

# Attachment 10.2

## Regulated Asset Base, Tax Asset Base and Depreciation

### Access Arrangement Information

2 October 2017



Access Arrangement Information (AAI) for the period  
1 July 2017 to 30 June 2022

# Regulated Asset Base, Tax Asset Base and Depreciation

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# 1. Introduction

## 1.1 Purpose

This document details the roll forward of the regulatory asset base (**RAB**) and tax asset base (**TAB**), focusing on the establishment of the opening asset base and depreciation (i.e. asset lives) for the fourth access arrangement (**AA4**).

This document considers:

- Determination/calculation of the opening AA4 RAB and TAB
- Capital expenditure forecasts
- Depreciation
- Economic lives of assets

## 1.2 Structure

This document is structured as follows:

- Section 2 provides a high level summary of Western Power's AA4 total RAB and TAB movements
- Section 3 provides an overview of the AA3 roll forward
- Section 4 AA4 forecasts and key assumptions
- Section 5 details the RAB and TAB depreciation methodologies proposed for AA4

## 1.3 Overview

Key Messages:

- Western Power is proposing to use the same RAB and TAB roll forward methodology as in previous access arrangements
- A straight line depreciation methodology has been adopted for regulatory depreciation
- A diminishing value depreciation methodology with an end of economic life "close off" is proposed for tax depreciation
- Regulatory and tax asset lives remain the same with the exception of metering to reflect the asset lives of the new standard meter
- There are no new or changes proposed for asset categories
- There are no proposed asset disposals for AA4

## 2. Establishing the opening AA4 RAB balances

Western Power has rolled forward its RAB from the start of the third access arrangement (**AA3**) period until 30 June 2017 by applying the methodology that is consistent with the approach taken in the second access arrangement, described below. This option is consistent with the requirements of section 6.48 of the *Access Code*.

In general, this involves the following steps:

- *start with* the opening RAB at the commencement of AA3 (i.e. \$3,853.4 million for distribution and \$2,554.7 million for transmission, as at 1 July 2012, in July 2012 dollars)
- *adjust* this RAB to account for:
  - the difference between any estimated capital expenditure included in that value, and actual capital expenditure undertaken in the preceding access arrangement period, and
  - the difference between any forecast inflation included in that value, and actual inflation observed in the preceding access arrangement period, and
- *add* the value of capital expenditure (net of contributions) incurred from 1 July 2012 to 30 June 2017
- *deduct* the value of disposals and forecast depreciation that occurred from 1 July 2012 to 30 June 2017

Table 2 and Table 3 set out the roll forward of the distribution and transmission RAB from 1 July 2012 to 30 June 2017 in real 2012 dollars.

### 2.1 Inflation

The AA3 decision was based on real 30 June 2012 dollars, these have been converted to real 30 June 2017 dollars using the following CPI data.

**Table 1: CPI data, actual inflation and inflation factors**

Inflation	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
June CPI	180.4					
June CPI (rebased)	100.4	102.8	105.9	107.5	108.6	110.7
Actual inflation	1.18%	2.39%	3.02%	1.51%	1.02%	1.93%
End of year inflation factor	0.907	0.929	0.957	0.971	0.981	1.000

### 2.2 Opening AA3 RAB values

Table 1Table 2 and Table 3 set out the opening values of the distribution and transmission RAB from 1 July 2012 in real 2012 dollars as well as showing the conversion to real 2017 dollars.

**Table 2: Opening AA3 distribution RAB**

Distribution asset group	Value [\$M real as at 30 June 2012]	Value [\$M real as at 30 June 2017]
Wooden Pole Lines	1,131.0	1,247.1
Underground Cables	1,404.1	1,548.1
Transformers	455.1	501.8
Switchgear	375.7	414.2
Street lighting	87.5	96.4
Meters and Services	142.7	157.3
IT	109.5	120.7
SCADA & Communications	20.4	22.4
Other Distribution Non-Network	103.9	114.6
Distribution Land & Easements	23.6	26.0

**Table 3: Opening AA3 transmission RAB**

Transmission asset group	Value [\$M real as at 30 June 2012]	Value [\$M real as at 30 June 2017]
Transmission cables	32.9	36.3
Transmission steel towers	749.0	825.8
Transmission wood poles	214.2	236.2
Transmission Metering	1.9	2.1
Transmission transformers	344.0	379.3
Transmission reactors	15.3	16.9
Transmission capacitors	140.6	155.1
Transmission circuit breakers	681.9	751.9
SCADA and Communications	62.4	68.8
IT	54.6	60.3
Other Non-Network Assets	56.3	62.1
Land & Easements	201.4	222.0

## 2.3 AA3 Capital expenditure and contributions

Capital expenditure incurred during AA3 has been incorporated into the capital base in accordance with section 6.51A of the *Access Code*. AA3 capital expenditure has been assessed against the new facilities investment test detailed in section 6.52 of the *Access Code*.

