

CONSISTENCY OF AN ASSET MANAGEMENT PLAN BASED APPROACH WITH IFRS REQUIREMENTS

The international accounting standard that deals with fixed assets is IAS 16 'Property, Plant and Equipment'. IAS 16 adopts a similar approach to fixed assets as UK GAAP. However, a significant difference is that the international standard does not contain provisions in respect of renewals accounting.

CONVENTIONAL DEPRECIATION V. RENEWALS

The purpose of depreciation is to charge the cost or value of a fixed asset to revenue expenditure in a manner consistent with the consumption of that asset. Although it has a direct impact on the value of the asset, that effect is secondary, as an asset's value is also governed through valuations (where used) and impairments.

Conventional approach

Under a conventional depreciation approach, the amount of the cost/value to be depreciated is known as the 'depreciable amount' which is the cost/value less any residual value of the asset which can be realised on disposal. For plant and equipment, this residual value is often nil or scrap value. For buildings, the residual value may be significant. Land is usually considered to have an infinite useful life and thus is not normally depreciated.

The allocation of this depreciation over the useful economic life should reflect the manner in which the economic benefits of the asset are consumed. In practice, a straight-line approach is often adopted whereby equal amounts are allocated to each period.

Renewals approach

UK GAAP contains specific provisions in respect of renewals accounting which can be used where an entity has a network or infrastructure system. Major components in the system with determinable finite lives should be separately identified and depreciated. For the remaining components in the network or system, renewals accounting can be used as a method of estimating depreciation provided that;

- The infrastructure asset as a whole is intended to be maintained at a specified level of services potential by the continuing replacement and refurbishment of its components;
- The level of annual expenditure required to maintain the operating capacity (or service capability) is calculated from an asset management plan that is certified by a person who is appropriately qualified and independent; and
- The system or network is in a mature or steady state.

In this circumstance, the estimated required annual expenditure from the AMP is charged as depreciation and deducted from the carrying amount of the asset (as part of the accumulated depreciation) The actual expenditure incurred each year is then capitalised as part of the cost of the asset. The accounting entries are therefore:

Dr	Revenue Expenditure	£x
Cr	Fixed Asset	£x

To record the depreciation charge against the asset value, with the cost being charged to revenue expenditure.

And

Dr	Fixed Asset	£y
Cr	Cash	£y

To capitalise the actual expenditure incurred on the asset.

From this it can be seen that if the amount actually spent is less than that required, the asset will suffer a net fall in value, reflecting the deterioration of its condition. Similarly, if the amount spent is greater, then a net increase in the asset value will occur, to reflect an increase in its condition.

The difference in accounting — an example:

At the start of the 40 year period covered by the Asset Management Plan, a road has a Gross Replacement Cost of £2,000,000. However, the surface and binder courses ('top layers') are worn out which results in a Depreciated Replacement Cost of £1,500,000 representing the £500,000 cost of reinstatement of these layers. The AMP includes £500,000 expenditure on the replacement of the top layers in year 1 to bring the value back to the £2m amount. Without the year 1 expenditure, the existing road layers would have a useful life of 30 years. The expenditure in year 1 has the effect of increasing the useful life of the existing road to 60 years. The top layers have an estimated useful life of 20 years, and therefore the AMP anticipates a further £500,000 to be spent in year 21 to renew these elements.

