

# DRAFT DECISION APA VTS Australia Gas access arrangement 2018 to 2022

# Attachment 5 – Regulatory depreciation

July 2017



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#### **Note**

This attachment forms part of the AER's draft decision on the access arrangement for APA VTS Australia for 2018-22. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 - Services covered by the access arrangement

Attachment 2 - Capital base

Attachment 3 - Rate of return

Attachment 4 - Value of imputation credits

Attachment 5 - Regulatory depreciation

Attachment 6 - Capital expenditure

Attachment 7 - Operating expenditure

Attachment 8 - Corporate income tax

Attachment 9 - Efficiency carryover mechanism

Attachment 10 - Reference tariff setting

Attachment 11 - Reference tariff variation mechanism

Attachment 12 - Non-tariff components

Attachment 13 - Demand

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# **Shortened forms**

| Shortened form        | Extended form                              |
|-----------------------|--|
| AER                   | Australian Energy Regulator                |
| АТО                   | Australian Tax Office                      |
| capex                 | capital expenditure                        |
| CAPM                  | capital asset pricing model                |
| СРІ                   | consumer price index                       |
| DRP                   | debt risk premium                          |
| ECM                   | (Opex) Efficiency Carryover Mechanism      |
| ERP                   | equity risk premium                        |
| Expenditure Guideline | Expenditure Forecast Assessment Guideline  |
| gamma                 | Value of Imputation Credits                |
| MRP                   | market risk premium                        |
| NGL                   | National Gas Law                           |
| NGO                   | national gas objective                     |
| NGR                   | National Gas Rules                         |
| NPV                   | net present value                          |
| opex                  | operating expenditure                      |
| PTRM                  | post-tax revenue model                     |
| RBA                   | Reserve Bank of Australia                  |
| RFM                   | roll forward model                         |
| RIN                   | regulatory information notice              |
| RPP                   | revenue and pricing principles             |
| SLCAPM                | Sharpe-Lintner capital asset pricing model |
| STTM                  | Short Term Trading Market                  |
| TAB                   | Tax asset base                             |
| UAFG                  | Unaccounted for gas                        |
| WACC                  | weighted average cost of capital           |
| WPI                   | Wage Price Index                           |

# Regulatory depreciation

When determining the total revenue for APA VTS (APA), we include an allowance for the depreciation of the projected capital base (otherwise referred to as 'return of capital'). Regulatory depreciation is used to model the nominal asset values over the 2018-22 access arrangement period and the depreciation allowance in the total revenue requirement.<sup>2</sup>

This attachment outlines our draft decision on APA's annual regulatory depreciation allowance for the 2018–22 access arrangement period for the VTS. Our consideration of specific matters that affect the estimate of regulatory depreciation is also outlined in this attachment. These include:

- the standard asset lives for depreciating new assets associated with forecast
- the remaining asset lives for depreciating existing assets in the opening capital base.4

#### 5.1 Draft decision

We accept APA's proposal to use the real straight-line method to calculate the regulatory depreciation allowance. However, we do not approve APA's proposed regulatory depreciation allowance of \$107.4 million (\$ nominal) for the 2018–22 access arrangement period. This is mainly because of our decision to update APA's calculation of the remaining asset lives as at 1 January 2018 (section 5.4.2.2) and due to the effect of our determinations on other components of APA's proposal. Discussed in other attachments, these determinations include the opening capital base (attachment 2), and the forecast capex (attachment 6).

We approve APA's proposed asset classes and the standard asset lives assigned to each of its asset classes for the 2018-22 access arrangement period. This is because they are consistent with the approved standard asset lives for the 2013-17 access arrangement period.

We accept APA's proposed weighted average method to calculate the remaining asset lives as at 1 January 2018.5 In accepting the weighted average method, we have

NGR, r. 76(b).

Regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the annual inflation indexation (positive) on the projected capital base.

The term 'standard asset life' may also be referred to as 'standard economic life', 'asset life', 'economic asset life' or 'economic life'.