**Table 4: Gross capital expenditure over AA3 in nominal dollars**

\$M Nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	779.1	804.1	835.8	720.3	540.2
Transmission	226.3	329.3	161.4	125.5	122.0

**Table 5: Gross capital expenditure over AA3 in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	838.9	840.5	860.7	734.2	540.2
Transmission	243.7	344.2	166.2	127.9	122.0

**Table 6: Cash contributions over AA3 in nominal dollars**

\$M Nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	90.1	102.6	77.2	90.8	93.4
Transmission	17.8	1.8	4.9	5.4	15.3

**Table 7: Cash contributions over AA3 in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	97.0	107.2	79.5	92.6	93.4
Transmission	19.2	1.8	5.0	5.5	15.3

**Table 8: Net capital expenditure over AA3 (*capital expenditure less capital contributions*) in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	679.9	671.5	628.9	515.5	364.4
Transmission	224.5	342.4	161.2	122.5	106.7



## 2.4 AA3 asset disposals

The following tables detail the value of the asset disposals that were made over the AA3 period. These disposals primarily relate to the sale of land holdings no longer required. The values below also include insurance recoveries for transmission Bus Tie Transformer (**BTT**) 1 and BTT2 located in Muja. A total of \$6.98m was recovered from insurance claims for BTT1 and BTT2 over AA3, as the cost of these assets has been recovered from the claims, the RAB has been reduced accordingly.

**Table 9: Asset disposals over AA3 in nominal dollars**

\$M Nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	0.9	0.3	4.8	2.8	0.6
Transmission	4.1	4.1	9.0	59.5	1.4

**Table 10: Asset disposals over AA3 in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	0.9	0.3	4.9	2.8	0.6
Transmission	4.4	4.2	9.3	60.6	1.4

## 2.5 AA3 depreciation

As discussed in section 4.5.2, depreciation of the RAB occurs in two parts – the depreciation of the initial capital base and of new capex since 2006. The following tables detail the forecast regulatory depreciation that was included in AA3 revenue against these two categories.

**Table 11: AA3 forecast depreciation of the initial capital base in real 30 June 2012 dollars**

\$Real as at 30 June 2012	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	105.9	105.5	105.4	88.0	81.3
Transmission	56.3	56.3	56.3	56.3	56.3

**Table 12: AA3 forecast depreciation of the initial capital base in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	116.8	116.3	116.2	97.0	89.6
Transmission	62.1	62.1	62.1	62.1	62.1

**Table 13: AA3 forecast depreciation of capital expenditure since 2006 in real 30 June 2012 dollars**

\$Real as at 30 June 2012	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	88.2	108.7	132.1	153.7	174.0

\$Real as at 30 June 2012	2012/13	2013/14	2014/15	2015/16	2016/17
Transmission	28.9	37.5	47.1	56.7	61.1

**Table 14: AA3 forecast depreciation of capital expenditure since 2006 in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	97.2	119.9	145.7	169.5	191.9
Transmission	31.9	41.3	51.9	59.1	67.3

Included in the AA3 decision were values for accelerated depreciation, these are shown the tables below.

**Table 15: AA3 forecast accelerated depreciation over AA3 in real 30 June 2012 dollars**

\$Real as at 30 June 2012	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	3.4	0.5	-	-	-
Transmission	-	-	-	-	-

**Table 16: AA3 forecast accelerated depreciation over AA3 in real 30 June 2017 dollars**

\$Real as at 30 June 2017	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	3.8	0.5	-	-	-
Transmission	-	-	-	-	-

## 2.6 Roll forward of the RAB

Combining all of the values in the preceding tables, the RAB can now be rolled forward over the AA3 period.

