Tasmanian Audit Office

Property, plant and equipment

Valuation
Impairment
Common challenges

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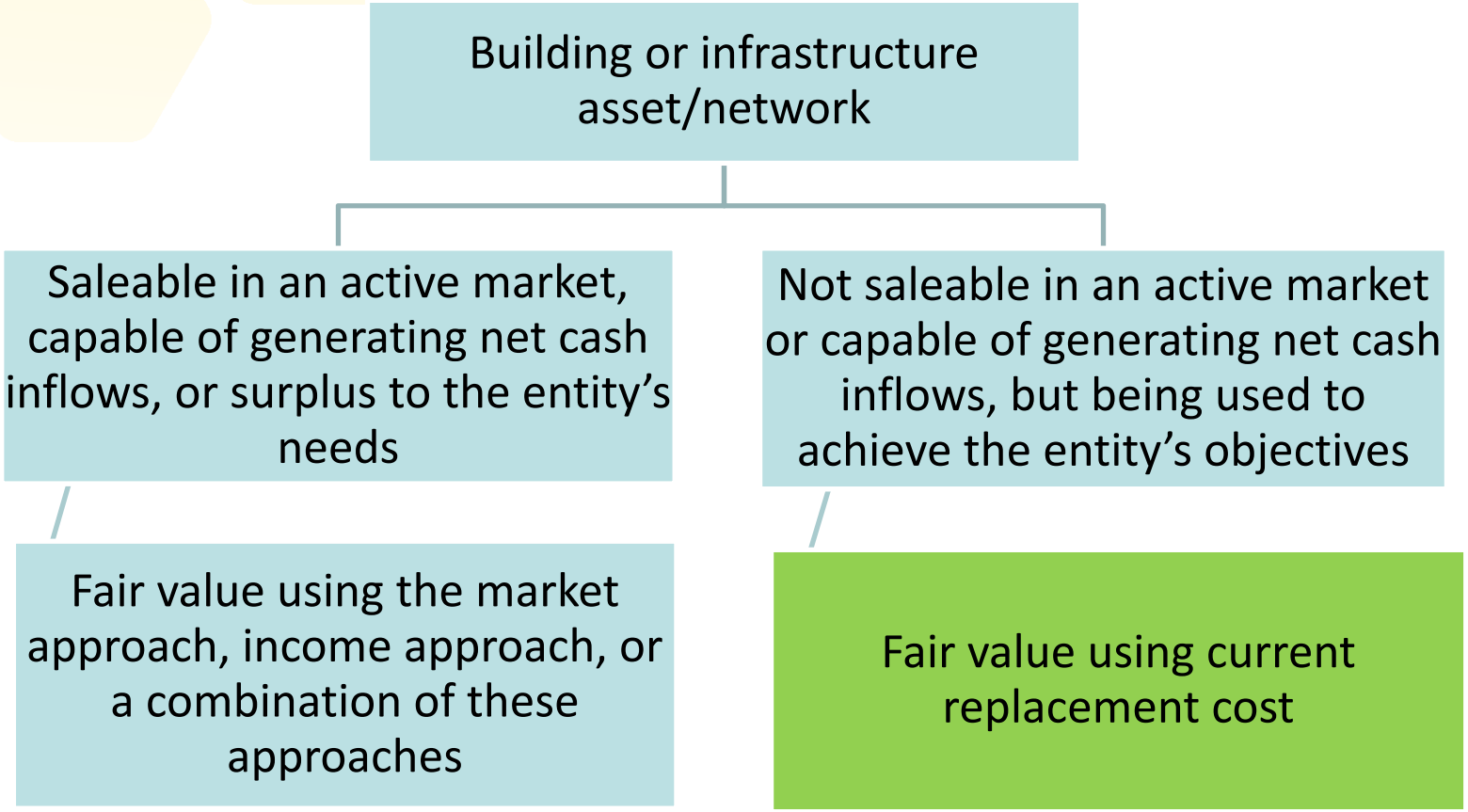
Appropriate valuation approach



For your infrastructure assets still in use, what valuation approach do you use?

Poll

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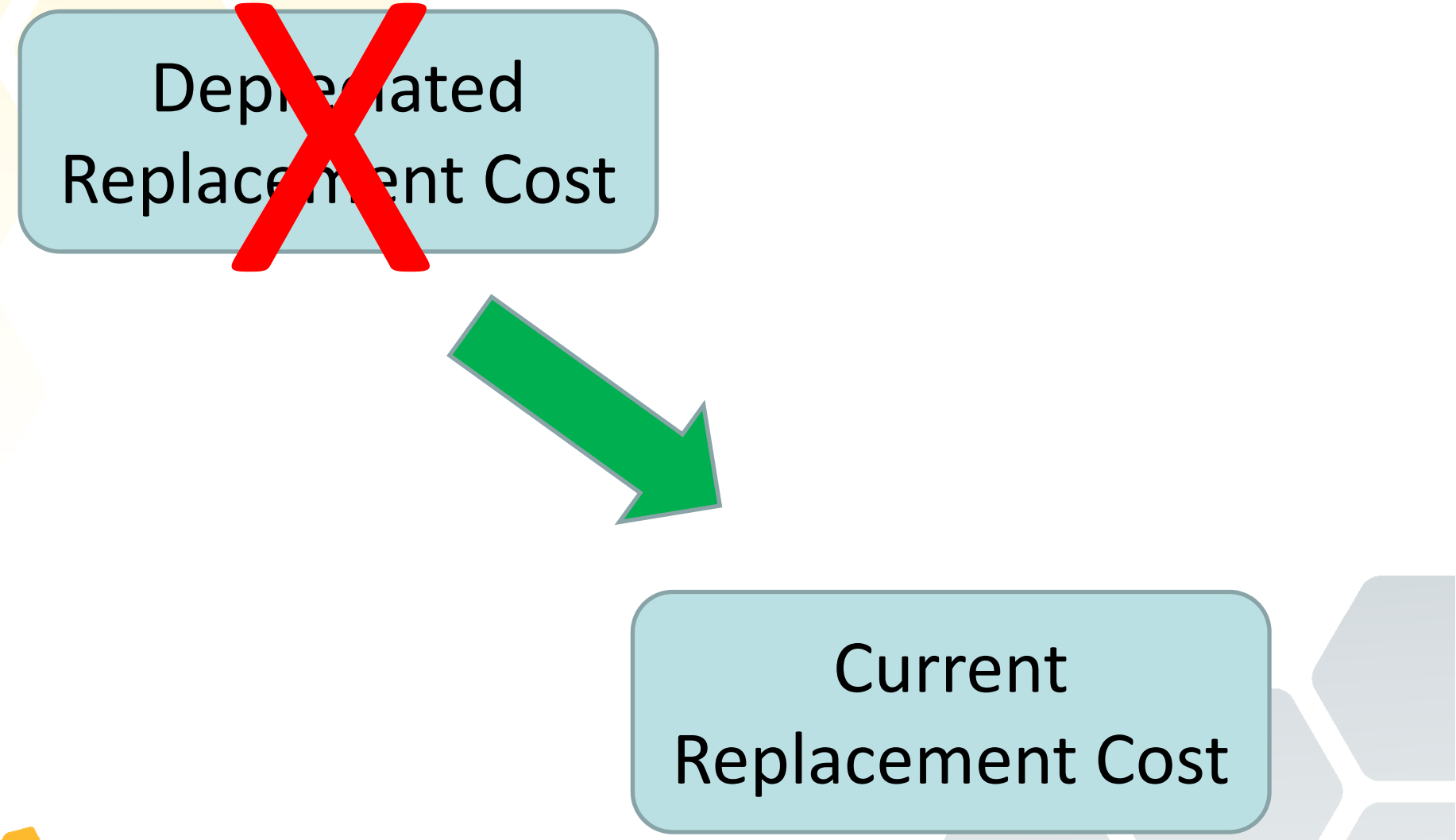