The term 'remaining asset life' may also be referred to as 'remaining economic life' or 'remaining life'.

We note that the capex determined in this draft decision for 2016 and 2017 are estimates. As part of the final decision, we expect the estimate of capex for 201 to be replaced by actuals and the estimate of capex for 2017 may be revised based on more up to date information by APA in its revised proposal. The capex values are used to calculate the weighted average remaining asset lives. Therefore, we may recalculate APA's remaining asset

updated the proposed remaining asset lives as at 1 January 2018 due to the input changes we made to APA's proposed roll forward model (RFM). These input changes affect the remaining asset lives calculation and are discussed in section 5.4.2.2.

Our draft decision on APA's regulatory depreciation allowance is \$78.1 million (\$ nominal) in total for the 2018–22 access arrangement period as set out in table 5.1.

Table 5.1 AER's draft decision on APA's regulatory depreciation allowance for the 2018–22 access arrangement period (\$million, nominal)

|                                  | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
|----------------------------------|------|------|------|------|------|-------|
| Straight-line depreciation       | 35.7 | 39.6 | 42.4 | 47.6 | 45.0 | 210.3 |
| Less: indexation on capital base | 24.1 | 25.4 | 26.6 | 28.1 | 28.0 | 132.2 |
| Regulatory depreciation          | 11.6 | 14.2 | 15.8 | 19.5 | 17.0 | 78.1  |

Source: AER analysis.

## 5.2 APA's proposal

APA's calculation of the forecast depreciation for the 2018–22 access arrangement period is set out in the proposed post-tax revenue model (PTRM). APA proposed to apply the same standard asset lives as those approved by the AER over the 2013–17 access arrangement period. It also proposed to use the weighted average approach as set out in the AER's RFM for calculating the remaining asset lives as at 1 January 2018. Further, APA proposed to update the expected inflation in each year of the 2018–22 access arrangement to reflect actual inflation on a lagged basis. This update would have an impact on the amount of the regulatory depreciation allowance. This is because a change in expected inflation will change the amount of indexation on the capital base, which is subtracted from the straight–line depreciation amount to calculate the regulatory depreciation allowance. The details of APA's proposed treatment of expected inflation is set out in attachment 3 of this draft decision.

APA's proposed regulatory depreciation for the 2018–22 access arrangement period is set out in Table 5.2.

lives using the method approved in this draft decision to reflect revisions to the 2016 and 2017 capex values for the final decision.

<sup>&</sup>lt;sup>6</sup> APA, Proposed RFM, January 2017.

Table 5.2 APA's proposed regulatory depreciation for the 2018–22 access arrangement period (\$million, nominal)

|                                  | 2018 | 2019 | 2020 | 2021 | 2022 | Total |
|----------------------------------|------|------|------|------|------|-------|
| Straight-line depreciation       | 37.1 | 41.0 | 44.3 | 49.4 | 47.3 | 219.1 |
| Less: indexation on capital base | 20.2 | 21.5 | 22.6 | 23.8 | 23.7 | 111.7 |
| Regulatory depreciation          | 16.9 | 19.5 | 21.7 | 25.6 | 23.7 | 107.4 |

Source: APA VTS - B4 - APA Post Tax Revenue Model revised with WORM (includes 3 March 2017 updates for inflation in response to AER information request IR003) - 16 May 2017.

#### 5.3 AER's assessment approach

In its access arrangement proposal, APA must provide a forecast of depreciation for the 2018–22 access arrangement period, including a demonstration of how the forecast is derived on the basis of the proposed depreciation method.<sup>7</sup>

The depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff. The depreciation schedule may consist of a number of separate schedules, each relating to a particular asset or class of asset.<sup>8</sup> In making a decision on the proposed depreciation schedule, we assess the compliance of the proposed depreciation schedule with the depreciation criteria set out in the NGR.<sup>9</sup> We must also take into account the NGO and the revenue and pricing principles.<sup>10</sup>

Our discretion under the depreciation criteria is limited.<sup>11</sup> The depreciation criteria state that the depreciation schedule should be designed:

- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services<sup>12</sup>
- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets<sup>13</sup>

NGR, r. 72(1)(c)(ii).

