in which the total allowed revenue is the sum of an allowed return on capital, depreciation, operating expenditure and an allowance for tax.

Return on capital

Applying the AER's Weighted Average Cost of Capital methodology and adopting the parameters published by the AER in its December 2013 Rate of Return Guideline, Directlink's Revenue proposal features a return on capital of 8.06%. This figure will be updated closer to the AER's Final Determination, to be issued in April 2015.

The return on capital also applies to forecast capital expenditure over the upcoming regulatory period.

Depreciation

Directlink proposes to depreciate the assets on a straight line basis over the 26 year remaining life of the assets. The National Electricity Rules provide for the asset base to be indexed for inflation, and the indexation amount reduces the depreciation charge. The net amount is shown below as "regulatory depreciation".

Operating expenditure

Directlink's operating expenditure is higher than allowed in the previous regulatory period. This is driven by two key causes: first, Directlink has amended its operating and maintenance procedures in light of the experience and change in risk profile resulting from the August 2012 converter station fire; and second, insurance costs are significantly higher as a direct result of the fire claim.

Allowance for tax

The allowance for tax is calculated directly from the AER's Post Tax Revenue Model and features a corporate tax rate of 30%.

Total proposed revenue allowance

Together, these building blocks develop a total forecast revenue allowance as follows:

FY ending	2016	2017	2018	2019	2020	Total
Return on capital	10,458	10,818	11,130	11,310	11,577	55,294
Return of capital	1,703	1,956	2,220	2,480	2,774	11,133
Total operating expenditure	5,930	5,387	5,625	5,740	5,883	28,565
Tax allowance	764	817	871	922	979	4,353
Unsmoothed revenue requirement	18,856	18,978	19,847	20,452	21,212	99,345

Engagement with electricity consumers

Rule 6A.10.1(g)(2) requires Directlink, as part of the process of submitting a regulatory proposal to the AER, to describe how it has engaged with electricity consumers and sought to address any relevant concerns identified as a result of that engagement.

Directlink contacted, via email, all consumer groups that lodged submissions to the AER's consultation on *Consumer Engagement Guideline for Network Service Providers* or AER *Stakeholder Engagement Framework*. This included:

New South Wales Irrigators' Council	Australian Council of Social Services (ACOSS)
Conservation Council of South Australia	South Australian Council of Social Service (SACOSS)
Consumer Action Law Centre	Tasmanian Council of Social Service (TasCOSS)
Consumer Utilities Advocacy Centre	Queensland Council of Social Service Inc
Council of Small Business Australia	Energy & Water Ombudsman NSW
Qld Consumers Association	Energy and Water Ombudsman of Victoria
Northern Alliance for Greenhouse Action	Ethnic Communities' Council of NSW Inc
Total Environment Centre	Public Interest Advocacy Centre
Handle My Complaint	UnitingCare Australia
Major Energy Users Inc	

Directlink included a short informational document describing the Directlink Interconnector, and invited the consumer representatives to attend a workshop at which Directlink would engage with the consumer representative organisations to understand any relevant concerns, and to ensure Directlink can address those concerns in this regulatory proposal. In the alternative, Directlink invited interested parties to engage in individual discussions at their convenience.

Directlink appreciates the resource constraints that consumer groups face, and understands that consumer groups must use their limited resources to maximum effect. So few were able to attend the consumer engagement workshop that Directlink elected to cancel the workshop.

However, Directlink provided contact details and an invitation for each of the groups to discuss the Directlink Interconnector regulatory proposal process individually. The AER was copied in on all email correspondence.

Key risks and benefits

Key benefits

In their 2009 *Final Report – Proposed New Large Transmission Network Asset – Development of Electricity Supply to the NSW Far North Coast*, TransGrid and Country Energy (now Essential Energy) identified a need to augment supply to the NSW Far North Coast. Country Energy and TransGrid jointly proposed to construct a 330kV transmission line between Dumaresq and Lismore at an estimated cost of $227 million. As load growth has tapered in the region, and TransGrid and Essential Energy have now deferred this project.

In October 2013, TransGrid advised that:[4]

> The Transmission Annual Planning Report 2013 indicates that the proposed Far North NSW Project is not expected to be required until the 2020s. This date may be further deferred to the 2030s or later if Directlink, part of a high voltage connection from Queensland, can be relied upon and load growth remains subdued. TransGrid is working with Directlink to identify opportunities to improve its availability and/or capacity.

Directlink can provide value to the National Electricity Market by giving TransGrid and Essential Energy the confidence in the Interconnector's reliability to be able to defer the Dumaresq-Lismore line into the longer term. This has been considered in the value associated with the reliability-related capital expenditure projects proposed in the Revenue Proposal.

Key risks

As stated in TransGrid's Build Cancellation Notice, its ability to defer this investment hinges on its ability to rely on the Directlink interconnector. If TransGrid is unable to count on Directlink's reliability, it will not to be able to defer its expenditure.

If Directlink cannot fund the proposed expenditure to improve reliability, then the TransGrid asset will not be deferred, and the market will be required to bear the costs of the Dumaresq-Lismore 330kv transmission line.

[4] See http://yoursaytransgrid.com.au/far-north-nsw-project-dumaresq-to-lismore-transmission-line-cancellation

Historical and proposed revenue cap

The previous regulatory determination was completed in 2006 and extended to 30 June 2015. The last 5 years' information is presented below.

Historical revenue cap

F/Y ending June (000 nominal)	2011	2012	2013	2014	2015F
Regulatory Allowance	12,753	13,005	13,038	13,189	13,398
Service Target Performance Incentive Scheme adjustment	-122	-127	-112	-130	-62
Net revenue allowance	12,631	12,879	12,926	13,059	13,336

Proposed revenue cap

F/Y ending June (000)	2016	2017	2018	2019	2020
Return on Capital	10,458	10,818	11,130	11,310	11,577
Regulatory depreciation	1,703	1,956	2,220	2,480	2,774
Total operating expenditure	5,930	5,387	5,625	5,740	5,883
Tax allowance	764	817	871	922	979
Proposed revenue requirement	**18,856**	**18,978**	**19,847**	**20,452**	**21,212**