Conventional depreciation — whole asset

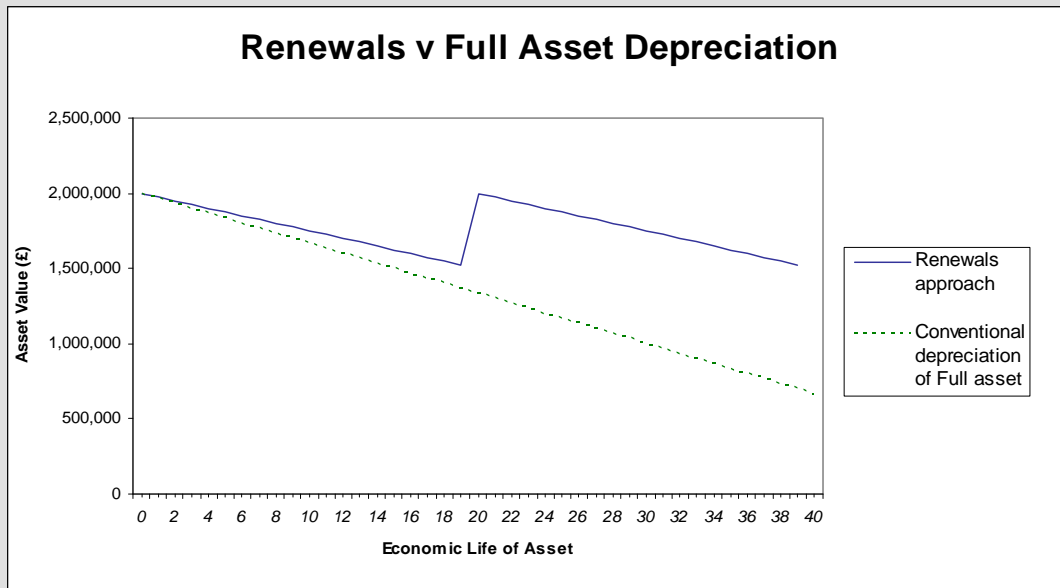
The year 1 expenditure is capitalised and the whole asset value depreciated over the following 60 year period. The expenditure in year 21 to renew the top layers is not capitalised as this simply restores the asset to the condition anticipated by the useful economic life (60 years) assumed in the depreciation policy.

Renewals accounting:

A The amount of depreciation charged is the annual estimate amount of expenditure required to keep the asset in a 'steady state' condition as recorded in the AMP. This annual expenditure can be calculated as the total AMP expenditure for that asset divided by the period covered by the AMP i.e.
 $(2 \times £500,000) / 40 \text{ years} = £25,000 \text{ per annum.}$

B The actual expenditure incurred on the asset in years 1 and 21 is capitalised.

The graph below contrasts the results that the two approaches generate (the initial capital expenditure is assumed to occur at the start of year 1 and is included in the opening asset value but not separately identified).



It can be seen that under conventional depreciation, the results are not vastly dissimilar initially, but once further capital works occur, the gap widens.

Under conventional depreciation, a total of £1.333m depreciation is provided against the asset and charged to the revenue account in this period. The £500,000 reinstatement costs in year 21 are also charged to revenue rather than being capitalised. At the end of year 40, the asset has a DRC of £666k.

Under renewals accounting, a total of £1.0m depreciation is provided and charged to revenue in this period. At the end of year 40, the asset has a DRC of £1.5m.

Thus it can be seen that conventional depreciation and renewals accounting can generate substantially different revenue charges and asset values.

It can be argued, however, that applying conventional depreciation to the whole of the road asset does not reflect the underlying pattern of consumption of the asset. Instead, it may be more appropriate to consider separately the individual components of a road and the periods over which they are 'used-up'. This is consistent with the component depreciation approach in both IAS 16 and UK GAAP.

WHAT DO WE MEAN BY 'COMPONENTS'?

IAS 16 requires that where an asset can be broken down into identifiable components with different useful lives, then these components should be accounted for separately:

- 43 Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item shall be depreciated separately.
- 44 An entity allocates the amount initially recognised in respect of an item of property, plant and equipment to its significant parts and depreciates separately each such part.

For practical purposes, where one or more components, can be separately identified, but have the same useful economic lives, then they may be grouped together for depreciation purposes.

An example of a component approach to depreciation is an office building with integrated plant and equipment e.g. lifts. The building itself may have a life of 50 years, but the lifts require overhaul or replacement every 15 years. Each element is therefore depreciated over its respective life. When the lifts are overhauled or replaced after 15 years, the cost of this work can be capitalised and this is then depreciated over the expected economic life, for example another 15 years. Where routine maintenance is performed which keeps the asset in the condition assumed by the depreciation policy, this cost is expensed rather than capitalised. This has important implications if a component approach is not adopted. Thus if the whole asset is depreciated over the 50 years, then this assumes that the lifts will last for this period, and thus the lift overhaul/replacement expenditure at 15 year intervals cannot be capitalised but must instead be expensed.