Depreciated Replacement Cost
Current Replacement Cost

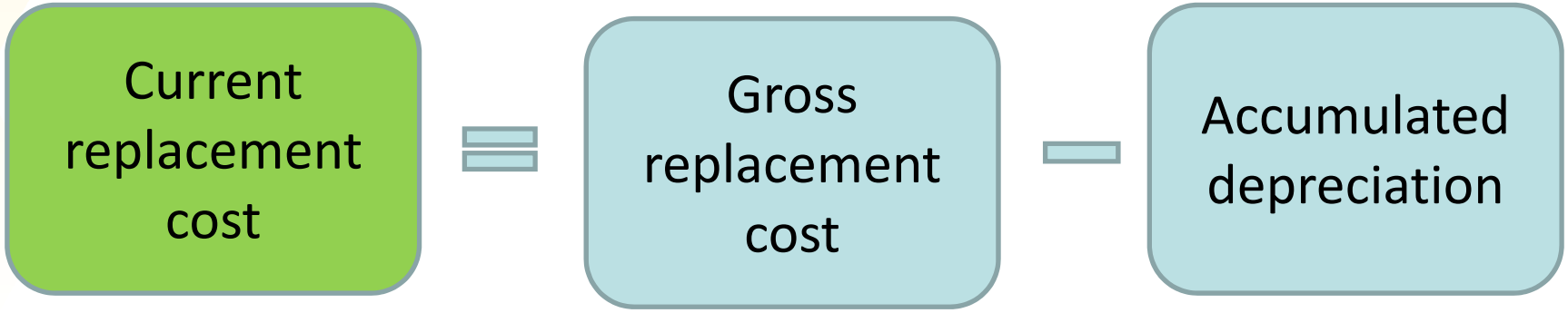
Current replacement cost

Defined by AASB 13:

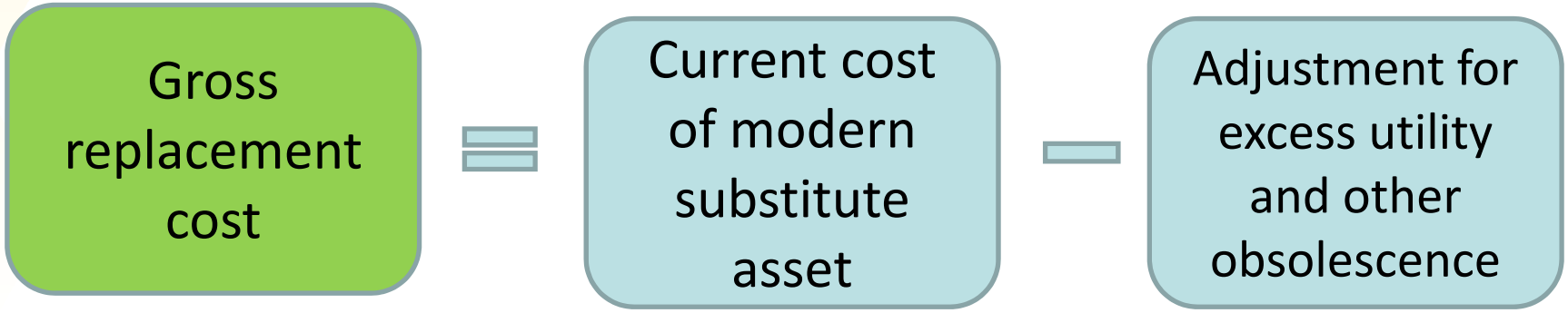
- a valuation technique that reflects the amount that would be required to currently replace the service capacity of an asset.

- *Current replacement cost is the cost to …. acquire or construct a substitute asset of comparable utility, adjusted for obsolescence.*

Overview of current replacement cost



Deriving gross replacement cost



Current cost of modern substitute asset

Current cost of a significant part of the modern asset = Number of units × Unit rate

The table below provides two simple examples of units and unit rates.

