Attachment 20.27

SA Power Networks: Network Program Deliverability Strategy

Network Program Deliverability Strategy

2015-20 Regulatory Control Period

SA Power Networks

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Contents

Executive Summary

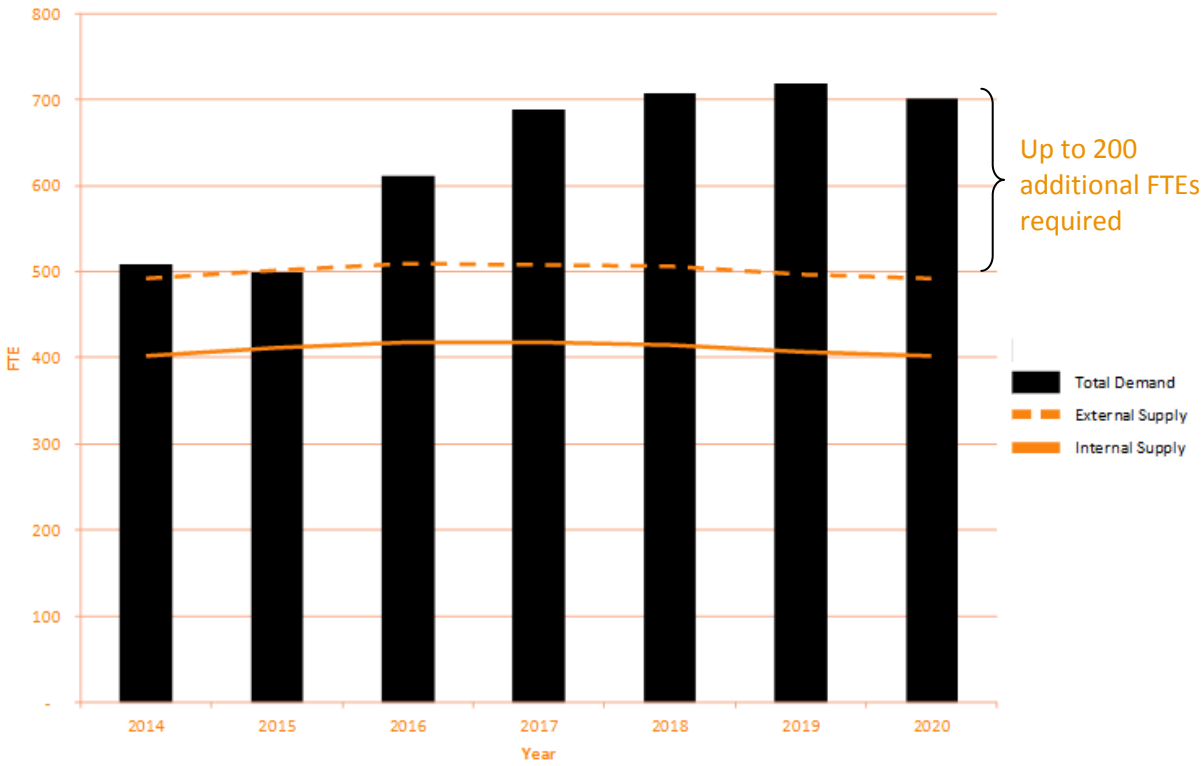
During the 2015-20 Regulatory Control Period (**RCP**) SA Power Networks will engage an additional 180 full time equivalent (**FTE**) trade skilled power line workers (**TSWPs**) to deliver the proposed capital and operating expenditure programs. While the volume of work requires up to 200 TSWPs, our proposed investment in mobility solutions (outlined in Section 16.2.5 of our Regulatory Proposal) is forecast to deliver benefits which reduce the increase in TSWPs required by 20 FTEs.

The increase in TSWPs results from a combination of the increased overall capital expenditure program and a change in the ratio of labour and equipment required for this program. The mix of capital works undertaken by SA Power Networks will shift from capacity related augmentation works (substation and construction work with high materials component) to asset replacement and refurbishment works which are more labour intensive.

SA Power Networks currently employs around 400 FTE TSWPs and supplements these internal resources with around 100 externally contracted TSWPs. We have demonstrated capacity to recruit resources to meet the expanded capital works program undertaken in the 2010-15 RCP.

SA Power Networks has forecast the total TSWP resources required to meet its forecast works program using its Field Services Workplace Planning Model. This model indicates the yearly gap between current resourcing levels and resources required to deliver the program – see Figure 1.

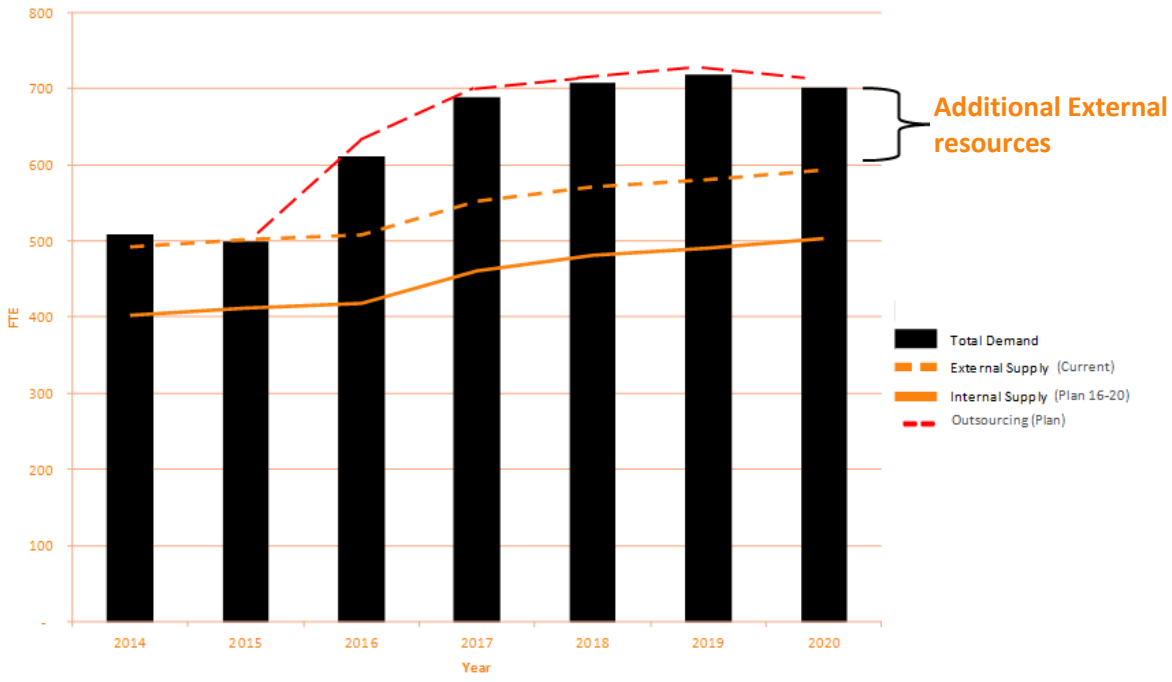
Figure 1: TSWP – Current resources (supply) and Forecast demand for each year of 2015-20 RCP