For highway infrastructure assets, components can be identified in a number of ways. At the simplest level, this would be to split the infrastructure between the types of assets, for example the CSS/TAG document identifies the following general types (described as Level 1 in the document):

- Roads
- Segregated footpaths and cycle routes
- Structures
- Highway lighting and high mast lighting
- Street furniture
- Traffic management
- Off-highway drainage
- Land

Each type may be capable of separation into smaller components. However, for the purposes of the accounting requirements, we need only concern ourselves with components that are significant i.e. those which have a material asset value and/or generate material depreciation charges.

ROADS

The road pavement comprises generally four layers which, from top to bottom, are:

- Surface Course
- Binder Course
- Base Course
- Roadbase

The surface course is the element that is subject to the greatest wear and tear and has a limited useful life. From discussions with highways practitioners, a typical estimate of the life of a surface course is in the region of 20 years, as used in the example earlier in this document, although this can and does vary depending on e.g. traffic and climate conditions.

The next layer is the binder course, which can suffer a significant degree of deterioration depending on factors such as the traffic it carries e.g. number and weight of vehicles, and its location, e.g. urban roads are generally dug-up by utility companies more frequently than rural roads and the cumulative effect reduces the useful life of the binder course.

Finally, according to highway practitioners, in most cases the lower layers of the road rarely, if ever, need replacement and renewal. Provided that the layers above them are adequately maintained, the lower layers can be said to have an indefinite life. In this context 'adequate' means sufficient to prevent deterioration of the lower layers rather than a measure of the quality of the upper road surface. However, there are exceptions to this, e.g. roads constructed before 1970 on weak ground, such as in peat areas or estuarine flood planes, where sub bases may also need to be replaced.

USEFUL ECONOMIC LIVES

IAS 16 requires an asset's 'depreciable amount' to be allocated on a systematic basis over its useful life. Importantly, the depreciable amount is not necessarily the whole carrying value of the asset but is instead the carrying value less the estimated residual value of the asset.

For most assets, the residual value is usually not significant and thus the whole carrying value is depreciated. However, where the residual value is significant, then the depreciable amount is also significantly reduced.

Taken to the extreme, where the residual value is equal to or greater than the carrying value, then no depreciation is chargeable. This is generally the situation with land, which is assumed to retain its value, and thus the standard notes that, with some exceptions, land has an unlimited useful life and therefore is not depreciable.

This principle is significant when considering the depreciable amount for roads. As described above, in many cases the lower layers of a road can be considered to have indefinite lives provided that the upper layers are maintained to an adequate standard. In those cases the value of the road attributable to these layers would be non-depreciable. This also reflects the actual approach taken by highway engineers to the maintenance of roads. Where lower layers do not have indefinite lives, approaches to depreciation will need to reflect these local circumstances.

IDENTIFYING THE VALUE OF THE LAYERS

The CSS/TAG approach requires the GRC to be based on the full cost of providing a new road, calculated using Unit Costs derived from contracts for new construction. It thus incorporates the cost of building the lower layers of roads.