<sup>&</sup>lt;sup>8</sup> NGR, rr. 88(1), 88(2).

<sup>9</sup> NGR, r. 89

NGL, s 28; NGR r. 100(1). The NGO is set out in NGL, s. 23. The revenue and pricing principles are set out in NGL, s. 24.

NGR, rr. 89(3) and 40(2). The example provided in r. 40(2) states: The AER has limited discretion under r. 89. Rule 89 governs the design of a depreciation schedule. In dealing with a full access arrangement submitted for its approval, the AER cannot, in its draft decision, insist on change to an aspect of a depreciation schedule governed by r. 89 unless the AER considers the change is necessary to correct non-compliance with a provision of the Law or an inconsistency between the depreciation schedule and the applicable criteria. Even though the AER might consider change desirable to achieve more complete conformity between the depreciation schedule and the principles and objectives of the Law, it would not be entitled to give effect to that view in the decision making process.

<sup>&</sup>lt;sup>12</sup> NGR, r. 89(1)(a).

- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets<sup>14</sup>
- so that (subject to the rules about capital redundancy), an asset is depreciated only once<sup>15</sup>
- so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs. 16

The depreciation criteria also provide that a substantial amount of depreciation can be deferred.<sup>17</sup>

The NGR also require that any forecast must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.<sup>18</sup>

The regulatory depreciation allowance is the net total of the real straight-line depreciation (negative) and the annual inflation indexation (positive) on the projected capital base. Our standard approach is to employ a straight-line method for calculating depreciation. We consider that the straight-line method satisfies the NGR's depreciation criteria. <sup>19</sup> This is because the straight-line method smooths changes in the reference tariffs, promotes efficient growth of the market, allows assets to be depreciated only once and over its economic life, and allows for a service provider's reasonable needs for cash flow.

In assessing APA's proposed regulatory depreciation allowance, we have analysed APA's proposed inputs to the PTRM for calculating depreciation for the 2018–22 access arrangement period. These inputs include:

- the opening capital base as at 1 January 2018
- the forecast net capex in the 2018–22 access arrangement period
- the forecast inflation rate for the 2018–22 access arrangement period
- the standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the 2018–22 access arrangement period
- the remaining asset life for each asset class—used for calculating the depreciation of existing assets associated with the opening capital base as at 1 January 2018.

Our decisions affecting the first three inputs in the above list are discussed elsewhere: opening capital base (attachment 2), forecast inflation (attachment 3) and forecast net

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<sup>13</sup> NGR, r. 89(1)(b).
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<sup>&</sup>lt;sup>14</sup> NGR, r. 89(1)(c).

<sup>&</sup>lt;sup>15</sup> NGR, r. 89(1)(d).

<sup>&</sup>lt;sup>16</sup> NGR, r. 89(1)(e).

<sup>&</sup>lt;sup>17</sup> NGR, r. 89(2).

<sup>&</sup>lt;sup>18</sup> NGR, r. 74(2).

<sup>&</sup>lt;sup>19</sup> NGR, r. 89.

capex (attachment 6). Our decision on the required amendments to APA's proposed regulatory depreciation allowance reflects our determinations on these building block components. Our assessment approach on the remaining two inputs in the above list is set out below.

In general, we consider that consistency in the standard asset life for each asset class across access arrangement periods will allow reference tariffs to vary smoothly over time. This will promote efficient growth in the market for reference services.<sup>20</sup> Our standard method for determining the remaining asset lives is the weighted average method.<sup>21</sup> The weighted average method rolls forward the remaining asset life for an asset class from the beginning of the earlier access arrangement period. This method reflects the mix of assets within that asset class. It also reflects when the assets were acquired over that period and the remaining asset lives of existing assets at the end of that period. The remaining values of all assets are used as weights at the end of the period.<sup>22</sup> APA's proposal has adopted the weighted average method to calculate its remaining asset lives as at 1 January 2018.