While we have considered a full range of options, we have determined that the most appropriate resourcing strategy to fill this gap is to progressively recruit an additional 90 FTE as employees and to engage external resources to meet the further resourcing requirements – see Figure 2. This decision has taken into account the following considerations:

- internal and external labour rates are comparable and similar requirements exist for recruitment, training, vehicles and tools for both types of resources;
- the timeframes for which resources are required and the long term consideration of increasing employees levels;
- the desire to increase the flexibility in the resource pool to manage workload peaks;
- the market supply of TSWP labour;
- our ageing workforce and apprentice intakes; and
- our work program type (including location and complexity).

Figure 2: TSWP – Proposed mix of employees and external resources to meet work program



The additional internal resources will be accommodated in the existing and/or planned new depots (as outlined in Section 20.8.3 of the Regulatory Proposal), additional elevated working platform vehicles (outlined in Section 20.8.4 of the Regulatory Proposal) with labour costs included in capital work based on historical project costs and operating cost elements being included in the scale adjustment made to the revealed cost year.

1. Network program delivery by Field Services

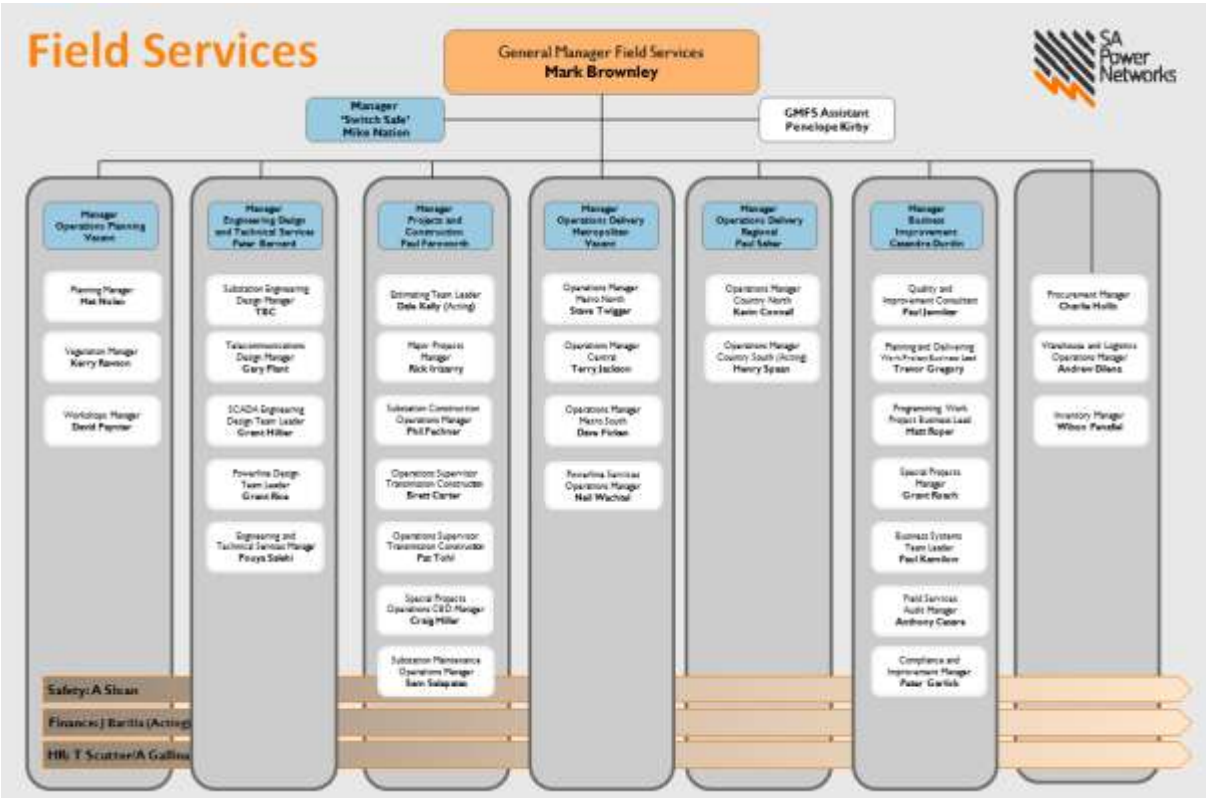
Recurrent and non-recurrent work packages on SA Power Networks' distribution network are defined by our Network Management Department and issued to our Field Services Department through the relevant internal governance, management processes and work procedures. Ultimately, the capital and operating distribution network plans approved through the annual budget process are planned, scheduled and delivered by the Field Services Department.

The Field Services organisational chart is shown in Figure 3. Field Services comprises a dedicated in-house team of power line workers, substation workers, design staff and project managers. Skills and expertise range from apprentices to qualified tradespeople, supervisors, engineers and managers, across multiple functions and disciplines.

Field Services undertakes construction, maintenance and refurbishment activities on network assets including:

- work on overhead and underground distribution lines;
- substation works;
- system improvements (ie; reliability, environmental or other);
- customer connections (major and minor connections);
- supply restoration activities; and
- works on other non-network assets (public lighting, other assets).