Asset	Significant part	Number of units (a)	Unit rate (b)	Current *cost* (a x b)
Hospital building	External doors	10 doors	$4 000 / door	$40 000
Sealed Road	Bitumen seal spray	50 000 m^2	$4.50 / m^2	$225 000

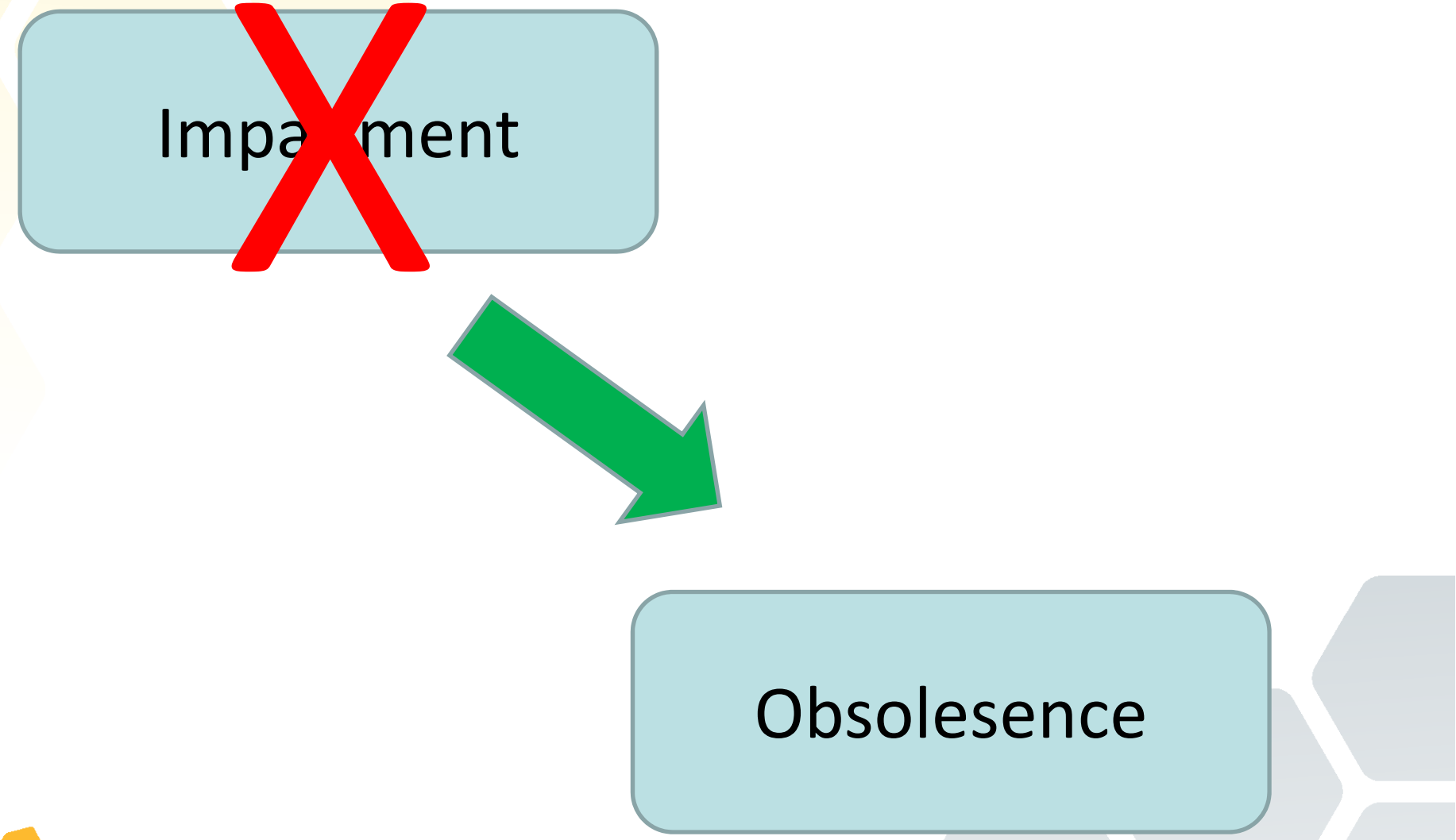
Example

Sources for unit rate development:

- actual labour and materials costs for recent projects undertaken by the entity
- schedules of rates supplied by developers on handover of assets
- schedules of rates provided by tenderers for capital works
- advice from a panel of industry experts.
- unit rates published by external experts such as the Roads and Transport Alliance for roads, Cordell's or Rawlinson's
- other benchmark data from nearby or otherwise comparable entities.

Excess utility normally takes two forms.

Type of utility	Description	Examples	Adjustment required
Quantity of outputs (asset size)	In many cases, entities would choose to replace their assets with a larger version, or be legally required to do so. In these cases, the gross replacement cost needs to reflect the service capacity of the existing asset, rather than the desired service capacity.	An entity would replace a four-lane road with a six-lane road today due to increased usage during peak periods. Changes in construction codes for hospitals require the number of bathroom facilities per patient, resulting in the modern building being larger than the existing building.	In practice, valuers usually take size differences into account by applying the unit rates of modern components to the quantities of the existing asset. Ideally, the difference in size between the modern substitute asset and the existing asset will not be so great as to have a material impact on the unit rates for each component (e.g. due to economies of scale). Otherwise, adjustments for economies of scale are required.
Quality of outputs (asset standard)	The quality of infrastructure often increases over time due to factors such as technology advances and enhancements to construction codes. It is inappropriate for entities to base gross replacement cost on these modern standards if they do not represent the utility that is currently in place.	Improved air conditioning systems. Increased mobility support requirements such as ramps and lifts for modern buildings.	If the modern substitute asset has a component that is absent in the exiting asset, the adjustment amount is the full amount of that component. If a component in the existing building has less utility than the modern component, the adjustment amount is any surplus in the current cost of the modern component over the existing component. Where current prices are not available for the gross utility provided by the existing asset, an estimate is required.


Impairment
Obsolesence

Type of obsolesence	Description	Example	Adjustment required for example
Functional (technological) obsolescence	Functional obsolescence includes: • Superseded design, technology or materials • Over-engineering The modern substitute asset is typically devoid of functional obsolescence. Adjustments for excess utility capture functional obsolescence.	For infrastructure, examples of functional obsolescence additional to that captured by adjustment for excess utility are rare.	In this example, entities should base the gross replacement cost on the smaller sized substitute.
Economic (external) obsolescence	When external influences such as changes in population, income levels or the regulatory environment cause a permanent decrease in demand for related services. A hypothetical willing market buyer would only be prepared to incur the costs required to meet an asset's expected future peak level of demand.	A recently constructed school that is of a modern standard, but whose required maximum future capacity has decreased because of the unexpected closure of a mine that was the major employer in the region.	The substitute asset is a smaller sized school sufficient to cater for the revised estimates of future student numbers. Therefore, adjustments are needed to gross replacement cost to reflect the decrease in size required.

