

# **Vegetation management cost pass through: Response to second additional information request**

Public submission

February 2014

# Contents

Contents.....	2
Introduction .....	3
Responses to questions .....	4
1 Relationship between rainfall and vegetation management costs .....	4
2 Inspection times.....	5
3 Historical costs and asset information .....	6
4 LiDAR Technology .....	10
5 Vegetation clearance technical details.....	13
6 Extent of undergrounding and Aerial Bundled Conductors installations .....	14
7 Clearance work processes.....	17
8 ActewAGL/supplier activity splits .....	19
9 Historical contracts .....	22
10 Dismissed alternative options.....	23
11 Board information .....	24
12 Resource relocation not included in proposed pass through amount.....	25
13 Operating expenditure objectives.....	26
Attachment A – Confidentiality Claims .....	28
Attachment B – Costs spread sheet.....	29
Attachment C – Scoping maps after aerial inspections.....	30
Attachment D – Historical contracts .....	31

# Introduction

On 1 November 2013 ActewAGL sought the approval of the Australian Energy Regulator (AER) to pass through the material increase in vegetation management costs in 2012/13. The increase in vegetation management costs was the result of unexpected and uncontrollable increases in vegetation growth rates, which followed above average rainfall in the ACT. In 2010/11 and 2011/12 rainfall was 40 per cent and 25 per cent respectively above the long term average, and the 8<sup>th</sup> and 11<sup>th</sup> highest amounts recorded since 1940.

On 2 December 2013 the AER issued a request to ActewAGL for further information. On 19 December 2013 ActewAGL provided substantive and complete answers to each of the AER's 10 questions and 28 supporting documents.

On 17 January 2014 the AER sought further information from ActewAGL in a second information request. Of the 17 additional questions only question 4 and 7 seek to further clarify ActewAGL's responses to the first information request.

This submission provides substantive and complete answers to the AER's second information request. The 17 questions have been grouped into the following 12 themes:

- Relationship between rainfall and vegetation management costs;
- Inspection times;
- Historical costs and asset information;
- LiDAR technology;
- Vegetation clearance technical details;
- Extent of undergrounding and Aerial Bundled Conductor installations;
- Clearance work processes;
- ActewAGL/supplier activity splits;
- Historical contracts;
- Dismissed alternative options;
- Board information;
- Resource allocation not included in proposed pass through amount; and
- Operating expenditure objectives.

# Responses to questions

## 1 Relationship between rainfall and vegetation management costs

*Q1. According to data provided by ActewAGL, the annual rainfall in 2012–13 is 25% above average. However the cost increase in 2012–13 is 65% (\$1.9 million on \$2.94 million presented in Table 5). Please explain why the cost increase is much higher than the rainfall increase.*

The cost increase is much higher than the rainfall increase because costs reflect the level of encroachment of vegetation and consequent clearance required.

Through its own experience over time, inquiries made of other industry participants, and review of horticultural or technical research studies, ActewAGL is unaware of any indication of a direct or proportional relationship between the level of annual rainfall and resultant vegetation management costs.

It is well known and documented that increased rainfall does cause increased vegetation regrowth, and it is well known and accepted that different species of plants and trees regrow at faster rates than others. However, the limited number of “exceptional” rainfall events and the vastly different natures of the terrain, vegetation types, and proximity to infrastructure, make it impossible to draw any meaningful conclusions about the relationship between annual rainfall and vegetation management costs in each individual case.

The data provided to the AER in the November 2013 submission shows that annual rainfall in 2012/13 was 24 per cent below the long term average. ActewAGL considers that rainfall in the two preceding years contributed to the unexpected and uncontrollable vegetation growth. In 2010/11 and 2011/12 rainfall was 40 per cent and 25 per cent respectively above the long term average, and the 8<sup>th</sup> and 11<sup>th</sup> highest amounts recorded since 1940.

Prior to 2012/13, on 1 October 2011, the commencement of the ACT bushfire season, all identified vegetation encroachment had been cleared. The encroachment was identified through inspection cycles where, as outlined in the November 2013 vegetation management cost pass through submission to the AER, one sector undergoes a full detailed inspection and the remaining two a visual inspection. In addition, vegetation inspections are staggered to be one sector ahead of the pole inspections to identify any regrowth from vegetation cut in the preceding year.

Identification and clearing of vegetation encroachments was up to date prior to the period of increased rainfall, and there was no backlog of work that might have inflated the costs during 2012/13. The cost increase incurred in 2012/13 was necessary to eliminate the urgent and high risk clearance breaches in a timely fashion.

## 2 Inspection times

*Q2. ActewAGL states (p10 para 1) that “The increased vegetation growth slows inspection of vegetation encroachment”. Please explain how the growth rate slows down inspection work. Also, please provide an estimate of the inspection time and cost historically, and additional time and cost due to ‘vegetation encroachment’.*

ActewAGL’s original statement referred specifically to ground based inspection work, not aerial inspection surveys.