Figure 3: Field Services organisation chart



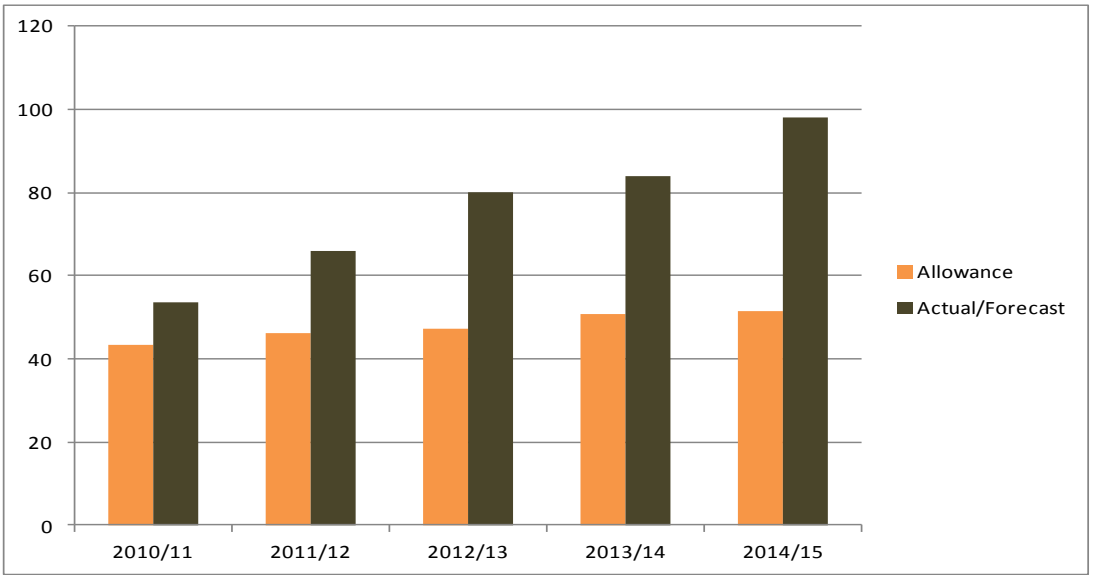
2. Network program and resourcing for 2010-15 RCP

The AER-approved capital allowance for the 2010-15 RCP represented a significant increase over the prior RCP.

The initial two years of the current RCP involved a high level of substation construction and maintenance work to meet customer demand and regulatory requirements. This type of work has a relatively low proportion of labour resource in the total capital spend.

The increased asset inspections and the resulting significant increase in asset replacement work (exceeding the AER's allowances especially after the first two years of the RCP) has seen a shift to more labour intensive power line work being undertaken by TSWPs – see Figure 4.

Figure 4: Total Asset Replacement capital expenditure 2010-15 ($ million, June 15)



To deliver this program SA Power Networks implemented a Field Services Resourcing Strategy at the commencement of the RCP which has progressively increased our internal TSWPs (an increase of 50 FTEs) and established panel contracts to provide additional external resourcing requirements primarily for design, substation and power line construction and maintenance works.

Dedicated sourcing teams were established to secure additional contractors and increase the volume of hours worked by existing contractors (Electel, Lend Lease, and EPS). Table 1 outlines the increased volume of available hours from external power line contractors.

Table 1: Power line 'available' contractor hours

Contractor	2011	2012	2013	2014	2015
Electel	55,000	70,000	70,000	70,000	70,000
Lend Lease	40,000	50,000	60,000	60,000	50,000
EPS	15,000	30,000	30,000	30,000	30,000
Total Hours	**110,000**	**150,000**	**160,000**	**160,000**	**150,000**

These total hours are a significant increase over the 90,000 hours that were available previously.

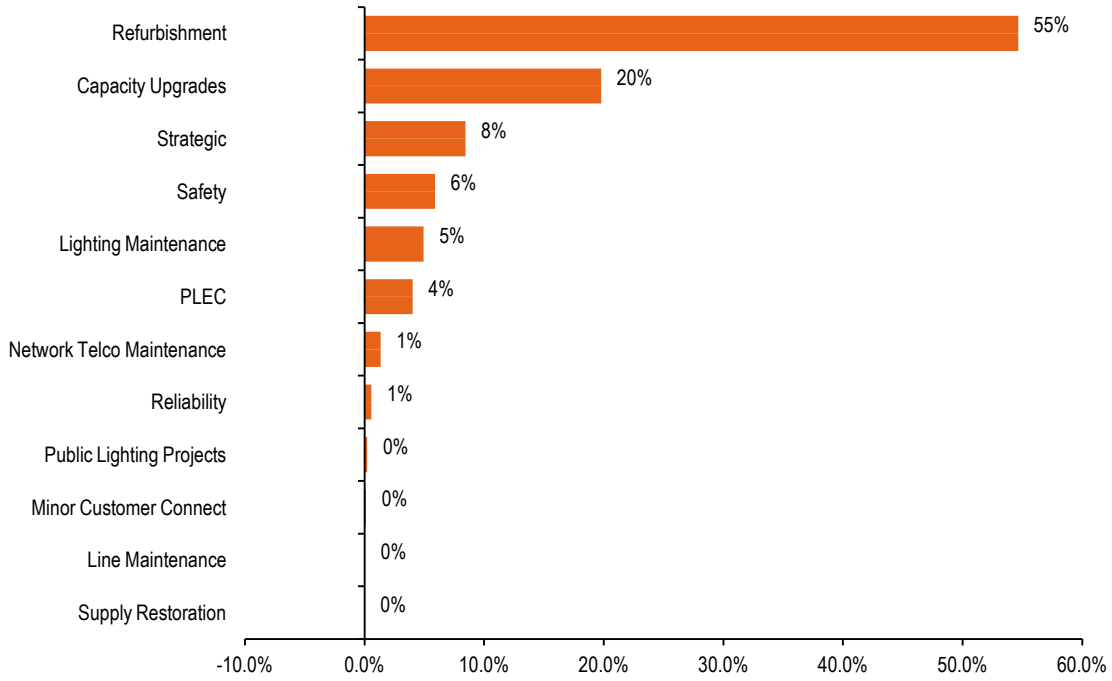
We also utilise other services provided by Electel and Lend Lease. These are summarised in Table 2.