**Table 17: AA3 distribution RAB roll forward (\$'million real as at 30 June 2017)**

Distribution	2012/13	2013/14	2014/15	2015/16	2016/17
Opening RAB	4,248.7	4,709.9	5,144.4	5,506.4	5,752.6
Net Capex	679.0	671.2	624.0	512.7	363.8
Depreciation	214.0	236.2	261.9	266.5	281.5
Accelerated depreciation	3.8	0.5	-	-	-
Closing RAB	4,709.9	5,144.4	5,506.4	5,752.6	5,834.9

**Table 18: AA3 transmission RAB roll forward (\$'million real as at 30 June 2017)**

Transmission	2012/13	2013/14	2014/15	2015/16	2016/17
Opening RAB	2,816.7	2,942.8	3,177.6	3,215.4	3,156.0
Net Capex	220.1	338.2	151.9	61.8	105.2
Depreciation	-94.0	-103.4	-114.1	-121.3	-129.4
Accelerated depreciation	0	0	0	0	0
Closing RAB	2,942.8	3,177.6	3,215.4	3,156.0	3,131.8

### 3. Establishing the opening AA4 tax asset base

The TAB is rolled forward using similar methods to the RAB described above. The key differences in methods are:

- The TAB is rolled forward in nominal terms
- Depreciation for the TAB is calculated using the diminishing value method as opposed to the straight line method for the RAB
- Depreciation is based on actual expenditure rather than forecast depreciation

The opening values for the TAB for distribution and transmission are shown in the following tables.

**Table 19: Opening value for the Distribution Tax Asset Base**

Distribution asset group	Value [\$M nominal]
Wooden Pole Lines	2,747.9
Underground Cables	110.2
Transformers	32.2
Switchgear	25.7
Street lighting	35.1
Meters and Services	3.2
IT	31.5
SCADA & Communications	15.9
Other Distribution Non-Network	107.7
Distribution Land & Easements	18.2
Equity Raising Costs	0
<b>TOTAL</b>	<b>3,127.7</b>

**Table 20: Opening value for the Transmission Tax Asset Base**

Transmission asset group	Value [\$M nominal]
Transmission cables	1,328.9
Transmission steel towers	58.8
Transmission wood poles	9.1
Transmission Metering	-
Transmission transformers	165.5

Transmission asset group	Value [\$M nominal]
Transmission reactors	1.9
Transmission capacitors	12.8
Transmission circuit breakers	23.6
SCADA and Communications	72.7
IT	18.8
Other Non-Network Assets	151.0
Land & Easements	200.1
Equity Raising Costs	0
<b>TOTAL</b>	<b>2,046.3</b>

### 3.1 Depreciation of the TAB

Similarly to the RAB, depreciation is split in two parts.

**Table 21: Depreciation of the Initial capital base for the TAB in nominal dollars**

\$M nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	83.8	84.9	80.9	80.0	77.3
Transmission	64.8	66.4	63.6	62.9	60.9

**Table 22: Depreciation of AA3 capital expenditure for the TAB in nominal dollars**

\$M nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	2.1	45.8	76.6	107.6	128.2
Transmission	0.3	15.4	28.5	37.0	43.1

### 3.2 Capital expenditure over AA3

The capital expenditure added to the TAB over AA3 is:

- Actual gross capital expenditure (shown in Table 4)
- less contributions (shown in Table 6)
- less disposals (shown in Table 9)

The resulting capital additions are shown in the following table.

**Table 23: Capital expenditure added to the TAB over AA3 in nominal dollars**

\$M nominal	2012/13	2013/14	2014/15	2015/16	2016/17
Distribution	630.6	642.1	605.9	502.9	363.8
Transmission	204.4	323.5	147.5	60.6	105.2

### 3.3 Roll forward of the TAB over AA3

The following tables show the roll forward of the TAB over the AA3 period.

**Table 24: AA3 distribution TAB roll forward (\$'million nominal)**

Distribution	2012/13	2013/14	2014/15	2015/16	2016/17
Opening TAB	3,127.7	3,668.9	4,179.8	4,628.3	4,943.6
Net Capex	630.6	642.1	605.9	502.9	363.8
Depreciation	-89.3	-131.1	-157.4	-187.6	-205.5
Closing TAB	3,668.9	4,179.8	4,628.3	4,943.6	5,101.9

**Table 25: AA3 transmission TAB roll forward (\$'million nominal)**

Transmission	2012/13	2013/14	2014/15	2015/16	2016/17
Opening TAB	2,043.3	2,182.5	2,424.2	2,479.7	2,440.3
Net Capex	204.4	323.5	147.5	60.6	105.2
Depreciation	-65.2	-81.8	-92.1	-99.9	-104.0
Closing TAB	2,182.457	2,424.197	2,479.651	2,440.342	2,441.580