Case study

Impact of excess utility and obsolescence on gross replacement cost

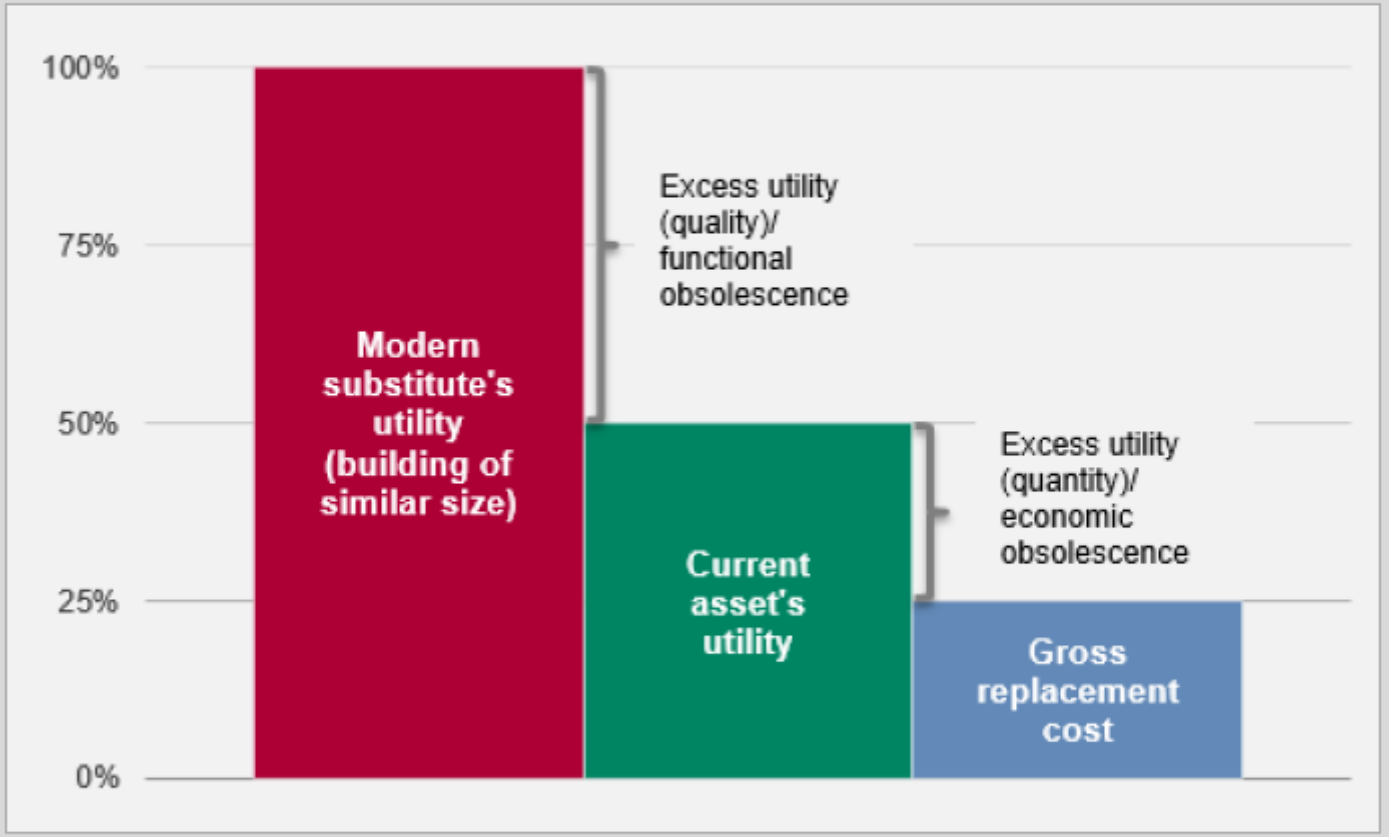
The modern fire protection system is more expensive than, and twice as effective as, the system in place for an existing building. We can view this difference equally as excess utility (greater outputs) and functional obsolescence (outdated technology). In addition, the entity would replace the existing building today with a building half its size as it has permanent excess capacity because of economic obsolescence.

Poll

What impact, if any, will there be on GRC?

Case Study
Impact of excess utility and obsolescence on gross replacement cost

The modern fire protection system is more expensive than, and twice as effective as, the system in place for an existing building. We can view this difference equally as excess utility (greater outputs) and functional obsolescence (outdated technology). In addition, the entity would replace the existing building today with a building half its size as it has permanent excess capacity because of economic obsolescence.



The gross replacement cost is the utility embodied by the existing asset that is required to meet future demand. This is less than the modern asset because it is inappropriate for an entity to recognise value that it has not acquired or does not require. Entities should not recognise an increase in asset value and subsequent revaluation gain because the requirements of building codes have increased, unless they have actually implemented the new requirements.

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Calculating accumulated depreciation

- The current replacement cost valuation approach involves making adjustments for obsolescence.
- Although obsolescence is broader than depreciation, it still includes depreciation.
- The physical deterioration portion of obsolescence is essentially its accumulated depreciation.

Example

Public infrastructure with constant service capacity:

specialised buildings, whose potential to accommodate students, patients, or prisoners, for example, is the same from one year to the next.

roads and bridges, which have the same level of traffic capacity, regardless of whether they are in new condition or moderate condition.

drains, whose benefit is being in place to provide a service when it rains, and whose value does not increase or decrease based on the expected rainfall.