Table 2: External provider services

Contractor	Scope of services provided
Electel	• Distribution system switching • Under-ground cabling • Communications cabling • Power line • Substation • Streetlight construction and maintenance
Lend Lease	• Design • Construction and maintenance of underground and overhead networks • Grid communications • Control systems • Smart meter installation programs

Figure 5 outlines the areas where external TSWPs were deployed in 2013. The main area where additional outsourced TSWP hours has been utilised is in asset refurbishment.

Figure 5: Proportion of all outsourced work undertaken in 2013 (% of total)



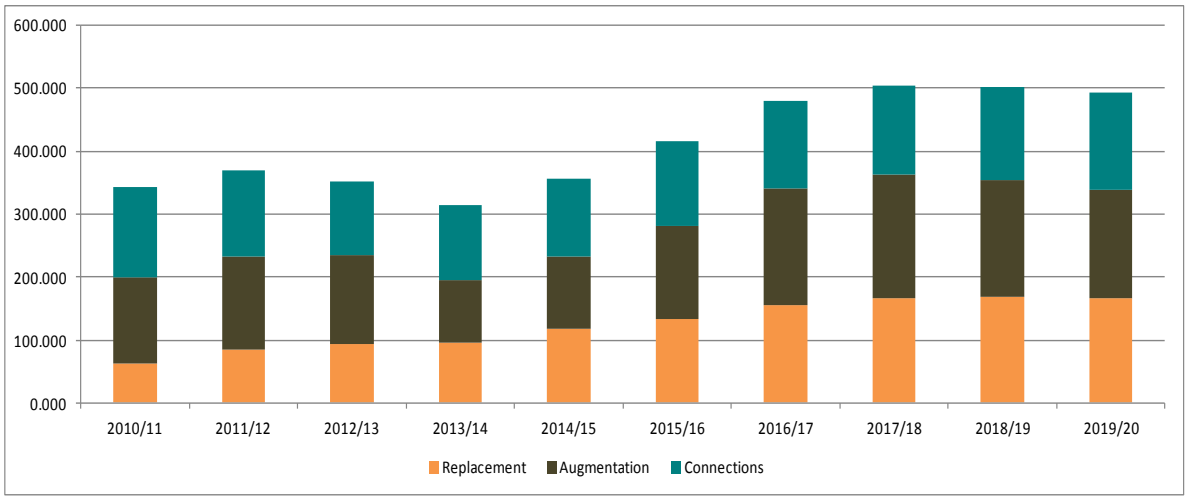
3. Proposed Network program and resourcing requirement for 2015-20 RCP

The significant increase in distribution network capital expenditure proposed for the 2015-20 RCP is required to:

- Deliver on our regulatory obligations;
- Comply with the requirements of our Safety, Reliability, Maintenance and Technical Management Plan **(SRMTMP**) approved by the Essential Services Commission of South Australia;
- Deliver on expectations of customers as informed to us through our customer engagement program.

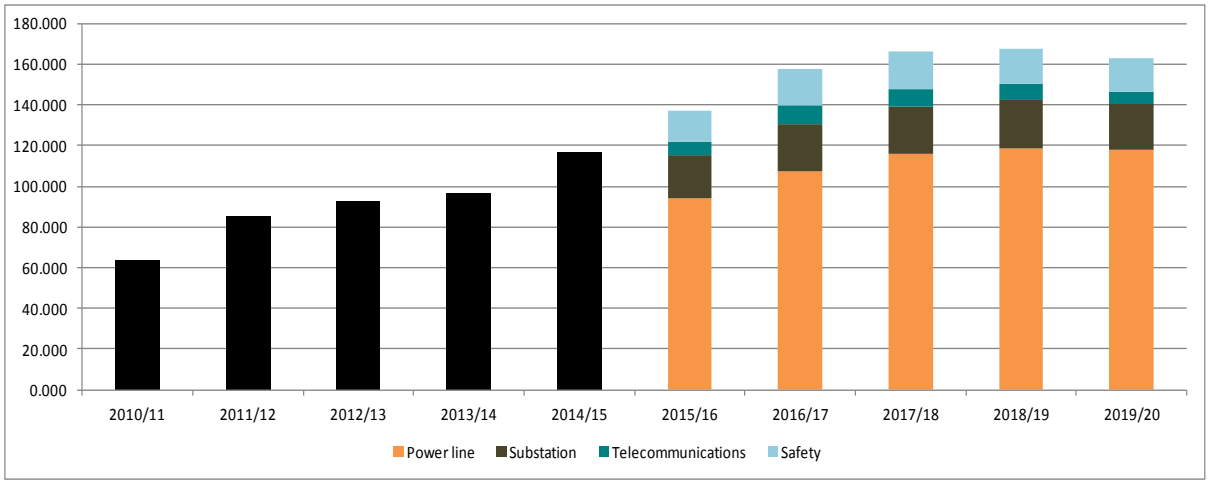
These matters have been discussed in detail in Chapters 9-15 and 20 of our Regulatory Proposal. As outlined in Figure 6 there is a continued increase in the asset replacement work.

Figure 6: Forecast Network (SCS) gross capital expenditure trends and components ($ million, June 15)



The largest component of the asset replacement capital expenditure for the 2015-20 RCP involves power line work, specifically pole and conductor replacement. Figure 7 outlines the relative proportion of major asset replacement works.

Figure 7: Asset Replacement capital expenditure by key components ($ million, June 15)



In addition to the power line work for replacement of ageing assets, there is a significant level of power line work within the augmentation safety works, driven by two major programs:

- **Bushfire mitigation** - based on the outcomes of the Victorian Bushfires Royal Commission and the Powerline Bushfire Safety Taskforce, a new work program is required to manage the increasing risk of bushfires starting from our infrastructure in High Bushfire Risk Areas (**HBFRA**) and to provide secure power supply to bushfire safer precincts. This will include the undergrounding of power lines in HBFRA; and
- **Road safety improvement** - a new program to address road safety hazards by relocating our power lines in high risk locations.