Increased vegetation growth slows ground inspection of vegetation encroachment due to the larger amounts of identification, scoping, work packaging, and notice issuance<sup>1</sup> required.

On occasion during 2012/13, overgrown vegetation was required to be cut away along access tracks in order to gain access to, inspect, and clear some lines. This occurred for example on the Matthews 11kV Feeder which terminates at Gudgenby Homestead in the Namadgi National Park. Additionally, the higher level of rainfall had softened the ground and damaged access tracks, thereby lowering the inspection rate of ground inspections.

ActewAGL estimates that lines can be inspected under normal rainfall conditions at a rate of 2km of lines per hour by walking, or 10km/hr with the use of a vehicle. Aerial inspections, as used in 2012/13, allowed lines to be inspected much faster and allowed ActewAGL to quickly clear encroaching vegetation. The August 2012 aerial inspection was mobilised for 10 hours and inspected 628 km giving an average inspection rate of 62.8 km/hr.<sup>2</sup>

---

<sup>1</sup> Note that ActewAGL’s introduction of a mobile tablet system to issue notices increased productivity of inspectors.

<sup>2</sup> August flight itemisation provided to the AER on 19 December 2013.

### 3 Historical costs and asset information

Q3. We wish to understand the historic variability in vegetation management costs for the last 10 years. Please provide the total network expenditures for vegetation management as incurred by ActewAGL for the following cost categories (net of overheads):

- a. annual total cutting/pruning cost and work volume (i.e. total number of spans cut or pruned)
- b. annual total inspection/scoping cost and inspection work volume (i.e. total number of spans inspected)
- c. annual total administration costs
- d. annual total other costs – please itemise and specify
- e. annual total overhead allocation for each of the above categories (where overheads are separated for corporate, divisional, etc. these should be provided separately)

In addition to the above cost breakdown we will also need:

- f. total number of spans in the network
- g. total number of maintenance spans in the network (any span within ActewAGL's network that is subject to vegetation management practices under ActewAGL's vegetation management program). If spans are not available then the number of poles subject to vegetation management practices would suffice.

Table 3 provides historical vegetation management cost over the last 10 years. The information is also provided in spread sheet form in Attachment B – Costs spread sheet. The table provides four main groups of costs: suppliers, labour costs, overheads and other.

Although ActewAGL is only claiming additional costs incurred in 2012/13 for the pass-through event, it is evident from Table 3 and ActewAGL's operational experience that additional vegetation management costs began to accrue during 2011/12. ActewAGL was not fully aware of the magnitude of the vegetation regrowth problem until the first aerial patrol in August 2012, and the increased costs were not material until 2012/13.

Prior to 2012/13, the majority of supplier costs related to vegetation clearance suppliers. The supplier costs prior to 2012/13 provide the best estimate of annual total cutting and pruning costs. In 2012/13 supplier costs also include the costs of the aerial surveys which relate vegetation inspection. Removing the aerial survey amount provides the best estimate of annual total clearance costs for 2012/13 (██████)<sup>3</sup>.

Annual inspection and scoping is conducted by ActewAGL's ground staff. These costs make up the majority of labour costs included in Table 3. As noted in ActewAGL's December 2013 submission, labour costs are significantly higher than the incremental costs claimed by ActewAGL (\$290,101) for vegetation inspection.

ActewAGL has provided, in Table 3, other costs including administration costs. Administration costs are comprised of stationary and office supplies, postage and

<sup>3</sup> Total supplier cost (██████) minus aerial survey cost (██████) gives ██████

telephone costs etc. ActewAGL has also itemised the non-administration costs included in other costs.

Annual total overhead allocation for the above categories during the current regulatory control period is calculated consistent with the cost allocation method submitted to the AER in February 2008<sup>4</sup> and approved by the AER in March 2008.<sup>5</sup>

The vegetation management costs for 2012/13 shown in Table 3 (are based on the costs captured by ActewAGL's accounting system. These costs have been adjusted to only incorporate incremental costs consistent with the National Electricity Rules (NER) to calculate the proposed pass through amount. Clause 6.6.1(j) of the NER states that the fifth relevant factor states that the AER must take into account, in determining a pass through amount is:

The need to ensure that the *Distribution Network Service Provider* only recovers any actual or likely increment in costs under this paragraph (j) to the extent that such increment is solely as a consequence of a *pass through event*;

As noted in ActewAGL's November 2013 submission, only incremental costs which occurred solely as a result of the pass through event have been included in the pass through claim. Accordingly ActewAGL's internal labour costs and overheads attributed to the vegetation management program are not included in the proposed pass through amount. ActewAGL notes that these costs, which are included in Table 3, are both substantially higher than the AER's allowance in the 2009 distribution determination.

As discussed in ActewAGL's earlier November and December 2013 submissions, ActewAGL incurred incremental costs in shifting labour resources that were intended to be allocated to asset inspection to vegetation inspection. As a consequence of the reprioritisation, the pole inspection contractor provided additional support beyond the end date envisaged, supplementing the lower allocation of ActewAGL labour hours to asset inspection. These costs are not captured in vegetation management costs shown in Table 3 but have been included in the proposed pass through amount.