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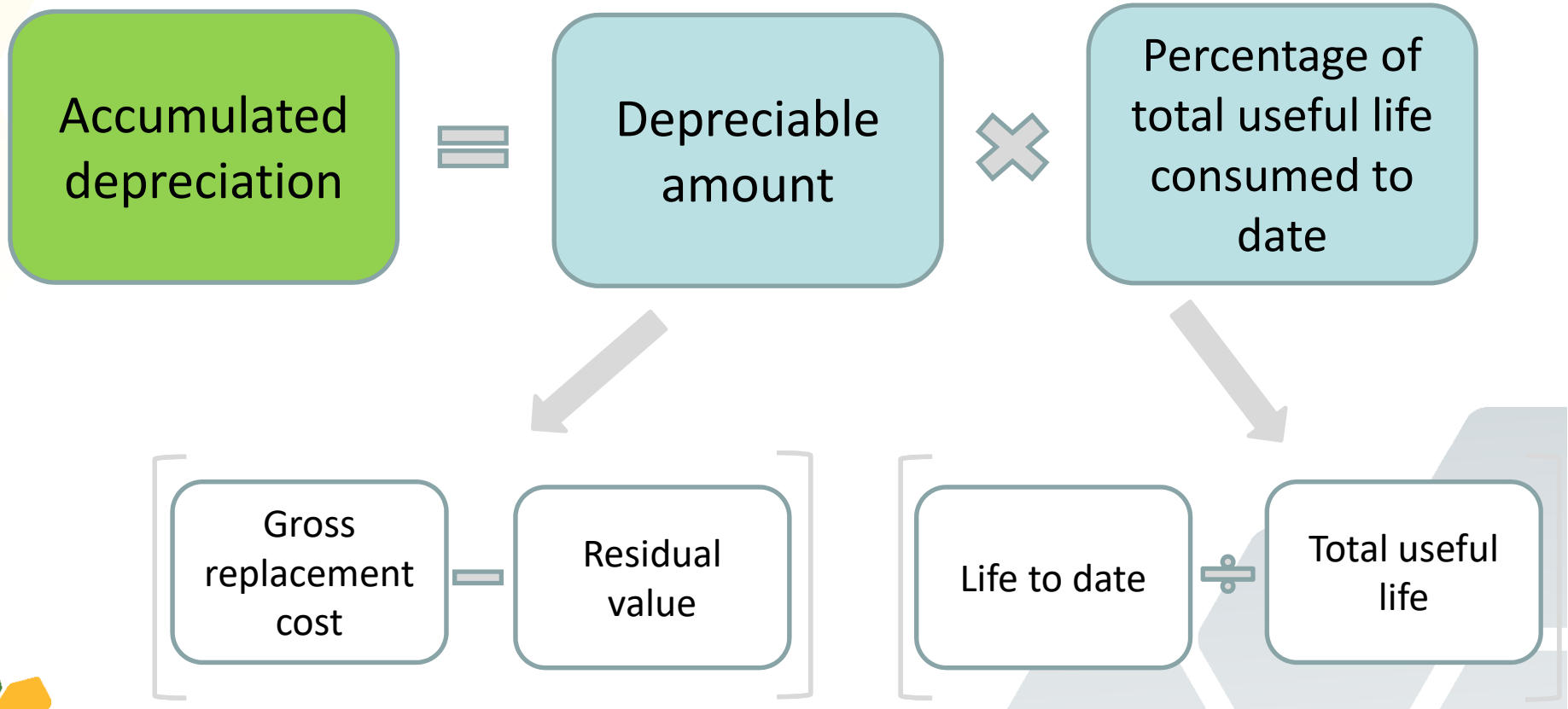
Calculating accumulated depreciation



Obsolescence

Type of obsolescence	Description	Impact in estimated total useful life
Physical deterioration	Loss of value due to physical deterioration arising from normal usage.	If a component's physical condition is worse than expected for its age, this is an indicator that a reduction in total useful life is required.
Functional (technological) obsolescence	Functional obsolescence includes: ▪ superseded design, technology, or materials ▪ over-engineering.	Entities sometimes replace assets ahead of schedule to attain the extra utility provided by the modern substitute asset, even though the existing asset is in good condition. In these cases, total useful life of the existing asset reduces.
Economic (external) obsolescence	When external influences such as changes in population, income levels or the regulatory environment cause a permanent decrease in demand for related services.	Like functional obsolescence, entities may decide to replace assets that are in good condition because of economic obsolescence. The opportunity to make savings in operating and maintenance costs through replacement with a smaller asset is one reason for such decisions. This obsolescence results in a reduction in the total life of the existing asset.

Example
How changes in estimated total useful life affects current replacement cost

Input	Fair value—Original total life	Fair value—Revised total life
Gross replacement cost (a)	$1 200 000	$1 200 000
Residual value (b)	$0	$0
Life to date (c)	30 years	30 years
Total useful life (d)	60 years	50 years
Percentage of total life consumed to date (e) *formula: b / c*	50%	60%
Accumulated depreciation (f) *formula: (a – b) x c*	$600 000	$720 000
Current replacement cost *formula: a – f*	$600 000	$480 000
Annual depreciation expense *formula: a / d*	$20 000	$24 000

Common challenges

1. Determining the valuation approach with consideration for highest and best use
2. Identifying the significant parts of an infrastructure asset
3. Deciding whether to use greenfield or brownfield costs
4. Reviewing useful lives and residual values
5. Utilising condition ratings appropriately
6. Reviewing and documenting valuation assumptions and inputs

Common challenges #1

Determining the valuation approach with consideration for highest and best use

Scenario	Example	Highest and best use for this example	Valuation approach in this example
Asset no longer required to achieve the entity's objectives	A rural train line that has been closed due to reduction in long-term freight forecasts	Scrap	Market approach
An active market exists for an asset or a group of assets	A building that is currently used to achieve the entity's objectives, for which a competitive rental market exists	Rental property	Combination of the market approach and the income approach
No recent sales of similar assets, but a private sector operator could make a profit by purchasing the assets at their current replacement cost	Water and sewerage assets that are capable of being operated at a profit	Open tender sale of water and sewerage business	Income approach

Conclusion

Current use is the highest and best use when:

1. the entity is using the asset or group of assets to achieve its objectives
2. there are no recent sales of similar assets
3. a private sector operator would be unable to make a profit from a group of assets purchased at their current replacement cost.

Where an asset meets all of the above criteria, fair value is measured using current replacement cost.

Common challenges #2

Identifying the significant parts of an infrastructure asset

Meaning of ‘an item of property, plant and equipment’

Example

An item of infrastructure:

Asset class	Example
Specialised buildings	Each building and potentially each extension
Roads	Each road, or each road segment

For horizontal networks such as roads and pipes, best practice is to base segments on each combination of the following factors:

- common characteristics—(e.g. differentiating hill sections from flat sections) as segments with different characteristics have different gross replacement costs
- life to date—(e.g. differentiating stretches replaced due to flooding from older stretches) as segments with a different ages have different accumulated depreciation
- total useful life—(e.g. differentiating parts with shorter useful lives due to the local environment) as segments with different total lives have different accumulated depreciation.

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Case Study
Importance of separately accounting for significant parts

A hospital building constructed 20 years ago has a total gross replacement cost of $100 million. The estimated total useful life of the structure of the building is 80 years. The entity's asset revaluation surplus for the buildings class exceeds $10 million.