Chapter 11 and Section 20.6.5 of the Regulatory Proposal provide more detail in respect to these programs.

3.1 Field Services Work Planning Model

The Field Services Work Planning Model is used to assist with the longer term planning of resources by skill type and location, based on the Network Management Department's requirements. Specifically, the model is used to forecast the quantity of labour hours which:

- are required during the regulatory period (overall resource demand);
- can be provided internally (internal supply); and
- can be outsourced (the shortfall between the total demand and internal supply).

The model estimates the overall resource demand through the conversion of the network capital and operating 2015-20 forecast expenditure, by category, into hours based on the following process:

1. allocation of expenditure by category split between labour and non labour;
2. allocation of labour expenditure by category split by resource skill type (for example power line[1]; design; substation) and location; and
3. conversion of labour expenditure to hours based on the most current planning information (for example average task times or specific project detail).

The underlying assumptions included in the model to determine the internal supply hours are:

- a base 7.2 hours worked per day plus 10% additional hours for overtime;
- an upper limit of 85% utilisation for a qualified TSWP (allows for safety, training and administrative tasks);
- apprentices have a lower level of utilisation (increasing from 0% in year 1 to 75% by year 4 over their apprenticeship); and
- historical workforce movements comprising:
    - an annual apprentice intake of 20; offset by
    - annual retirements and resignations of 20; and
    - internal transfers within SA Power Networks.

A copy of the workforce planning model is available for review as a supporting document (Attachment 20.107).

[1] The workforce planning model distinguishes between a qualified TSWP and an apprentice by year

3.2 Field Services Resource Supply and Demand

The key work drivers from a resourcing perspective over the 2015-20 RCP are:

- Asset Replacement;
- Safety projects;
- Customer projects;
- Capacity upgrades;
- Minor customer connections;
- Supply restoration; and
- Substation maintenance.

The labour demand (hours) by major expenditure category are detailed in Table 3 which shows:

- The average annual asset replacement hours required during the 2015-20 RCP are 170,000 hours per annum (or 47%) higher than those required in 2014/15; and
- The average annual safety works hours for the 2015-20 RCP are 165,000 hours per annum (or 244%) more than the 2014/15 level.

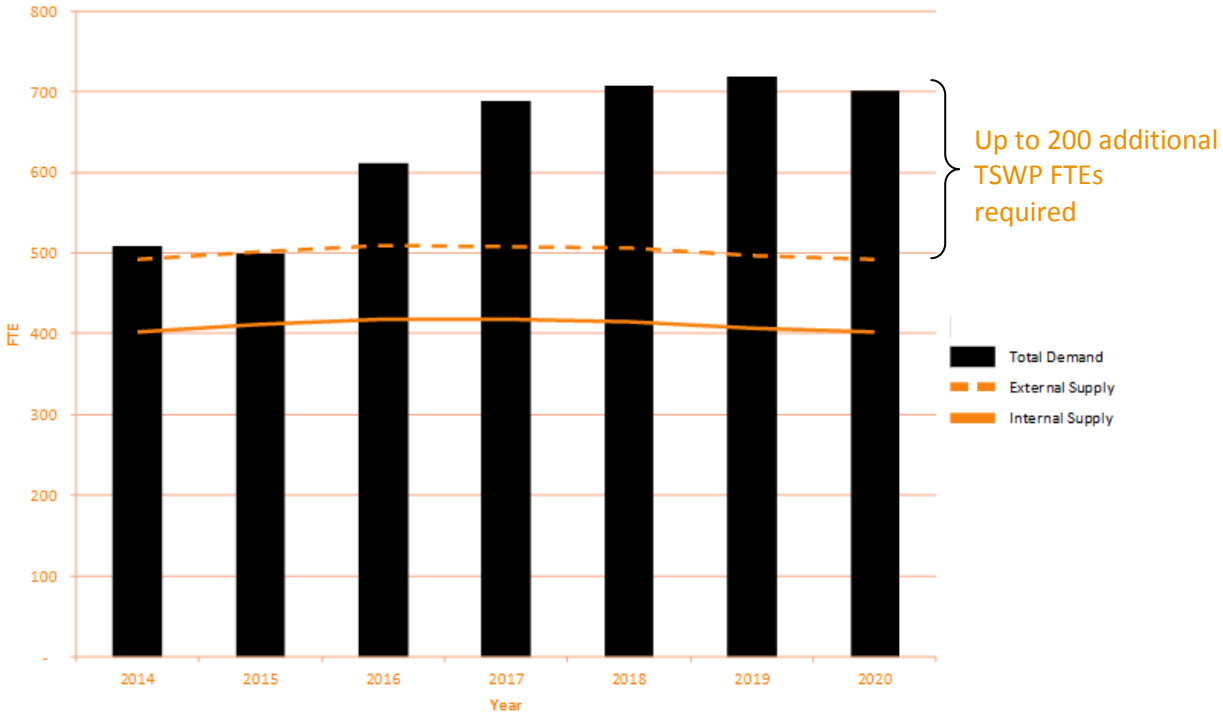
Table 3: Major expenditure category work hours demand

Category	2014/15 Forecast	2015-2020 Total	2015-2020 Average	% Change from 2014/15
Asset Replacement	365,889	2,693,742	538,748	47%
Safety	66,982	1,153,635	230,727	244%
Customer Projects	174,810	1,035,726	207,145	18%
Capacity Upgrades	143,661	919,154	183,831	28%
Minor Customer Connections	115,631	625,611	125,122	8%
Supply Restoration *	107,804	539,019	107,804	0%
Substation Maintenance *	57,996	289,982	57,996	0%

* Maintenance activities are assumed to be at 2014/15 planned levels.

Figure 8 illustrates the total forecast demand requirements in FTE terms. A deficit of up to 200 TSWP FTEs exists between current resource levels and forecast demand.