ActewAGL's asset information system maintains number of poles not spans. There are 49,794 poles in the ActewAGL's electricity network of which 49,465 are owned by ActewAGL.

Table 1 August 2013 Snapshot of poles in ActewAGL's electricity distribution network

Pole Type	Number
Urban Poles	42,971
<i>High voltage</i>	8,584
<i>Low voltage</i>	34,387
Rural Poles	6,823
<b>Total Poles</b>	<b>49,794</b>

<sup>4</sup> ActewAGL 2008, *ActewAGL electricity network cost allocation method: ActewAGL submission to the Australian Energy Regulator*, February

<sup>5</sup> AER 2008, *ActewAGL cost allocation method*, Final decision, March

As ActewAGL is responsible for the safe operation of its network, the entire network is inspected for vegetation encroachment. All poles are included as part of the vegetation management strategy and consequently under the vegetation management program and subject to ActewAGL's vegetation management practices. Table 2 sets out the responsibilities for vegetation clearance.

Generally, responsibility for vegetation clearance differs depending on whether the network facilities sit on private or public land (and whether the public land is unleased land or national land). ActewAGL is responsible for clearing vegetation near poles on these areas where there was pre-existing vegetation. In addition, ActewAGL is responsible for clearing vegetation near power lines connecting the 6,823 rural poles.

Table 2 Vegetation Clearance Responsibility

	Private land	Public Land	
		Unleased land	National land
<b>Vegetation clearance responsibility</b>	Land holder for non pre-existing vegetation. Otherwise ActewAGL	ActewAGL is responsible for vegetation in natural areas, specifically national parks, nature reserves, special purpose reserves and Namadgi National Park  Vegetation in urban areas is maintained by ACT Government Territory and Municipal Services	Vegetation is dealt with on a case by case basis through direct contact with the National Capital Authority



### Table 3 Historic Vegetation Management Costs

[illegible]

## 4 LiDAR Technology

*Q4. In relation to the aerial surveys and the use of LIDAR technology, your December response to our first information request (at question 2) indicated that the first aerial patrols identified 526 urgent clearance encroachments. The next series of patrols in urban areas identified 411 urgent clearance encroachments. Please identify:*

- a. The percentage of false positives (clearance infringements identified but subsequently found to be compliant with regulations.*
- b. The percentage of encroachments that would not have been identified without the use of the aerial survey LIDAR technology.*

*Q5. LIDAR technology typically identifies significantly more tree cutting requirements than a ground based inspection due to the clearer view of the assets and the accuracy of the technology. It is reasonable to assume that the introduction of the new technology contributed to a significant increase in the identification of vegetation requiring trimming. What is the ActewAGL estimate of the additional “find rate” of the aerial survey above that of the previous ground inspection process?*

*Q6. What productivity increase/cost saving has ActewAGL achieved using LIDAR technology? Table 6 shows additional cost of Aerial Survey of \$310k. Please provide inspection costs comparison between ground based inspection work and aerial inspection, i.e. average cost of inspection per span including both inspection activities as well as data processing work.*

The main advantage of LiDAR technology is the speed with which ActewAGL can inspect overhead lines. The technology allowed line inspection to be completed in less time than ground surveillance enabling ActewAGL to dispatch reactive crews to address vegetation encroachment sooner.

LiDAR technology is accurate but not perfect. Although a detailed specific database has not been developed, ground based inspectors identified instances of both false positives and false negatives.<sup>6</sup> These differences are likely due to different levels of sag and swing (caused by wind) which is taken into account by experienced ground inspectors. For instance, experienced ground inspectors can identify whether saplings, which are more flexible than established trees, are likely to enter an encroachment zone. LiDAR may not detect this possibility if they are outside of the clearance zone on the day of the survey.

From the December 2012 aerial survey 14 out of the 411 (3.4%) urgent encroachments were cancelled because the encroachment was found to be of a lower priority once inspected at ground level.

Once increased vegetation growth was identified, ActewAGL's priority was to locate and rectify critical clearance breaches in a cost effective manner, not test the accuracy of aerial surveys versus ground patrols.

---

<sup>6</sup> Examples of each are provided in the vegetation inspector notes provided in Attachment C – Scoping maps after aerial inspections.

ActewAGL considers that it is incorrect to say that “LiDAR technology typically identifies significantly more tree cutting requirements than a ground based inspection due to the clearer view of the assets and the accuracy of the technology.” The increase in vegetation clearance requirements stems from the unexpected and uncontrollable increase in vegetation growth. The use of aerial survey technology made it possible for ActewAGL to patrol lines in question faster, and to respond to the increased vegetation growth in a timely and cost efficient manner.