#### 5.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the annual building block revenue requirement.<sup>23</sup> Higher (or quicker) depreciation leads to higher revenues over the access arrangement period. It also causes the capital base to reduce more quickly (assuming no further capex). This reduces the return on capital allowance, although this impact is usually smaller than the increased depreciation allowance in the short to medium term.<sup>24</sup>

Ultimately, however, a service provider can only recover the capex it has incurred on assets once. The depreciation allowance reflects how quickly the capital base is being recovered and is based on the remaining and standard asset lives used in the depreciation calculation. It also depends on the level of the opening capital base and the forecast capex. Any increase in these factors also increases the depreciation allowance.

NGR, r. 89(1)(a).

We consider this depreciation method to be a generally superior approach. The reasons are outlined in our decision on the roll forward model for electricity transmission network service providers. See AER, Explanatory statement, Proposed amendment, Electricity transmission network service providers, Roll forward model, August 2010, pp. 5-6.

See AER, Final decision - amended transmission roll forward model, December 2010, pp. 5-6 for further explanation.

Under our standard approach, the distinction is made between straight-line depreciation and regulatory depreciation. The difference being that regulatory depreciation is the straight-line depreciation minus the indexation adjustment.

This is generally the case because the reduction in the capital base amount feeds into the higher depreciation building block, whereas the reduced return on capital building block is proportionate to the lower capital base multiplied by the WACC.

Our standard approach is to maintain the capital base in real terms, meaning the capital base is indexed for expected inflation. The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening capital base. The total revenue requirement is calculated by adding up the return on capital, depreciation, opex, and tax building blocks. Because inflation on the capital base is accounted for in both the return on capital—based on a nominal rate—and the depreciation calculations—based on an indexed capital base—an adjustment must be made to the revenue requirement to prevent compensating twice for inflation.

To avoid this double compensation, we make an adjustment by subtracting the annual indexation gain on the capital base from the calculation of total revenue. Our approach is to subtract the indexation of the opening capital base—the opening capital base multiplied by the expected inflation for the year—from the capital base depreciation. The net result of this calculation is referred to as regulatory depreciation.<sup>26</sup> Regulatory depreciation is the amount used in the building block calculation of total revenue to ensure that the revenue equation is consistent with the use of a capital base, which is indexed for inflation annually.

This approach produces the same total revenue requirement and capital base as if a real rate of return had been used in combination with an indexed capital base. Under an alternative approach where a nominal rate of return was used in combination with an un-indexed (historical cost) capital base, no adjustment to the depreciation calculation of total revenue would be required. This alternative approach produces a different time path of total revenue compared to our standard approach. In particular, overall revenues would be higher early in the asset's life (as a result of more depreciation being returned to the service provider) and lower in the future—producing a steeper downward sloping profile of total revenue. <sup>27</sup> Under both approaches, the total revenues being recovered are in present value neutral terms—that is, returning the initial cost of the capital base.

Figure 5.1 shows the recovery of revenue under both approaches using a simplified example.<sup>28</sup> Indexation of the capital base and the offsetting adjustment made to depreciation results in smoother revenue recovery profile over the life of an asset than if the capital base was un-indexed.

The relative size of the inflation indexation and straight-line depreciation, and their impact on the capital base using APA's proposal is shown in the capital base

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<sup>&</sup>lt;sup>25</sup> NGR, cl. 87(4)(b).

If the asset lives are extremely long, such that the capital base depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. The indexation adjustment is greater than the capital base depreciation in such circumstances

A change of approach from an indexed capital base to an un-indexed capital base would result in an initial step change increase in revenues to preserve NPV neutrality.

The example is based on the initial cost of an asset of \$100, a standard economic life of 25 years, a real WACC of 7.32%, expected inflation of 2.5% and nominal WACC of 10%. Other building block components such as opex, tax and capex are ignored for simplicity as they would affect both approaches equally.

attachment 2. A ten per cent increase in the straight-line depreciation causes revenues to increase by about three per cent.