Figure 8: TSWP – supply and demand model summary



There is a continued focus on field force mobility into the next RCP, as discussed in the relevant business case (Attachment 20.48). We have identified in that business case that the implementation of the recommended information technology mobile solutions will reduce the TSWP requirement by approximately 20. On the basis that this investment is approved, then the resourcing strategy has been developed on a net increase in TSWPs of 180 FTEs.

4. Resourcing options for deliverability for 2015-20 RCP

To provide the number of TSWPs needed to deliver the planned network capital works program, the following options have been considered:

1. The resource gap is fully provided by external resources. Current level of internal TSWP resource levels are maintained (at around 400 FTEs) on the basis that the attrition of older workers through retirement will be matched by the output from our apprentice program;
2. A mixture of increasing the number of internal TSWP resources and a smaller increase in external resource uplift. Several different mix of internal / external uplifts have been assessed; and
3. Reducing current internal TSWP resource levels and outsourcing a greater proportion of work ie more than just the uplift in resources required.

In assessing these options consideration has been given to the following key factors:

- the market supply of TSW labour;
- our ageing workforce;
- the work program type (including size, complexity, location);
- internal and outsourced labour rates; and
- support functions such as training, accommodation (depot) requirements and contract management.

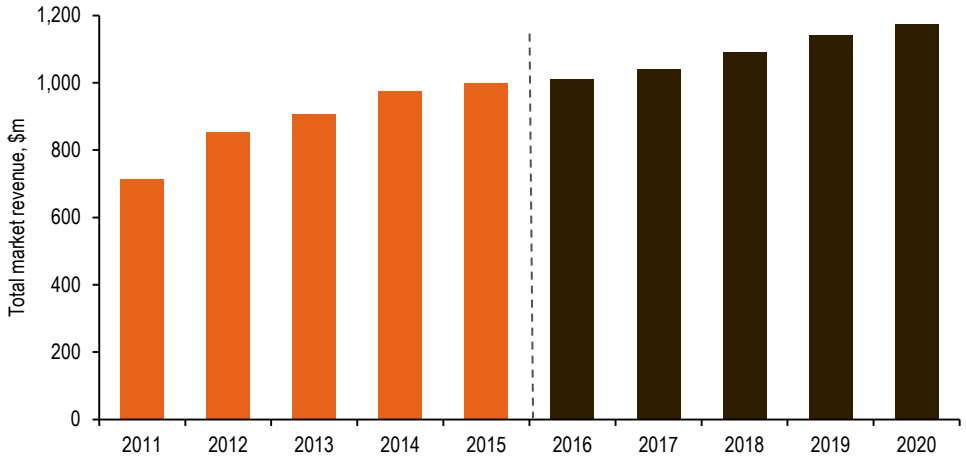
4.1 Market supply of TSW labour

We have reviewed publically available information relevant to this labour market. The most relevant data source for the market for infrastructure construction and maintenance services is from IBIS World data (Infrastructure Maintenance Services in Australia, OD5330, July 2013). This classifies the market for the provision of maintenance and minor capital works on roads, utilities, telecommunications, water supply and wastewater assets and energy generation (not including the construction of major new energy generation assets such as power plants, LNG facilities and other major scale projects).

Nationally, this market is expected to account for $13 billion in revenue in FY 2014, with 7.5% of businesses located in South Australia. This forecast is expected to rise to approximately $15.6 billion by 2020.

Using the share of businesses located in South Australia, it is possible to estimate the South Australian market share at approximately 7.5% of this total which is approximately $976 million in 2014 as shown in Figure 9. However, this assumes that the share of businesses located in South Australia is representative of the national share of revenues. Nationally, this sector accounted for the employment of approximately 48,000 people, and based on the estimated South Australian share, this would be approximately 3,600 people.

Figure 9: Estimated market size for South Australian Infrastructure maintenance services, 2011-20



Source: IBIS World, Infrastructure Maintenance Services in Australia, OD5330, July 2013. Note: This is based on a fixed 7.5% share of the national market across Australia.

However, the market for infrastructure maintenance services is characterised by two other factors which makes a detailed market analysis approach more difficult in this case:

- the market is dominated by smaller players with key sector specialisation; and
- the broad categories of activities included within the market definition compared to our requirements mean that the market for infrastructure maintenance services is much larger than the potential market which can supply skilled staff to us.

Within the classification of the Infrastructure Maintenance Services market in Australia, there is a wide range of sub-sectors including:

- Roads;
- Rail;
- Telecommunications;
- Water supply; and
- Utilities maintenance.

There is a smaller subset of private sector providers who are capable of delivering construction and maintenance services for electricity distribution assets in South Australia. The current expectation is that these contracting arrangements, with some modification, will be able to meet projected shortfall requirements in the 2015-20 RCP.

In making this assessment we have considered the following factors that could limit our ability to recruit external resources as follows:

- In the current period there has been a shortfall of trained lines workers due to high demand across Australia. However, we note that the marketplace is changing with the forecast capital program reductions outlined in the recent NSW Regulatory Proposals.
- Within South Australia, we are a major source of revenue for outsourced electrical distribution asset work. There is limited scope for businesses offering this service to develop a broader portfolio of clients and therefore to increase their resource levels they seek a level

of certainty in workloads. The proposed expenditure program with its higher labour proportion will help alleviate this uncertainty and assumed business risk.

- External providers will be competing with SA Power Networks when recruiting from within the employment market for electrical trades, particularly as we are considered to be an 'employer of choice'. Our resourcing strategy needs to take account of this conflict especially as we seek to develop flexibility in our resourcing arrangements.
- The average age of skilled lines workers in Australia continues to increase and the external provider market may face similar retention issues.
- There is a period of time required to meet safety, training and licensing requirements before trained lines workers currently working in other states and territories are able to work on our network assets. This can limit the movement of skilled staff between states and territories in the short term.