Given sufficient time as outlined previously in ActewAGL’s response to the AER’s information request in December 2013, all vegetation encroachments would have been identified by ground crews. ActewAGL does not consider that the introduction of LiDAR technology contributed to an increase in the identification of vegetation requiring trimming. Therefore the additional “find rate” is zero.

As noted by ActewAGL in its initial November 2013 submission, aerial surveys do not have the same sight lines and access issues as ground crews. This advantage increases the speed at which inspections can be undertaken. ActewAGL’s ground staff persevered when faced with access issues or obstructed sight lines. In one case, an access track near the Monaro Highway was washed away when a creek overflowed; this slowed but did not prevent ActewAGL from inspecting overhead lines. Hence, although obstacles and sight lines increase the time taken for ground crews to inspect lines they did not prevent the identification of vegetation encroachment.

ActewAGL understands that other Distribution Network Service Providers and Vegetation Management Companies generally follow up LiDAR surveys with ground based checks to verify the need for and scoping of the volume of cutting and disposal work required.

It is difficult to precisely measure the productivity increase or cost saving through the use of LiDAR technology in 2012/13. LiDAR technology was primarily used for its capability to complete inspections in shorter timeframe than ground surveillance. As a result, LiDAR technology was used to expand ActewAGL’s inspection capacity, not replace ground based inspections.

A comparison of the costs of ground based inspection work and aerial inspection can be conducted using the labour cost approved by the AER and the pole data provided in response to question 3.

The three aerial patrols conducted by ActewAGL surveyed all overhead lines other than urban low voltage. The AER allowed \$0.978m for 2012/13 labour costs (not including divisional and corporate overhead) for inspection and scoping work. Applying the proportion of the network the aerial patrols surveyed of approximately 31%<sup>7</sup> provides a comparative inspection cost of \$0.3m, similar to the cost of the aerial surveys. This means that the average cost of inspection per pole would also be very similar.

<sup>7</sup> As shown in Table 1 urban low voltage poles make up 34,387 (69%) of the 49,794 of the network. Non-urban low voltage poles make up 31% of the network.

Two caveats apply to the cost comparison above. Firstly, corporate and divisional cost centre overheads related to the labour costs have not been incorporated. Secondly, the aerial surveys were supported by ground inspectors who scoped the work for vegetation clearance contractors which would have incurred labour costs. Data processing work was included in the cost of the aerial surveillance supplier.

## 5 Vegetation clearance technical details

Q7. In relation to the trimming of trees to a three year cycle:

- a. Is ActewAGL or the contractor(s) responsible for determining the extent of tree cutting required to provide a three-year minimum clearance?
- b. How are different species growth rates accommodated in the tree trimming program?
- c. What (if any) herbicides or growth retardants are used to manage limb regrowth after cutting?

The extent of tree clearance is determined by ActewAGL. ActewAGL determines the clearance distances based on the species of tree and in consultation with local groups such as *Friends of Black Mountain* and *Friends of Mt Majura* and the ACT Government. ActewAGL encourages local groups to find suitable plants and shrubs to plant near power lines and directs consumers to a list located on the ActewAGL website.<sup>8</sup> However, this is generally unnecessary for the local groups that conduct park care activities and have a keen interest in native fauna and flora.

Through the use of LiDAR, ActewAGL has begun to maintain a database of trees which may encroach upon clearance spaces. The database is not yet at a usable stage and does not incorporate the species or growth rates. However, ground based inspectors take into account the species of any vegetation encroachment and possible growth rates. This knowledge is reflected in the clearance distances employed in rural areas.

ActewAGL ensures that clearance contractors employ herbicides and growth retardants consistent with the *Code of Practice*. ActewAGL's vegetation clearance suppliers use Glyphosate as a herbicide.

---

<sup>8</sup> Available: <http://www.actewagl.com.au/Help-and-advice/Safety-advice/Vegetation-management/Suitable-shrubs.aspx>

## 6 Extent of undergrounding and Aerial Bundled Conductors installations

Q8. ActewAGL identified a program in the current regulatory period (see page 21 of Wilson Cook's report) to replace overhead lines with 'aerial bundled low voltage overhead cable' or underground cable. Some of these works were forecast to reduce vegetation management requirements. Please confirm the volume (length of overhead lines) replaced under these programs and the total annual costs of these programs for the last 5 years.

There has been no significant change to the extent of bare low voltage conductors in the ACT electricity network. ActewAGL's network consists of 1124 km of bare low voltage conductor and 63.6 km of Aerial Bundled Conductor. Although in two cases ActewAGL has undergrounded overhead lines specifically for vegetation reasons, the installations are small and have made a negligible difference to the total vegetation management cost on a network wide level.

For greenfield developments ActewAGL installs underground cable as standard. ActewAGL installs Aerial Bundled Conductor where there are low clearance issues.