\$16 \$14 \$12 \$10 \$8 \$6 \$4 \$2 \$0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 -Nominal WACC, indexed capital base ----Nominal WACC, non-indexed capital base

Figure 5.1 Revenue path example – indexed vs un-indexed capital base (\$ nominal)

Source: AER analysis.

#### 5.4 Reasons for draft decision

We accept APA's proposed method to calculate the regulatory depreciation allowance which is the straight-line depreciation less the annual inflation indexation on the projected capital base. However, we do not approve APA's proposed regulatory depreciation allowance of \$107.4 million (\$ nominal). Our draft decision on APA's regulatory depreciation allowance is \$78.1 million (\$ nominal) over the 2018–22 access arrangement period, a reduction of \$29.3 million (\$ nominal) or 27.3 per cent compared to the proposed amount. This reduction is made because of our update to APA's calculation of its remaining asset lives (section 5.4.2.2), and also because of our amendments to other components of the proposal.

We accept APA's proposed standard asset lives for its asset classes. We also accept APA's proposed weighted average method to calculate the remaining asset lives as at 1 January 2018. In accepting the weighted average method, we have updated APA's proposed remaining asset lives for each asset class.

Our determinations on other components of APA's proposal also affect the calculation of the regulatory depreciation allowance.<sup>29</sup> These include:

- a reduction to APA's forecast net capex of \$41.1 million (\$ 2017) or 16 per cent.<sup>30</sup>
   Our detailed assessment of the proposed forecast capex allowance is set out in attachment 6.
- a reduction to the opening capital base as at 1 January 2018 of \$23 million (\$ nominal) or 2.3 per cent. Our detailed assessment of the proposed opening capital base is set out in attachment 2.
- an increase to APA's proposed expected inflation. Our detailed assessment of the proposed expected inflation is set out in attachment 3.

Table 5.3 sets out our draft decision on the standard and remaining asset lives as at 1 January 2018 for APA.

Table 5.3 AER's draft decision on APA's standard and remaining asset lives as at 1 January 2018 (years)

|                                 | Standard asset life | Remaining asset life |
|---------------------------------|---------------------|----------------------|
| Pipelines                       | 55.0                | 37.1                 |
| Compressors                     | 30.0                | 21.9                 |
| City gates and field regulators | 30.0                | 21.9                 |
| Odorant plants                  | 30.0                | 18.0                 |
| Gas quality                     | 10.0                | 8.4                  |
| Other                           | 5.0                 | 4.1                  |
| General buildings               | 60.0                | 34.4                 |
| General land                    | n/a                 | n/a                  |

Source: AER analysis. n/a Not applicable.

## 5.4.1 Regulatory depreciation method

We are required to assess APA's proposed depreciation schedule against the depreciation criteria as set out in r. 89 of the NGR. We accept APA's proposed method to calculate the regulatory depreciation allowance which is the straight-line depreciation amount less the annual inflation indexation on the projected capital base. APA's proposed PTRM is based on the AER's PTRM for calculating the total revenue

<sup>29</sup> NGR, rr.88–90.

The capex figures presented here does not include the half year WACC adjustment applied in the PTRM to account for the time value of money.

requirement and is broadly consistent with our standard approach for calculating regulatory depreciation as discussed in section 5.3.<sup>31</sup> We therefore accept APA's proposal because we are satisfied that the proposed depreciation method complies with the depreciation criteria.<sup>32</sup>

In the final decision, we will use updated inputs for calculating the regulatory depreciation allowance such as the opening capital base (attachment 2) and remaining asset lives (section 5.4.2.2).

#### 5.4.2 Asset lives

The straight-line depreciation component of regulatory depreciation is calculated by dividing the asset value for each asset class by its standard asset life (for new assets) or remaining asset life (for existing assets). Our draft decision on APA's standard and remaining asset lives follows.