## 4. AA4 regulated asset base and tax asset base

The following section shows the parameters and assumptions used to derive the capital base over the AA4 period. When determining the AA4 RAB roll forward, consideration is given to the following areas:

- Capital expenditure and the new facilities investment test
- Depreciation
- Forecast inflation

### 4.1 AA4 RAB summary

**Table 26: Distribution RAB roll forward (\$'million real as at 30 June 2017)**

Distribution	2017/18	2018/19	2019/20	2020/21	2021/22
Opening RAB	5,834.9	6,080.8	6,320.0	6,582.2	6,715.3
Net Capex	509.5	520.0	557.4	431.3	445.7
Forecast depreciation	263.6	280.8	295.2	298.3	289.1
Closing RAB	6,080.8	6,320.0	6,582.2	6,715.3	6,871.8

**Table 27: Transmission RAB roll forward (\$'million real as at 30 June 2017)**

Transmission	2017/18	2018/19	2019/20	2020/21	2021/22
Opening RAB	3,131.8	3,183.9	3,277.4	3,396.1	3,473.8
Net Capex	165.8	210.7	245.6	216.0	212.7
Forecast depreciation	113.7	117.2	126.8	138.2	144.3
Closing RAB	3,183.9	3,277.4	3,396.1	3,473.8	3,542.2

### 4.2 AA4 TAB summary

Forecast capex is in input in real as at 30 June 2017 terms, for the purposes of rolling the TAB forward the inflation assumptions used in determining the AA4 Weighted Average Cost of Capital have been used.

**Table 28: Distribution TAB roll forward (\$'million nominal)**

Distribution	2017/18	2018/19	2019/20	2020/21	2021/22
Opening TAB	5,101.9	5,400.3	5,685.5	5,988.7	6,129.2
Net Capex	517.9	537.2	585.2	460.3	483.5
Forecast depreciation	226.5	263.5	295.0	321.1	327.1
Closing TAB	5,516.0	5,802.7	6,048.8	6,197.7	6,366.6

**Table 29: Transmission TAB roll forward (\$'million nominal)**

Transmission	2017/18	2018/19	2019/20	2020/21	2021/22
Opening TAB	2,441.6	2,504.5	2,606.4	2,736.6	2,823.3
Net Capex	168.5	217.7	257.9	230.5	230.7
Forecast depreciation	105.6	115.8	127.7	143.7	148.5
Closing TAB	2,504.5	2,606.4	2,736.6	2,823.3	2,905.5

### 4.3 AA4 capital expenditure

Capital expenditure in AA4 is added to the RAB when it is reasonably expected to satisfy the new facilities investment test. This is consistent with section 6.51 of the *Access Code*.

**Table 30: distribution capital expenditure across AA4**

Distribution [\$M]	2017/18	2018/19	2019/20	2020/21	2021/22
Total (real 2017)	674.9	702.2	718.4	581.5	601.9
Total (nominal)	685.9	725.4	754.4	620.6	652.9

**Table 31: transmission capital expenditure across AA4**

Transmission [\$M]	2017/18	2018/19	2019/20	2020/21	2021/22
Total (real 2017)	178.7	223.4	258.2	229.0	225.8
Total (nominal)	181.6	230.8	271.1	244.3	244.9

### 4.4 Asset disposals

Consistent with the previous approach in AA1 to AA3, Western Power has not forecast any asset disposals over the AA4 period. The capital base will be adjusted for actual asset disposals that occur over the AA4 period when setting the capital base for the subsequent access period. The asset disposals over AA4 will continue to be based on the gross asset sales proceeds.

### 4.5 Depreciation

Key messages:

- No proposed changes to asset group categories for transmission and distribution
- Western Power proposes to maintain the economic lives that were applied in AA3 for majority of the asset groups, except for distribution meters and services which is proposed to be 15 years
- Western Power is maintaining the RAB depreciation approach approved by the ERA in previous access arrangements and depreciate assets using the straight line approach



- Western Power is proposing a slight modification to the TAB depreciation methodology in order to fully depreciate the asset within its stipulated economic tax life

#### 4.5.1 Economic life

Western Power is proposing to maintain the economic lives that were applied in AA3 for majority of the asset groups, except for distribution meters and services which is proposed to be 15 years.