A summary of the amount of existing low voltage circuit by year of commission is provided in Table 4. The 457.6 km of low voltage underground conductor was installed primarily due to greenfield development and to a lesser extent block redevelopment. Aerial Bundled Conductor installations were mostly due to the identification and rectification of low clearance issues with new constructions. Bare low voltage lines were installed as a result of reactive maintenance (such as repairing damage from a storm) or as a part of augmentation resulting in only a small amount of installed line.

Table 4 Commissioned low voltage circuit installed and operating August 2013 (km)

Conductor	2008	2009	2010	2011	2012	2013	Total
<b>Bare Low voltage</b>	0.0	0.1	0.6	0.00	0.1		0.8
<b>Aerial Bundled Conductor</b>	6.6	3.8	4.8	3.6	3.1	0.2	22.2
<b>Low voltage underground</b>	89.0	93.6	86.2	109.0	79.8		457.6

Note: The numbers above do not include low voltage circuit that has been decommissioned.

ActewAGL has identified two projects in the current 2009-14 regulatory period with the aim of reducing bushfire risk due to vegetation issues. These works, shown in Table 5, involve a small fraction of ActewAGL's total overhead lines and made a negligible difference to total vegetation management costs.

Table 5 Projects due to vegetation issues

Project	Budgeted cost (Nominal)	Expenditure (Nominal)	Year	Length
Hume undergrounding high voltage cable			2009	480m
Yarralumla high voltage relocation (undergrounding)			2010	800m

ActewAGL notes that vegetation inspectors, in scoping the work for vegetation clearance suppliers, also take into account whether a line is open conductor or aerial bundled cable.<sup>9</sup>

ActewAGL had also advised in its June 2008 regulatory proposal that a broader, phased undergrounding program could commence in the 2009-2014 regulatory period as part of a long-term investment horizon, if further testing of cost and benefit estimates confirmed that such a program would provide a net economic benefit.<sup>10</sup> Wilson Cook and Co supported this approach, stating:

An unsatisfactory feature of ActewAGL's network is the presences of a considerable amount of 'back yard' overhead reticulation that requires pole replacements and is difficult to access...It may be a better long-term solution to replace the back yard reticulation with new reticulation in the street...If the AER is able to address this situation, it might consider doing so.<sup>11</sup>

Further testing of cost and benefit estimates has taken place since that time. In 2009, ActewAGL commissioned a cost-benefit study by Applied Economics, which drew on research by the Australian National University (ANU) that found a 2.9 per cent premium (or around \$12,000 on average) on the prices of houses serviced by underground networks.<sup>12</sup> The study concluded that there could be a net benefit to the community from undergrounding at least some suburbs and recommended further assessment of the costs and benefits.

Before the merit of widespread undergrounding in the ACT can finally be concluded, a pilot project would need to be undertaken to allow more accurate specification of costs,

<sup>9</sup> An example of this is provided in the vegetation inspector notes provided in response to question 9.

<sup>10</sup> ActewAGL Distribution, 2008, *ActewAGL Distribution Determination 2009-14 – Regulatory Proposal to the Australian Energy Regulator*, p. 268

<sup>11</sup> Wilson Cook, October 2008, *Review of Proposed Expenditure of ACT & NSW Electricity DNSPs Volume 5 – ActewAGL Distribution Final*, p. 20

<sup>12</sup> McNair, B.J., Abelson, P. (2010). Estimating the Value of Undergrounding Electricity and Telecommunications Networks, *Australian Economic Review*, Volume 43, Issue 4, pp. 376–388.

gauge community support and learn from the process so the benefits of any broader program could be maximised.



## 7 Clearance work processes

*Q9. We wish to understand the previous and current processes for the identification and notification of vegetation requiring trimming. As part of this understanding we seek also understand the audit, feedback and review processes. Could ActewAGL please provide representative samples of:*

- a. “pre-cut” inspection or audit reports. This should include documentation that identifies the location and quantity of vegetation requiring trimming. Typically this information is provided as instructions to the vegetation management contractors. Please provide copies that are representative of previous and current report types. If these reports vary between zones or contract, please provide copies that are representative of all types. Further to this please also provide:*
  - i. the number of spans, vegetation management spans, and length identified in the “pre-cut” inspection*
  - ii. the number of vegetation management spans (or poles) where aerial bundled cable has been installed.*
- b. “post-cut” inspection or audit reports. This should include documentation that identifies any vegetation that was not trimmed or cut to the required standard. Typically this information is provided as “re-work” instructions to the vegetation management contractors. Please provide copies that are representative of previous and current report types. If these reports vary between zones or contract, please provide copies that are representative of all types. Please also provide a description of the “post cut” audit practices applied by ActewAGL.*

The process for the identification and completion of vegetation clearance in 2012/13 for areas in which ActewAGL clears vegetation consists of six stages.

1. Identification of vegetation encroachment
2. Scoping of vegetation encroachment
3. Communication with vegetation clearance supplier
4. Vegetation clearance
5. Audit and rework of clearance conducted

ActewAGL identifies vegetation encroachment through either ground inspectors or via aerial surveys. Ground crews then scope the work identified, including specifying the required mechanisation, the extent of clearance based on the type of vegetation and estimating the number of hours required for a supplier to complete the work. Scoping occurs as ground crews inspect the lines.