The following table shows how fair value and depreciation expense are different depending on whether the entity accounts separately for a part with a gross replacement cost $10 million (10 per cent) and a total life of 20 years. If not accounted for separately, the part's useful life is that of the buildings, being 80 years. If accounted for separately, its useful life is 20 years.

Input	Outcome when the component is not separately accounted for	Outcome when the component is separately accounted for
Gross replacement cost (a)	$10 000 000	$10 000 000
Residual value (b)	$0	$0
Life to date (c)	20 years	20 years
Total useful life (d)	80 years	20 years
Percentage of total life consumed to date (e) *formula: c / d*	25%	100%
Accumulated depreciation (f) *formula: (a – b) x c*	$2 500 000	$10 000 000
Current replacement cost *formula: a – f*	$7 500 000	$0
Annual depreciation expense *formula: a / d*	$125 000	$500 000

If the entity had not depreciated the part separately, a revaluation decrease of $7.5 million is required in year 20 when the entity replaces the part. The entity would need to make the adjustment against comparatives if the failure to value the part separately was an error and the impact was material.

When the entity replaces the $10 million part in year 20, an addition is required for the renewal cost and a disposal is required for removal of the original part.

The part's fair value after the entity replaces it is $10 million. If the entity did not account for the part separately and expensed the replacement costs rather than capitalising them, the revaluation adjustment it recognises is a $2.5 million increment instead of the correct treatment of a $7.5 million decrement, and a $10 million addition. While the difference in these treatments does not affect property, plant and equipment, it does result in errors for expenses (overstated by $10 million) and asset revaluation surplus (overstated by $10 million), which has a flow-on effect for the net operating result.

Significant parts (Components)

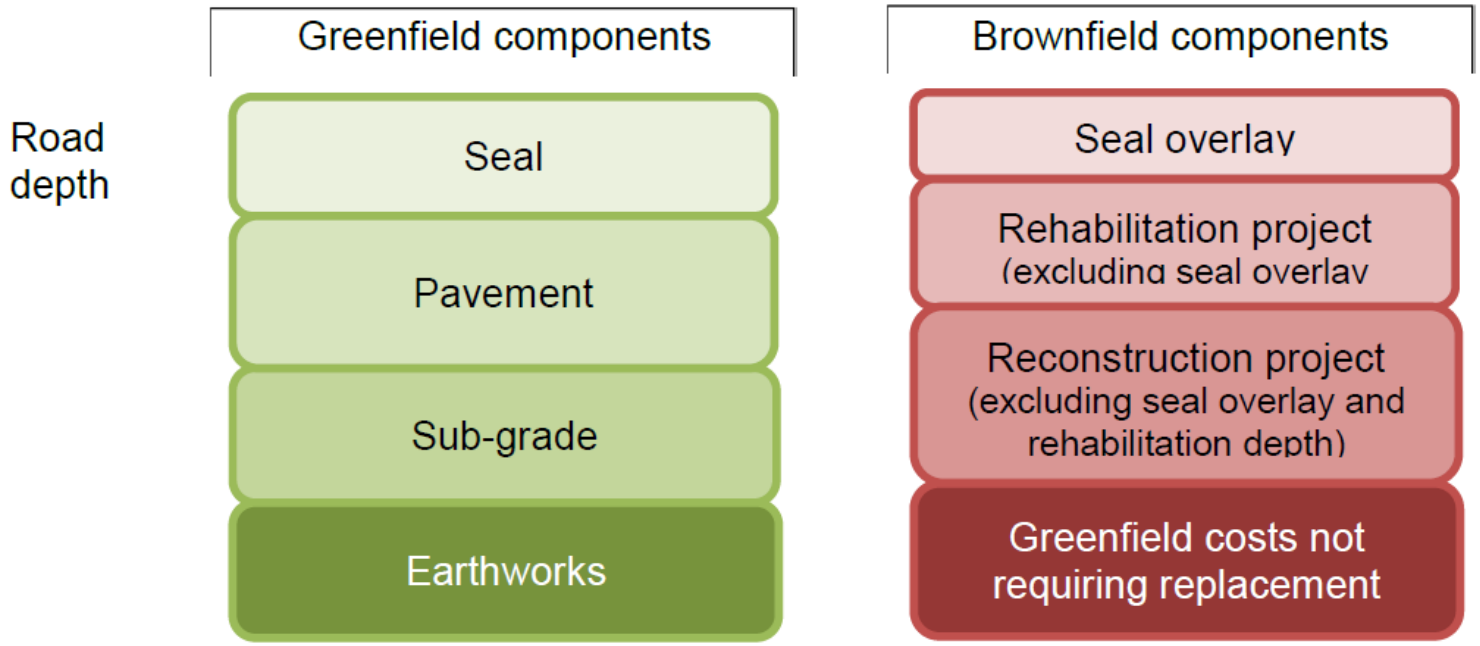
Example

Benefits of separately recording each part with a gross replacement cost above the capitalisation threshold are:

- better alignment with valuations, which are based on the parts of the asset requiring replacement over its life cycle. Among other things, this allows entities to more meaningfully analyse valuation movements
- reliable calculation of depreciation expense
- simpler accounting for additions, and related disposals when parts are replaced
- higher quality information available for asset management, such as more detailed knowledge of the expected timing and cost of replacing parts
- avoids the complexity around adjusting average depreciation rates when the entity replaces a part.

Common challenges #3

Deciding whether to use greenfield or brownfield costs



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Road type	Project type (greenfield components impacted)	Example project	Description
Gravel	Rehabilitation (pavement)	Re-sheeting	Place new granular (gravel) pavement over original pavement.
Sealed	Seal overlay (seal)	Spray (chip) seal	Place a single coat bitumen surface over the existing sealed surface.
	Rehabilitation (seal and pavement)	Granular overlay	Repair pavement failures. Place new granular (gravel) pavement over original pavement. Apply new bitumen surface.
		Dig out	Dig up seal and part of pavement. Mix in a chemical stabilisation agent (typically cement) into the existing granular pavement to improve pavement strength.
		In situ stabilisation	Repair pavement failures. Place a single coat bitumen surface over the existing sealed surface.
	Reconstruction (seal, pavement and sub-grade)	Reconstruction	Replacement of existing material with all new material in the current location.