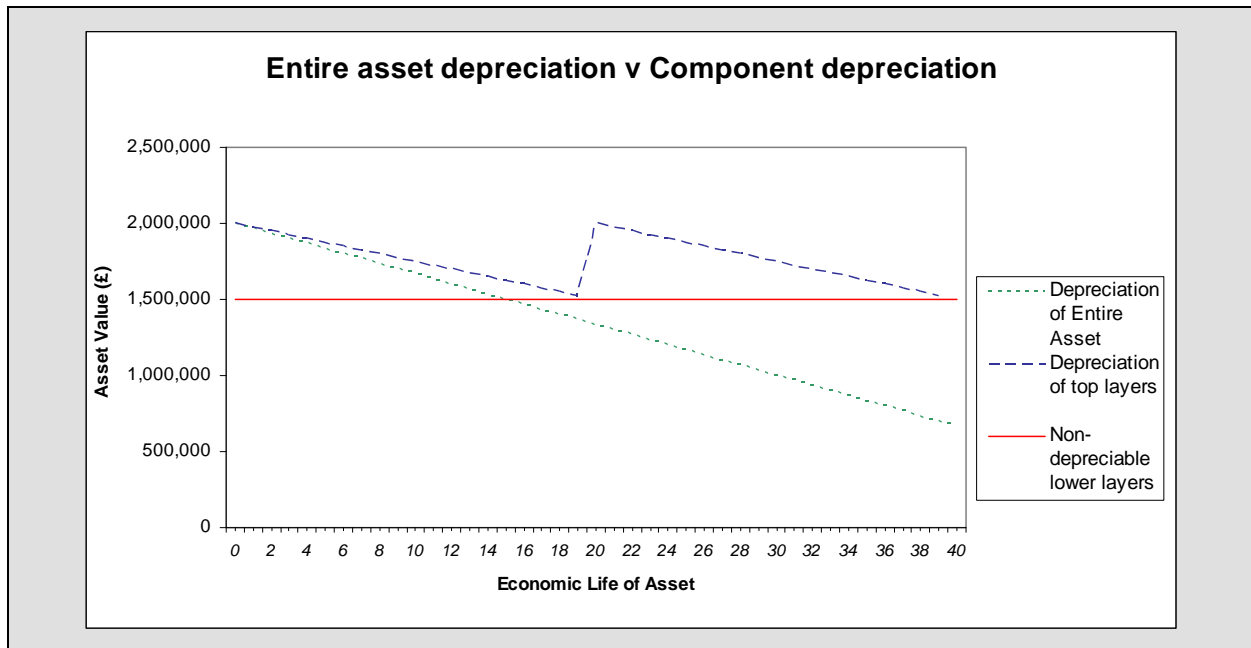
The amounts included within the Asset Management Plan reflect the replacement cost of the road layers that wear out i.e. the depreciating elements. These costs are also derived from Unit Costs, but typically these are unit costs from maintenance — rather than new build — contracts or in-house scale costs. These lower rates reflect the lower cost associated with simply replacing the upper layers rather than building the entire road from new.

The asset value of the upper layers is therefore the replacement cost of these layers as identified in the AMP. The value of lower layers is then simply the GRC less this amount.

Applying this approach to the example from earlier in the Annex, the GRC of £2m is split between the replacement cost of the upper layers — £500,000 and the £1.5m representing the replacement cost of the lower layers.

Applying component depreciation, the £1.5m lower layers retain an indefinite life (on the assumption that the top layers are replaced as necessary) and thus no depreciation is applied to this component. By contrast, the top layers are depreciated over their estimated useful life of 20 years.

The graph below shows the effect of this, with the component approach represented by the two lines for the top and lower layers and compared with the 'entire asset depreciation' shown earlier.



It can be seen that the asset value profile and depreciation amounts generated by a component depreciation approach are identical to those generated by the 'renewals approach' in the earlier example.

If the expenditure to replace the top layers at year 21 is not incurred, then the lower layers may start to deteriorate. Depreciation would therefore then need to be applied to these lower layers, representing the expected consumption of this part of the asset up to the time when work is expected to be carried out to restore it.

UNEXPECTED EARLY REPLACEMENT OF SURFACE

Where evidence e.g. from surveying, reveals that a particular road is in need of resurfacing earlier than originally predicted, an adjustment to the carrying value and depreciation amounts will be necessary.