In the case of aerial surveys, ground crews allocated their time to the required priority locations. The location, quantity and scope of vegetation clearance are documented on maps and form the basis of the instructions provided to the vegetation clearance supplier. These maps include the number of poles for each location. Copies of these maps completed for scoping of encroachment identified by the aerial surveys and where ActewAGL is responsible for clearance are provided in Attachment C – Scoping maps after aerial surveillance. Ground inspectors mark the locations where Aerial Bundled Conductor is installed, as appropriate.

ActewAGL's ground staff walk the lines with the selected vegetation clearance supplier and provide clearance instructions. The instructions include the how far the vegetation is to be cleared from the lines and the required standard.

Once the supplier has cleared the lines, ActewAGL's staff conduct post cut audits by comparing the work completed against the maps produced as part of the scoping. On one occasion in 2012/13 the vegetation clearance supplier did not clear the vegetation to the required distance due to a misunderstanding with a Ranger. ActewAGL identified that vegetation was not cleared to the required distance and required that the supplier complete the work to the original specifications.

## 8 ActewAGL/supplier activity splits

Q10. Please explain how the risk of reduced/increased vegetation growth is borne by ActewAGL and its contractors.

Q11. Unit rate based contracting is considered to provide a better outcome of risk sharing with contractors and to provide incentive for contractors to improve productivity. Why does ActewAGL not employ a unit based contracting arrangement? How does ActewAGL ensure that its contractors are incentivised to seek productivity improvements?

Q13. We are seeking to understand the demarcation between activities that are carried out directly by ActewAGL and those that are contracted out. Please describe all vegetation management activities and parties responsible for these activities for both the previous and current regulatory control period. For example, is ActewAGL responsible for data collection, standards relating to growth retardants, tree replacement, hazard trees, determining live line works, etc.?

The vegetation management model employed by ActewAGL in 2012/13 is deliberate and commonly used within the Australian electricity distribution industry. ActewAGL manages all aspects of vegetation management including data collection, standard relating to growth retardants, tree replacement and hazardous trees. ActewAGL uses external suppliers to clear the majority of vegetation encroachment. All vegetation clearance contractors are accredited by ActewAGL to work near live power lines and are capable of determining whether an outage is required, which ActewAGL then coordinates.

Prior to a supplier commencing work, ActewAGL scopes the work required and walks along the lines with the supplier. Typically, ActewAGL sets the clearance distance and the regrowth allowances. The regrowth allowances for rural areas are specified in the latest vegetation supplier contract are as follows:

Table 6 Allowance for regrowth between inspection / maintenance cycles in rural areas

Vegetation type	Allowance for regrowth
Shrubs and mature trees	1m
Typical native and introduced vegetation	3m
Fast growing species in favourable environments	6m

However, these distances are often determined with the input of local groups and the ACT Government. Walk throughs with suppliers set specific expectations, for how and what work is conducted.

The major variables impacting vegetation clearance costs include travelling time, accessibility, and the volume of vegetation to be cleared. These complications make it difficult for a rigid per tree or per km unit rate to be used. Using a unit rate with exogenous cost drivers creates a wedge between the cost incurred by the supplier and the price. Under a unit rate methodology suppliers would need to incorporate a premium in prices to compensate for the additional risk. In 2012/13 ActewAGL used a supplier

pool to create competitive tension and specified the extent of mechanisation (e.g. elevated work platforms etc) to be used in each job. These controls encouraged the suppliers to seek productivity improvements and avoid excessive labour input.

Changes to vegetation growth rates can impact the volume of work required and the price at which work is conducted, due to an increase in regional demand for clearance services. ActewAGL's use of a competitive tender process limits seasonal price movements and in turn price risk.

ActewAGL uses a competitive tender process to determine the hourly rate of vegetation suppliers. On occasion, ActewAGL also requests quotes from multiple vegetation suppliers for specific work packs. As a result, ActewAGL is assured of being charged an efficient hourly unit rate or set price for a work pack.

Historically, including in 2012/13, ActewAGL has borne the volume risk. This approach ensured that a volume risk premium is not included in prices. The premium is likely to be exacerbated by the unknown travel time and uncertain volume of work issued to each supplier.

ActewAGL also managed volume risk through separating the scoping and clearance work. [REDACTED]

ActewAGL's contracting arrangements are continuously assessed and modified for improvement. As noted in ActewAGL's November 2013 pass through application, ActewAGL is trialling a change to its vegetation management strategy based on the success of the aerial surveys. ActewAGL intends to undertake an annual aerial inspection of areas designated as bushfire prone. The change in approach and deeper understanding of the makeup of vegetation in the ACT has enabled ActewAGL to change how vegetation suppliers are engaged.