Tips

1. Brownfield is usually best for the parts of the asset that have shorter lives, as it is uneconomic to replace these components in a greenfield context unless the whole asset is due to be replaced in a greenfield location.
2. A greenfield based solution is required for components with unlimited lives, as brownfield rates are not applicable for these components.
3. The sum of the components should not exceed greenfield in total, because current replacement cost should be based on the minimum amount required to replace an asset's service capacity with a substitute asset.

Consider points

When using brownfield costs:

- exclude incidental costs incurred on other assets
- large revaluation adjustments in the year of acquisition are unusual and require investigation
- virtual componentisation may be required (refer to section 2.2.2.1 and the supplementary document for roads).

Common challenges #4

Reviewing useful lives and residual values

Consider points

For determining nominal useful lives, consider:

- the number of years it will take to replace this component type for the entire network based on recent or forecast annual funding
- historical average life for disposed assets
- design lives
- estimates used by other entities in the industry
- relationships between components (i.e. it is reasonable for an entity to estimate that they will replace components evenly over the asset life cycle)

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Example

The table below provides a checklist for identifying assets whose useful lives differ materially from their nominal lives, and some examples of high-level responses. Entities should have detailed supporting documentation for each consider point.

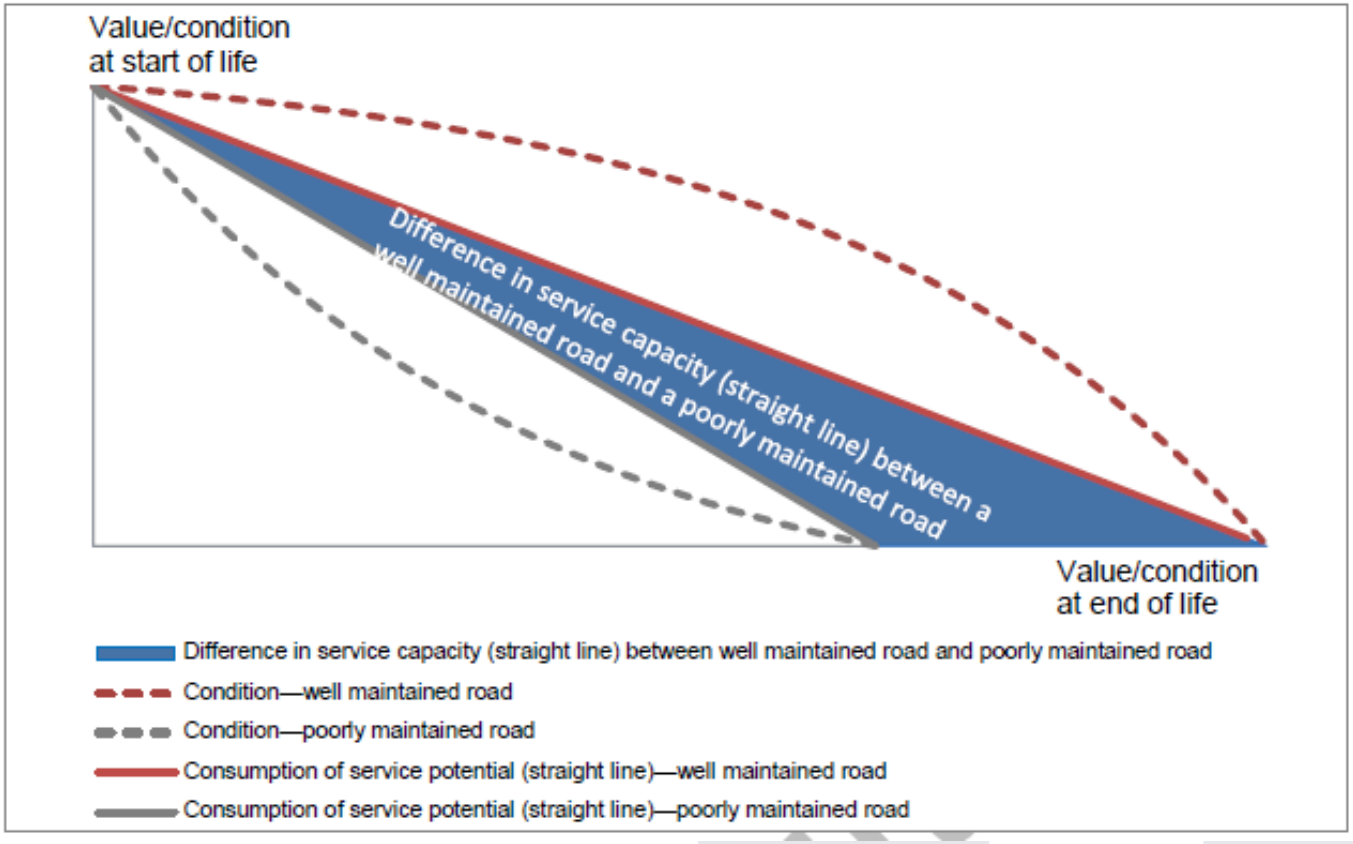
Consider point	Example summary of analysis performed
Assets that have passed their nominal lives.	A report of assets with a life to date greater than the nominal life was extracted. A useful life was set for each listed asset based on life to date plus a remaining life, which was estimated based on condition ratings and that asset management plan—refer to detailed documentation filed at… We have updated the asset register with these new lives.
Correlation with condition: ▪ assets whose current condition suggests that they will require replacement before they reach the nominal life. ▪ assets whose current condition suggests that the entity can defer their replacement.	Maintenance staff update condition ratings for all assets on a five-year rolling basis, and record the latest condition rating in the asset register. For each unit rate category, we graphed condition ratings against lives to date for each asset to identify those with unusually low or high condition ratings relative to age. Significant outliers that were not addressed above were re-inspected, and their total lives adjusted in the asset register as appropriate. Refer to the detailed documentation filed at…
Assets requiring early retirement despite being in good condition because of: ▪ obsolescence ▪ legal limits (lease agreements or licence conditions).	We are not aware of any assets whose useful lives are subject to legal limits. We do not plan to replace any assets early due to obsolescence.
Correlation with the asset management plan: ▪ inconsistencies between budget for renewals and gross replacement cost of assets whose lives are due to expire over the budget period ▪ assets specifically identified for replacement earlier than the nominal life ▪ assets that will pass their nominal lives within the period covered by the plan, but are not planned for replacement during that period.	An updated asset management plan was endorsed by the audit committee in the current year and is filed at… This plan identified specific assets needing replacement during the plan period on pages XX to XX. We have updated the asset register with these lives. A report of assets due to expire over the term of the asset management plan was extracted. The gross replacement cost of these assets was [higher/lower] than the budget for renewals. We corrected this mismatch by [deferring/bringing forward] the useful lives of the assets closest to expiry date, and smoothing the lives for the remaining assets—refer to the detailed documentation filed at…

Suggested steps for reviewing useful lives:

1. By 31 March (for a 30 June year end):
   - review nominal lives
   - review for exception for nominal lives
2. Provide evidence of the review to the auditor
3. Upon agreement on lives:
   - update accumulated depreciation per section 1.3
   - update useful lives for future depreciation calculations
4. Around year end, perform a high-level review for significant changes since the detailed review.