Note that this changes will only affect the calculation of the capital base and target revenue for new facilities investment undertaken during the AA4 period. New facilities investment undertaken in previous access arrangements will continue to be depreciated based on the economic lives that applied at the time the depreciation forecast was developed for the investment.

Table 32 and Table 33 set out the distribution and transmission asset categories and standard lives Western Power proposes to apply to all capital expenditure in the regulatory period.

**Table 32: Distribution asset lives for AA4 expenditure**

Distribution assets	RAB life	Tax life
Wooden Pole Lines	41.00	45.00
Underground Cables	60.00	50.00
Transformers	35.00	40.00
Switchgear	35.00	30.00
Street lighting	20.00	15.00
Meters and Services	15.00	25.00
IT	6.00	4.00
SCADA & Communications	10.16	10.00
Other Distribution Non-Network	10.16	10.00
Distribution Land & Easements	n/a	n/a
Equity Raising Costs	43.000	5.00

**Table 33: Transmission asset lives for AA4 expenditure**

Transmission	RAB life	Tax life
Transmission cables	55.00	47.50
Transmission steel towers	60.00	47.50
Transmission wood poles	45.00	47.50
Transmission metering	40.00	25.00
Transmission transformers	50.00	40.00

Transmission	RAB life	Tax life
Transmission reactors	50.00	40.00
Transmission capacitors	40.00	40.00
Transmission circuit breakers	50.00	40.00
SCADA and communications	11.00	12.50
IT	6.00	4.00
Other non-network assets	16.85	12.50
Land & Easements	n/a	n/a
Equity raising costs	49.00	5.00

#### 4.5.2 RAB depreciation

RAB depreciation modelled in two parts, initial capital base (**ICB**) and new capital expenditure in the access periods following disaggregation. ICB depreciation is depreciating the opening capital base when Western Power was first disaggregated in 2006. New capital expenditure depreciation is depreciating the capital expenditure for each year.

The ERA approved the following methodology for allocating Western Power's actual distribution capital expenditure to approved distribution regulatory asset categories:

- Western Power reported capital expenditure under the following broad activity categories, ie:
  - Growth (Capacity expansion, Customer driven, Gifted assets)
  - Asset replacement and renewal (Asset replacement, State Undergrounding Power Program, Metering, Smartgrid, Wood pole management)
  - Improvement in service (Reliability driven, Rural Power Improvement Program, SCADA & Communications)
  - Compliance (Safety environment & statutory)
  - Corporate (IT, Business support, Equity raising costs).
- The reported capex activity categories are then allocated to the following distribution regulatory asset categories using the ERA approved mapping matrix:<sup>1</sup>
  - Wooden pole lines
  - Underground cables
  - Transformers
  - Switchgear
  - Street lighting
  - Meter services
  - IT

<sup>1</sup> There are two approved mapping matrices, i.e. the AA1 and AA2 mapping matrix; and the AA3 mapping matrix.

- SCADA and communications
- Distribution land & easements
- Equity raising costs.

Initial capital base and annual capital expenditure in each of these distribution regulatory asset categories is depreciated over their approved standard life on a real straight line basis. Western Power proposes to maintain this depreciation methodology for all investments in AA4.

#### 4.5.3 Tax depreciation

Tax depreciation is also conducted in two parts, as per RAB depreciation.

The methodology for Initial capital base tax depreciation is based on proposed changes to modelling the tax asset base as part of the AA3 submission. Refer to section 10.3.2 Modelling tax asset base in the [AA3 Amended access arrangement information for the Western Power Network](#). As approved, Western Power proposed to roll forward the AA3 tax asset base on a straight-line basis, therefore the ICB will continue to be depreciated on a straight line basis.

As part of the AA3 submission Western Power engaged Ernst & Young to review its tax asset base. One of the recommendations was to depreciate the TAB on a diminishing value basis over the approved standard tax life. Western Power has proposed a minor modification to the diminishing value methodology to ensure assets are fully depreciated within its stipulated tax life.

Western Power proposes to maintain ERA's approved asset categories and standard tax lives for all investments that occurred prior to the start of the regulatory period.

The following formula is used for the diminishing value methodology:

*Value of asset x (200% / asset's effective life)*

This formula results in the depreciated assets value getting close to and continues to approach 0, but doesn't fully depreciate by the end of its tax life. Western Power has incorporated an IF statement in its revenue model to "catch" and depreciate the remaining asset value in the final year of the assets tax life.