ActewAGL intends to change its vegetation management approach such that any vegetation encroachment identified by the aerial surveys is provided directly to a vegetation clearance provider. The vegetation clearance provider will then be responsible for ensuring all vegetation in the bushfire abatement zone is cleared to ActewAGL's requirements by the commencement of the bushfire season on 1 October. ActewAGL will audit the performance of the vegetation clearance provider using ground and aerial surveys.

In 2013/14, ActewAGL undertook a tender process that, in addition to hourly rates, specified suppliers provide a lump sum price for each of the three sectors within the bushfire abatement zone. [REDACTED]

[REDACTED]. By providing a larger quantity of work, suppliers could take advantage of economies of scale and permanently move personnel to the ACT region. Further, using a fixed price for sections of the bushfire mitigation zones reduced the need for a supplier pool to maintain ongoing competitive tension and consequent price pressure.

ActewAGL provided potential suppliers with detailed maps which marked the feeders within the bushfire abatement zone. This enabled suppliers to become familiar with the scope of work required and understand geographic factors, such as terrain and access and predict with higher accuracy the cost of providing vegetation clearance. Hence, the issue with cost variability with regard to travel time and volume was reduced, thereby reducing the potential for a premium to be paid.

## 9 Historical contracts

*Q12. Please provide copies of all vegetation management contracts not already submitted to the AER, including contract variations and related documentation for vegetation management outsourced services that were in operation for:*

- a. The previous regulatory control period*
- b. The current regulatory control period.*

In 2002 the standing offer was originally a 'Tree Surgery Contractor Pre-Qualification' process upon which ActewAGL developed a list of 'ActewAGL accredited tree surgeons'. Suppliers on the panel were called upon to quote for works as required.

In 2005 ActewAGL invited eight suppliers to nominate set hourly rates for works as a trial. Only two suppliers responded. However, the standing offer panel remained in place.

Standing offer 095 expired in 2006 although providers on the panel continued to provide services to ActewAGL. During this period one provider was receiving the majority of the work due to their pricing and availability.

Of the providers that continued to provide services only two submitted pricing for standing offer 095/09. A third supplier submitted pricing for standing offer 095/10, which was later amended. All three suppliers again submitted pricing in regards to standing offer 095/13.

As outlined in *ActewAGL/supplier activity splits*, ActewAGL has altered its approach for contract N701/13.

Attachment D – Historical contracts contains a summary of all contracts and suppliers in the previous and current regulatory period, contracts N701/13, 095/10 and 095/09 and example of contracts for standing offers 095/05 and 095/05.

## 10 Dismissed alternative options

*Q14. ActewAGL states that (p12) “no further action could reasonably be taken to reduce the costs and no such action or omission has increased the magnitude of the costs.” What options has ActewAGL considered? On what ground were they dismissed?*

Upon becoming aware of the rapid regrowth problem in August 2012, ActewAGL commissioned aerial surveys to quickly complete inspections and then address the vast majority of vegetation encroachment. Two main alternatives to this approach were taking no action at all or engaging a vegetation management supplier to perform all of the inspection, identification, scoping, work packing, contractor management, and auditing work performed by ActewAGL staff.

### Option 1 – Take no action

Given the magnitude of the clearance breaches identified by the aerial surveys, ActewAGL could have not have cleared the vegetation encroachment in a timely manner using its traditional methods. Vegetation encroachment within the minimum distances would have resulted in ActewAGL not meeting its regulatory obligations, increasing the risk of a bushfire and reducing the reliability of the network via a larger probability of vegetation related outages. For these reasons this option was assessed to be unacceptable.

### Option 2 – Engage external Vegetation Management Company

A second option would have been for ActewAGL to engage a vegetation management company to provide additional support. The company could either have taken over the entire management of vegetation for ActewAGL or provide inspection resources. As noted in the December 2013 submission, ActewAGL has no experience in engaging and training vegetation management inspectors on a contract basis, and it would have taken 3-4 months to mobilise the additional contract resources required. It would have taken a similar amount of time to engage through a tender the option of a vegetation management company. Further, time constraints would have limited ActewAGL's ability to provide sufficient information to allow suppliers to quote efficient prices. This option was assessed to be unacceptable as it would not have provided a timely solution and would have been more expensive than the solution implemented.

## 11 Board information

*Q15. What information was provided to the ActewAGL board regarding the increase in vegetation management costs? Please provide copies of all ActewAGL Board papers, agenda items or minutes relating to vegetation management for the previous 2005-10 and current 2010-15 regulatory control periods. This includes all items relating to vegetation management, contracts for vegetation management and the current pass through application.*

The AER seeks copies of ActewAGL Board materials relating to vegetation management. The Board does not allow access by external parties to its papers or minutes unless compelled to do so for a specific purpose. We are aware of the requirements of clause 6.6.1(e1) of the NER for a DNSP to provide information sought for the purpose of enabling the AER to make a determination on cost pass-through amounts. We note that Board materials are records of internal administration and governance rather than evidence of substantive matters (which are essentially operational in nature) that may assist the AER for that purpose.