4.2 SA Power Networks Ageing Workforce

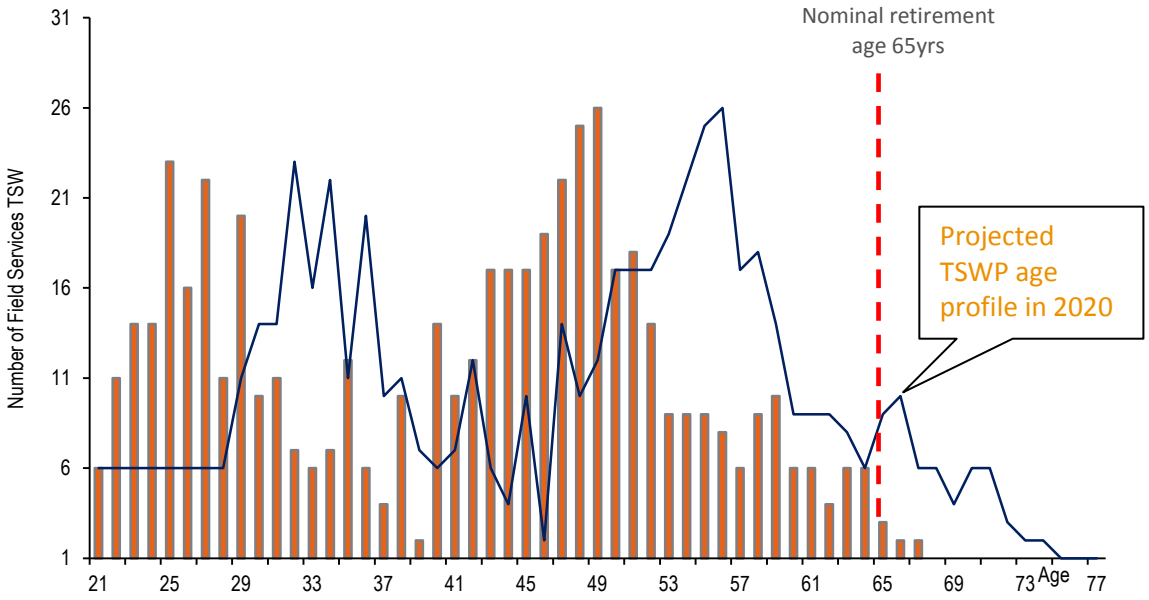
As at July 2014, SA Power Networks currently employs 444 TSWPs, 346 of which are qualified and 98 are apprentices.

The average age of the current Field Services TSW workforce is 41 yrs, with a large proportion of the workers below the age of 30 (less experienced) and above the age of 45 (potentially approaching retirement). The projected shift in age profile of current TSWP employees at the end of regulatory period in 2020 is provided below in Figure 10.

By the end of the 2015-20 RCP, 41 TSWPs are forecast to exceed the nominal retirement age of 65 years. The resourcing strategy needs to consider the extent to which our apprentice intake and our recruitment of trained power line workers is less than, equal to or better than the number of senior TSW workers who retire. This is an Australia-wide issue as the electricity industry has one of the oldest workforces of all Australian industries, with close to half of workers aged 45 and over. The increasing age of electricity industry employees has been accentuated as many workers have delayed retirement following the Global Financial Crisis (**GFC**).

The transitioning and replacement of our ageing workforce, and the recruitment, training and development of new employees are challenges we have been successfully addressing during the current RCP. For example, we have recruited 231 apprentices during the last six years with a retention rate of greater than 90%.

Figure 10: Field Services TSWP age profile - 2014 v 2020



** Apprentices are not shown in the above until they are qualified TSWs.*

4.3 Work program type

The key factors which determine the suitability for Field Services maintenance work or projects to be outsourced are:

- **level of interface risks** - generally more complex assets have more interfaces with the wider network. Some of those assets are also more critical to larger numbers of customers. This means that undertaking work on complex assets which are critical to large numbers of customers leads to a much greater risk of customers being de-energised from faults in work performed.
- **knowledge of the network** – we have institutional knowledge over our network assets, and there are few external parties who have a similar familiarity with our network.
- **willingness to bear risk** - the combination of knowledge of the network, and the interface risks mean that we are generally best placed to bear risks related to asset damage, health and safety, and de-energisation. This means that more complex and more integrated network asset work will generally be undertaken by our internal staff, and less complex and less critical assets can be performed by external parties.
- **informed client status** - we retain an informed client status and capability to maintain control and ownership of the network and associated assets. Outsourcing a large volume of work, over an extended period of time increases the risk of lack of effective management and oversight by our Field Services Department.

Other factors which influence the decision to outsource are:

- **packaging of work** - currently some packages of work are small in scale and infrequent (such as line or substation work in regional areas), and outsourcing of this work is generally greater in cost than delivery through internal resources. However, bundling this work into a larger package of work may in the future reduce this issue.

- **internal utilisation** - we seek to maximise the internal utilisation of our workforce. This means that we plan work to first fully utilise internal resources before committing work to external resources. A clear external work program will assist in engagement of external resources.

Table 4 below outlines some of the types of services and projects which can be provide by external resources. These projects and services consist of varying levels of risk, technical requirements, size and complexity. Analysis of the scope of services and projects to be undertaken in the next RCP indicates that there are few services which must be delivered internally and are not suitable for outsourcing as follows:

- Works with considerable technical complexity and multiple network interfaces;
- Works where inadvertent errors could lead to supply disruptions to major customers and/or a large number of customers; and
- Supply restoration work requiring crews to be available on call.