#### 5.4.2.1 Standard asset life

We accept APA's proposed standard asset lives for its asset classes for the 2018–22 access arrangement period, because they are consistent with our approved standard asset lives for the 2013–17 access arrangement period. We compared the standard asset lives proposed by APA to those approved in our recent decisions for other gas transmission service providers. Table 5.4 shows that APA's proposed standard asset lives for key gas transmission asset types for the VTS are lower than that of APTNT and APTPPL for the Amadeus and Roma to Brisbane Pipelines. However, we do not consider the difference is significant, particularly in terms of their impact on overall depreciation. In addition, we consider that consistency in the standard asset life for each asset class across access arrangement periods will allow reference tariffs to vary smoothly over time. This will promote efficient growth in the market for reference services. Therefore, on balance, our draft decision is to accept the proposed standard asset lives.

We are satisfied the proposed standard asset lives reflect the requirements of r. 89(1) of the NGR. Table 5.3 sets out our draft decision on the standard asset lives for APA over the 2018–22 access arrangement period.

The exception is APA's proposed approach to update the expected inflation in each year of the 2018–22 access arrangement to reflect actual inflation on a lagged basis. We reject this proposed approach and the reasons are discussed in attachment 3.

<sup>&</sup>lt;sup>32</sup> NGR, r. 89

For example, AER: Access arrangement final decision APA GasNet Australia (Operations) Pty Ltd 2013–17 Part 2: Attachments, March 2013, p.101 and AER: Final decision Amadeus Gas Pipeline access arrangement attachment 5— Regulatory depreciation, May 2016, p. 9.

<sup>&</sup>lt;sup>34</sup> NGR, r. 89(1)(a).

Table 5.4 Comparison of standard asset lives (years)

|                       | APA VTS | APTNT | APTPPL |
|-----------------------|---------|-------|--------|
| Pipelines             | 55      | 80    | 80     |
| Compressor            | 30      | 30    | 35     |
| Meters and regulators | 30      | 50    | 40     |

Source: APA VTS - B2 -APA Post Tax Revenue Model - 20170103 - Public, APA, Roma to Brisbane Gas Pipeline Access Arrangement 2017–2022 proposed PTRM, September 2016, AER, Final decision Amadeus Gas Pipeline access arrangement attachment 5 — Regulatory depreciation, May 2016, p. 9.

#### 5.4.2.2 Remaining asset lives

We accept APA's proposed weighted average method to calculate the remaining asset lives as at 1 January 2018.<sup>35</sup> The proposed method is consistent with our preferred approach as discussed in section 5.3. In accepting the weighted average method, we have updated the proposed remaining asset lives as at 1 January 2018 because we made several changes in the proposed RFM which affect the calculation of the weighted average remaining asset lives. As discussed in attachment 2, these changes are:

- the inclusion of the as-commissioned opening capital base as at 1 July 2013
- indexing the capital base for actual CPI over the 2013–17 access arrangement period
- using the net capex (as-commissioned) and associated forecast regulatory depreciation as approved in our 2013–17 access arrangement decision for rolling forward the as-commissioned capital base over the 2013–17 access arrangement period.

Table 5.3 sets out our draft decision on the remaining asset lives as at 1 January 2018 for APA.

#### 5.5 Revisions

We require the following revisions to make the access arrangement proposal acceptable:

We note that the capex determined in this draft decision for 2016 and 2017 are estimates. As part of the final decision, we expect the estimate of capex for 20116 to be replaced by actuals and the estimate of capex for 2017 may be revised based on more up to date information by APA in its revised proposal. The capex values are used to calculate the weighted average remaining asset lives. Therefore, we may recalculate APA's remaining asset lives using the method approved in this draft decision to reflect revisions to the 2016 and 2017 capex values for the final decision.

| Revision 5.1 | Make all necessary amendments to reflect this draft decision on the regulatory depreciation allowance for the 2018–22 access arrangement period, as set out in table 5.1. |
|--------------|---|
| Revision 5.2 | Make all necessary amendments to reflect this draft decision on the remaining asset lives as at 1 January 2018, as set out in Table 5.3.                                  |