Nevertheless, in light of the request, we have reviewed relevant Board materials back to February 2007. Except for one item (see below), relevant information was provided to the Board for noting only. In these cases, any related decision that was needed was within the delegated authority of management and no approval or ratification was required or sought from the Board.

We have identified a single item where approval for the Board was sought and granted, the extension of the contracts for vegetation clearance suppliers in 2013 to 30 September 2013. ActewAGL has already provided copies of these contracts in response to question 7 of the AER's first information request, submitted in December 2013. As a result, all information which could be required for the purpose of making a determination under paragraph (d) of clause 6.6.1 of the NER has been already been provided.



## 12 Resource relocation not included in proposed pass through amount

*Q16. Were resources relocated from any other opex programs and to what extent? If so, were these other resources back filled and from where?*

Clearing of the increased vegetation growth required increased support from other areas of the business. In addition to reprioritisation of asset inspectors, the higher amount of clearing increased the work undertaken by:

- Works enablement team – to plan and issue additional work packs;
- Administration officers – to issue additional notices to land holders;
- Switching teams – to de-energise lines and allow safe clearing; and
- Network operations – to facilitate and coordinate the vegetation clearance activity.

ActewAGL cannot demonstrate the incremental cost of these tasks. As a result, the proposed pass through amount only includes for incremental costs and has not included increased overhead costs or internal labour costs (vegetation inspection and management), already factored into ActewAGL's annual revenue requirement in the AER's 2009 final decision.

### 13 Operating expenditure objectives

*Q17. Please explain in more detail how the \$1.9 million associated with the proposed pass through event 'significantly affected' ActewAGL's ability to achieve the opex objectives. In light of ActewAGL's current circumstances (including all factors affecting costs that were not anticipated at the time of the determination) please elaborate on how the building block allowance is insufficient to comply with all applicable regulatory requirements, and to maintain the quality, reliability and security of supply of standard control services and the distribution system.*

ActewAGL considers that the unexpected and uncontrollable vegetation growth significantly affected ActewAGL's ability to achieve the operating expenditure objectives outlined in clause 6.5.6 of the transitional chapter 6 of the National Electricity Rules (NER).

As outlined in ActewAGL's November 2013 submission, neither the NER nor the 2009 ACT Distribution Determination provides a definition of "significant". The 2009 ACT Distribution Determination made reference to a "significant materiality threshold" and considered that one per cent should generally apply to pass through events.<sup>13</sup> The same decision also defines a one per cent materiality threshold for general nominated pass through events. This implies that the one per cent threshold is significant and can provide a basis for interpreting whether ActewAGL's ability to achieve the operating expenditure objectives is significantly affected.

Due to the unexpected and uncontrollable increase to vegetation growth rates, following above average rainfall in the ACT, ActewAGL incurred vegetation management costs above the total forecast operating expenditure included in the annual revenue requirement. The increased expenditure was required to comply with the regulatory obligations, such as minimum clearance distances, and to maintain the quality, reliability and security of supply of the distribution system through the supply of standard control services. Maintaining vegetation clearance from lines decreases bushfire risk, thus improving the safety of the ACT community and lessening the risk to other parts of the network, as well as maintaining the reliability of the network through limiting the number of vegetation related outages.

In 2012/13 increased vegetation management costs were 1.10 per cent and 1.07 per cent of the smoothed revenue requirement and annual revenue requirement respectively. As this amount is above the one per cent threshold, ActewAGL considers the increase in costs to be significant.

Other factors affecting costs, not anticipated at the time of the determination, did not provide a circumstance such that ActewAGL's building block allowance was sufficient to achieve the operating expenditure objectives, outlined in clause 6.5.6 of the transitional chapter 6 rules. In 2012/13 ActewAGL's total actual operating expenditure was \$86.6m<sup>14</sup>,

<sup>13</sup> AER 2009, Australian Capital Territory Distribution Determination 2009-10 to 2013-14, Final Decision, p.130

<sup>14</sup> ActewAGL 2014, *Transitional Regulatory Proposal*, p.20

\$12.1m above the operating expenditure allowance of \$74.5m<sup>15</sup> (all in 2008/09 dollars). Similarly, ActewAGL's controllable operating expenditure was \$63.9m, \$13m above the forecast operating expenditure for Efficiency Benefit Sharing Scheme purposes of \$50.9m.<sup>16</sup>

Accordingly, the annual revenue requirement was significantly insufficient to achieve each of the operating expenditure objectives, outlined in clause 6.5.6 of the transitional rules.

---

<sup>15</sup> AER 2012, *Application by ActewAGL for revocation and substitution of 2009-14 ACT Distribution Determination Decision*, p.11

<sup>16</sup> ActewAGL 2014, *Transitional Regulatory Proposal*, p.20

## Attachment A – Confidentiality Claims

## Attachment B – Costs spread sheet

## **Attachment C – Scoping maps after aerial inspections**

## Attachment D – Historical contracts