Table 4: Sample services undertaken by Field Services with potential for outsourcing

Service classification	Currently delivered internally or externally	Potential to outsource
Minor Customer Connection (Standard Charge)	Currently insourced in CBD, due to risk and complexity in this network area, as well as desire to retain internal skill set. Outside CBD, this is delivered both internally and externally	CBD – no current ability Non CBD – potential to outsource
Customer Connection > 15k <= 100k	Currently insourced or outsourced depending on internal resourcing levels and urgency	Yes
Customer Connection > 100k	Currently insourced or outsourced depending on internal resourcing levels and urgency. Design and project management may be undertaken by SA Power Networks, with external delivery of scope of works	Yes
URD Connection / Augmentation	Currently insourced or outsourced depending on internal resourcing levels and urgency	Yes
Distribution Line Refurbishment/Repair – Planned	Currently insourced or outsourced depending on internal resourcing levels and urgency. Generally delivered internally in country regions (due to price), and outsourced in metro regions	Yes
Distribution Line Refurbishment - Unplanned	This generally involves supply restoration (and is time critical). This is also generally higher risk work and less easy to define in scope. Currently insourced, with the exception of contractor support during foreseeable weather events where we may expect to experience a higher volume of unplanned interruptions.	No
Safety Improvements	Currently insourced or outsourced depending on internal resourcing levels and urgency	Yes

4.4 Labour rates and support costs

Assessment of the options has taken into consideration that internal and external labour rates are comparable and similar requirements exist for recruitment, training, vehicles and tools. Accordingly, there is limited cost differential between internal and external resources. The assessment of the preferred resourcing option has therefore been driven primarily by the ability to obtain the resources in the timeframes required and our desire to keep a level of flexibility in the use of resources.

There are two further items of support costs that have been taken into account:

- accommodation (depot) requirements (impacts the level of internal resources; and
- contractor management (impacts the level of external resources).

With respect to depot accommodation we currently have 30 depots strategically located across metropolitan and country regions to service customers. We currently have a plan to upgrade existing depots and the development of several new facilities primarily driven by the need to locate depots near primary work locations (to limit the increase in travel times for jobs), to ensure depots meet modern standards and to enhance the safety of the work places. The resourcing strategy will take account of the incremental costs of incorporating additional TSWPs in these existing and planned facilities.

An increase in the level of work provided to external resources will require an increase in contract management capacity and capability to ensure the required services are delivered in line with contract terms and conditions and contractor performance is managed appropriately.

At a broad level it is considered that these two items effectively offset each other in terms of their significance in assessing the alternative options.

5. Options Assessment and Preferred Option

To provide the number of TSWPs needed to deliver the planned network capital works program, the following options have been considered:

1. The resource gap is fully provided by external resources. Current level of internal TSWP resource levels are maintained (at around 400 FTEs) on the basis that the attrition of older workers through retirement will be matched by the output from our apprentice program;
2. A mixture of increasing the number of internal TSWP resources and a smaller increase in external resource uplift. Several different mix of internal / external uplifts have been assessed; and
3. Reducing current internal TSWP resource levels and outsourcing a greater proportion of work, ie more than just the uplift in resources required.

In considering the above options and noting that the preferred mix of internal and external resources is not dependent on the costs of these resources, the focus of assessing the preferred option is on:

- building a level of flexibility into the mix so that SA Power Networks is best placed to adapt to any unexpected changes in workloads;
- having the necessary skilled resources available in the required timeframes noting the need to balance our recruitment versus recruitment by the external providers;
- acknowledging that the recruitment of employees is likely to be a longer term commitment than the engagement of external resources;
- the limit on apprentice intakes that is possible given the direct supervision requirements for apprentices; and
- the need for SA Power Networks to maintain a resourcing presence across the State to deliver the work that is not suitable for external parties such as supply response.

A qualitative analysis on the three options has been undertaken and the results are summarised in Table 5.

Table 5: Analysis of options considered

Analysis attributes	Option 1	Option 2	Option 3	Rationale
Qualitative scoring: (3 Highest, 1 Lowest)				Options are scored against the attributes on a 3,2,1 ranking. Options can have same ranking
Certainty of future demand for labour	2	2	2	As there is some certainty on future labour requirements beyond 2020, it is possible to increase internal staffing levels
Ability to recruit resources in timely manner	2	3	2	SA Power Networks employer of choice. Firms providing services to SA Power Networks under stable contracts will be well regarded.
Flexibility to adapt to unexpected changes in workloads	3	1	2	SA Power Networks can divert resources to other tasks but cannot reduce costs in short term
Long term security of labour supply	1	3	1	By growing internal headcount, can lock in long term security of labour supply. An increased level of outsourced work will create greater risk of losing long term supply
Ability to deal with ageing workforce	1	3	1	The engagement of new resources through the apprentice program and recruitment will address this issue over time
Ability to do different Work program types	2	3	2	The majority of the services provided by Field Services can be outsourced
Costs of labour and support costs	2	2	1	Cost of service provision comparable across all options with exception of option 3 which may require additional costs to achieve resource mix
Total	**13**	**17**	**11**	

Preferred Option and Resource Level

Option 2 is the preferred option which requires some further consideration of the level of mix between external and internal resource uplift. In this regard we have given consideration to a number of the factors described above including:

- What is the best long term internal resourcing level given the long term nature of this recruitment type;
- The limit on apprentice intake given the "direct supervision" requirement and the size of work crews;
- The desired level of flexibility to ramp use of resources up and down to meet planned work schedules;
- The recognition that while SA Power Networks is an employer of choice sufficient room needs to be provided to external parties to efficiently recruit employees; and
- The ability to accommodate an increase in employees with incremental costs for accommodation (ie constraints on additional resources that can be accommodated in existing depots).

On this basis our best assessment is to progressively recruit an additional 90 TSWPs and to fill the gap with the engagement of external resources.

In summary, based on the analysis undertaken it has been determined that in order to deliver safely and efficiently on the forecast work program, the resourcing strategy will:

- be a continuation of an optimised mix of internal and externally-sourced resources;
- bolster our internal field resource base through the progressive recruitment of an additional (approximately) 90 TSWPs over the next RCP, and maintain our significant apprentice intake program;
- reinforce our external resourcing capability by working with existing contractor 'panel' service providers, and exploit the growing availability of interstate resources as appropriate;
- provide for increased supervision and contractor management capabilities that will be needed to support higher volumes of sub-contracted work;
- have an appropriate number of depots and office locations based on services requirements for customers (refer Property Strategic Plan: Attachment 16.7); and
- ensure that resources have fit-for-purpose, safe and legislatively compliant vehicles (refer Fleet Strategic Plan: Attachment 20.26) and equipment.

As we progressively recruit TSWPs over the 2015-20 RCP, we will also work with our panel contractors to engage the necessary external resources to meet our work program profile. This is shown in Figure 11.

Figure 11: TSWP – Proposed Resourcing Strategy