Common challenges #5

Utilising condition ratings appropriately



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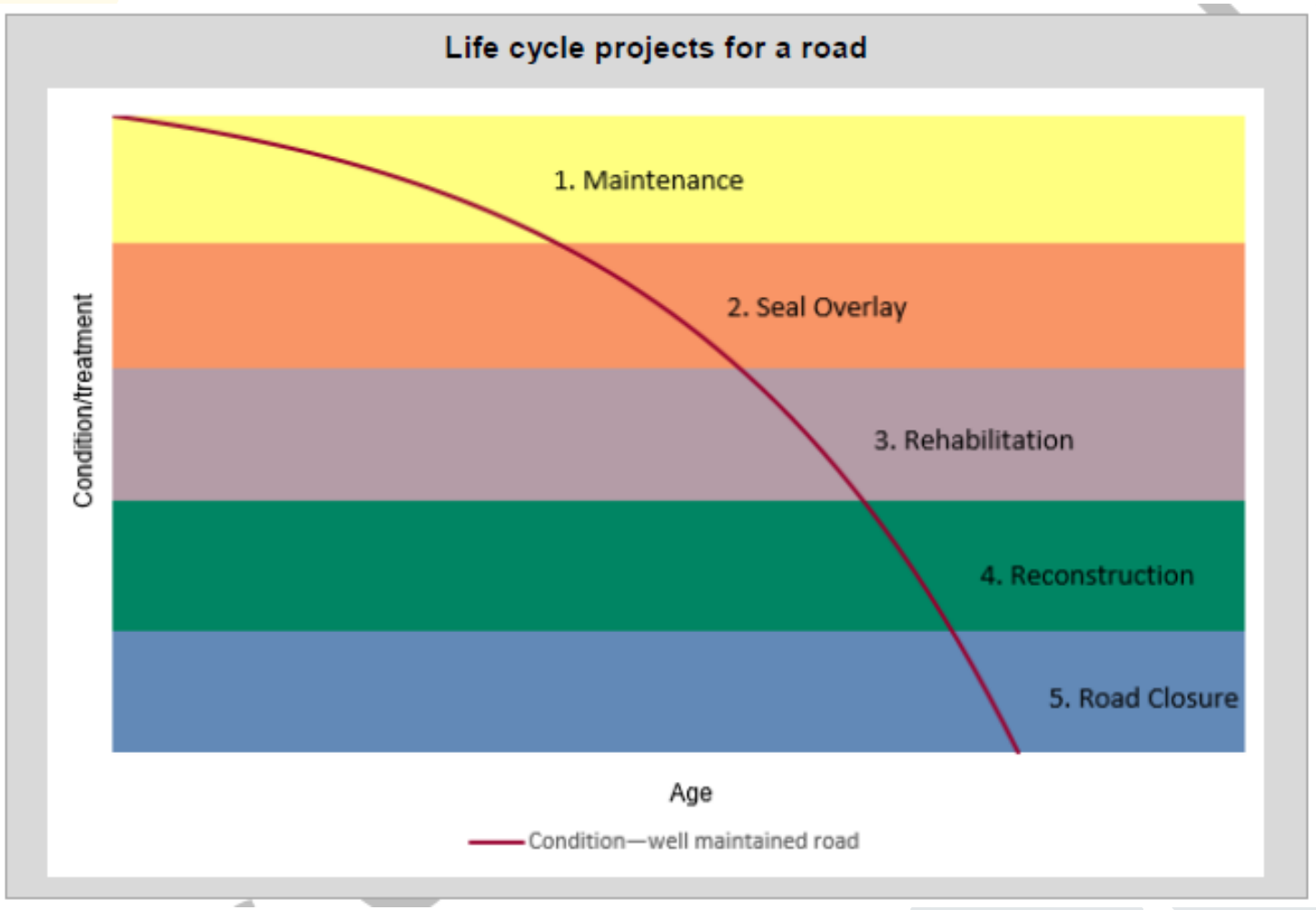
Use of conditions assessments

Case study
Comparison of condition rating adjustments and time-based adjustments for physical deterioration

Scenario	A road pavement is currently five years old and its condition rating has not changed since construction, which is consistent with original expectations. Useful life on commissioning was 50 years.
Issue	What percentage adjustment, if any, is required at year five for physical deterioration?
Options	▪ 0 per cent, because there has been no change in condition rating. ▪ 10 per cent, based on a straight-line formula of life to date (five years) divided by total estimated life (50 years).
Analysis and conclusion	It is illogical to suggest that pavement experiences nil physical deterioration over a five-year period. Equally, it is unrealistic to expect that a hypothetical willing market buyer would pay full gross replacement cost for a road pavement that is five years old. Therefore, the straight-line approach (option 2) provides a more reliable estimate of the adjustment for physical deterioration.

Poll

Depreciation



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Common challenges #6

Reviewing and documenting valuation assumptions and inputs

- General principles for documenting valuations
- Expectations for documenting an annual review of valuations

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What to do between comprehensive revaluations?

In years between comprehensive revaluations, entities should review for changes in:

- highest and best use
- the modern substitute asset/functional obsolescence
- demand for the asset/technical obsolescence
- componentisation/parts planned for replacement
- use of greenfield or brownfield costs
- construction cost indices
- useful lives, including asset management plans/budgets and condition assessments
- residual values.

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Other matters

Asset recognition/de-recognition	
Found assets	➢ Prior period error
Land transfers	➢ Asset recognised at fair value in income statement
Scrapped or demolished assets	➢ Derecognised
Damaged assets	➢ Reduced useful life or derecognised
Assets held for sale	➢ Reclassify, market valuation
Intangible assets	➢ AASB 138