Where the top layers are to be replaced immediately:

- their remaining value should be impaired to zero to reflect the fact that the surface no longer has a useful life. This will require a calculation but should represent the replacement cost written-out e.g. if the assumed life was 20 years but replacement was required after 15 years the value to be written out would be approximately:

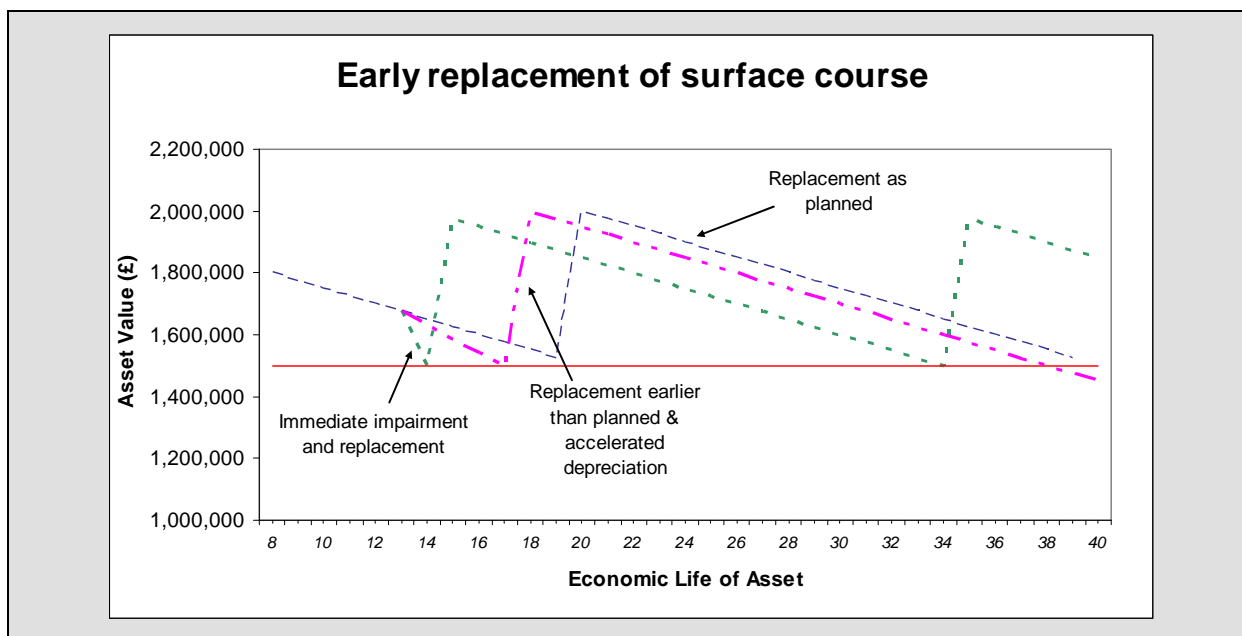
Replacement Cost of components x (5 / 20)

- the subsequent expenditure on resurfacing should be capitalised and the new surface component then depreciated over its expected economic useful life. This may be different to that estimated for the original asset if the early replacement was due, for example, to changes in traffic conditions.

Where the surface course is not planned to be resurfaced immediately, but nevertheless earlier than planned:

- its remaining useful life is revised and the asset value for the component is depreciated over this shorter life ('accelerated depreciation').
- as above, the subsequent expenditure would be capitalised and depreciated over its expected economic life.

These scenarios can be seen in the graph below.



CONCLUSION

Road asset valuation and depreciation based on amounts derived from an Asset Management Plan approach appears to be consistent with a component depreciation approach under IAS 16 in the following circumstance:

- The road can be sub-divided into its various layers, which can be shown either to have an indefinite life, where upper layers are maintained to an appropriate standard or to be subject to deterioration.
- The AMP includes amounts that reflect the replacement cost of the layers that do not have an indefinite life and therefore allows identification of the proportion of the overall asset value attributable to those layers
- The required annual expenditure on maintaining the deteriorating layers in the condition assumed in the plan is calculated as the replacement cost of these layers divided by the economic useful lives of these layers.
- The approach is applied at the level of individual roads rather than for the whole network.
- In the event that the above assumptions do not hold true, for example because the top layers are wearing faster than predicted or they are not replaced in accordance with the AMP so that the lower levels start to deteriorate, then adjustments will need to be made to the asset lives and/or impairments recognised. These amounts will have to be calculated separately for the individual assets.