

## Asset Management is not as hard as you think

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### ABSTRACT:

*The objective of this presentation is to emphasise the simplicity of asset management. It is also encouraging local government staff to perform asset management by using excel spreadsheets, if not a complex environment, without spending and managing costly software solutions for asset management.*

*It is also explaining important factors and methodologies in data collection, asset register maintenance and asset valuations. This presentation also discusses the benefits of doing asset management by the council itself.*

**KEYWORDS:** data collection, register development, assets valuations, benefits of council managing its assets.

## 1 Introduction

All councils are required to have an Assets Register to manage and maintain the assets under their control.

What is the economical way of managing assets? I have presented some of the key objectives, and challenges, that may be met in successfully planning and executing asset management. Examples and methodologies, many of which I have been involved in, are used for demonstration of important points. This presentation covers my knowledge and experience on the following topics:

1. What are the important factors in asset data collection?
2. Developing an assets register.
3. Valuing the assets (Unit rate & useful life developments and benchmarking, fair value calculation).
4. Benefits of council managing its own assets.

## 2 What are the important factors in data collection?

Most council's already have significant data on their infrastructure assets including type, location, age, and usage that is gathered over

several years, called an Asset Register. However, if the data is not available, the important information that needs to be collected is as below.

1. Location identification (Road name, segmentation, plant name etc.)
2. Hierarchy
3. Quantity (length, width, depths, diameter)
4. Attribute details (type, manufacturer, serial number)
5. Componentisation (It is important as per the CPA guidelines, that assets that are made of significant parts and have different life spans, should be depreciated separately)
6. Condition assessment methodology:
  - Professional condition assessment
  - In-house condition assessment / Visual
  - Collective condition assessment with field staff / operator
  - Underground assets condition assessment is very expensive, alternatively you can use age-based condition assessment using construction year.

7. Photograph the asset, number the photograph and attach it to the Asset Register. This photograph can then be attached to many asset management systems or hyperlinked to a spread sheet.
8. Important points in data collection:
  - It is very economical to use a tablet and/or GPS data collecting unit.
  - Plan and identify the type of data to be collected.
  - Develop a standard methodology and consider the practicality.
  - Create guidelines by reading some published documentation.
  - Determine how sophisticated the location data should be, for example: (1or 2m accuracy, 5m accuracy etc)
  - Use the flow of direction to start with (Treatment plant – Inlet to outlet, Roads - Township to rural properties etc.)

### 3 Assets register development

Develop the asset register by analysing the collected data frequently (at least once in two days). Save separate files daily if possible.

1. Group the similar assets under the Hierarchy:
  - Urban / rural roads
  - Arterial / major collector / minor collector / access roads
  - Civil / mechanical / electrical / telemetry / pipework & valves etc
2. Determine the calculation quantity and unit.
3. Hyperlink the photos for each asset if available.
4. Develop a component code for each asset to calculate unit rate, useful life etc.:
  - Pipe type & diameter or Pipe type, diameter & depth
  - Pit length, width & depth,
  - Pump well diameter and depth

- Pump type and capacity (kW)
- Urban/rural or hierarchy & surface type

## 4 Assets valuations

### 4.1 Unit rate benchmarking methods and calculation

1. Project cost analysis
2. Calculation cost from first principle using publications (e.g. Rawlinsons)
3. Neighbouring similar council unit rates
4. Publications (NSW reference rates for Water, Sewer and Stormwater)
5. Supplier costs
6. Other source of similar rates

### 4.2 Project cost analysis

1. Get the details cost breakdown with variations if available. If unavailable, use cost estimates, quotations, tender documents etc.
2. Allocate cost component code for each task.
3. Identify direct and indirect overhead separately and assign based on cost.
4. Determine the cost component quantities constructed for this project.

### 4.3 Unit rate developed from Rawlinsons Construction Handbook 2018 for Roads

The following methods and activities can be used when developing unit rates from Rawlinsons handbook. Traffic management cost, project overhead and engineering cost can be considered additionally for each cost component code.

For example:

1. Spray seal surface (Page No. 683)
  - Two coat spray bitumen seal can be considered
2. Asphalt surface (Page No. 683)
  - Hot bitumen typical depth is considered

- Prime seal coat is considered
3. Pavement (Page No. 683,682,484)
    - Road base course can be considered as crushed rock/ blue metal.
    - Typical depth is considered for calculation of pavement quantity.
    - Road shoulders cross section is considered for the pavement volume.
    - Geotextile fabric cost can be included for pavement as well as for road shoulders.
    - Subsoil drain can be considered.
  4. Earthworks (Page No 678, 211, 228)
    - Excavate to reduce level, deposit, spread soil and level within 1 km can be used as activity task.
    - Typical road category depth can be considered for the calculating excavating volume.
    - Soil type is used as clay.
    - Additional cartage of 1km is considered.
    - Compaction to 90% is considered.
    - Additional 100% width is considered for road shoulders.
    - Clear medium vegetation and cart away is considered for the road and shoulder width.
    - Level, grade, prepare and grass seeding activities can be considered for road shoulders.

#### 4.4 Important consideration for unit rate calculations

1. It may be required to adjust neighbouring council rates to bring their costs in line with your cost. (e.g. a Neighbouring council may have 30mm asphalt surface, where as your cost component is 50mm)
2. To develop unit rates from Rawlinsons you may have to develop some assumption and keep a note for audit purposes.
3. Convert all the rates to today's value and to your local area. This can be

done by adjusting annual and area indexation using Rawlinson.

4. Populate the data for each cost component.
5. Adopt a unit rate from the available rates (using professional judgement, average etc.)

#### 4.5 Determining useful life, short life, long life percentages

1. Neighbouring similar council useful life.
2. Publications (NSW reference rates for manual useful life).
3. Asset custodians' and professionals' knowledge
4. Treatment history or previous experience.
5. Other similar asset registers.
6. Alternatively, further componentised assets without using short life, long life method. (eg: Pavement can be sub-componentised as pavement and sub pavement).
7. Adopt a useful life and short life, long life cost % for each cost component.

#### 4.6 Fair value calculation

Definition of fair value

"The price that would be received to sell an asset or, paid to transfer a liability, in an orderly transaction between market participants at the measurement date."

(Australian Accounting Standards Board, 2015, Fair Value Measurement, Pg. 7)

Level of Inputs:

1. Level 1 – Level 1 inputs are quoted prices – E.g. Shares
2. Level 2 - Level 2 inputs are inputs other than quoted prices included within Level 1 – E.g. Motor Vehicle
3. Level 3 - Level 3 inputs are unobservable inputs (All infrastructure assets are covering under this category. The gross replacement cost (GRC) and the useful life can vary

from Council to Council or valuer to valuer)

Valuation techniques:

There are three main approaches:

1. Market approach
2. Income approach
3. Cost approach – Use cost approach for most infrastructure assets

Remaining service potential (RSP)

$RSP = \text{remaining useful life} / \text{useful life}$

Consider straight line depreciation method since it is simple and has become widely accepted. You can calculate the Remaining Service Potential as per the below table.

**Table 1:** Condition Rating

Condition Rating	Remaining Service Potential	Description of the condition
1	98%	Excellent Condition
2	75%	Very Good Condition
3	50%	Good Condition
4	25%	Poor Condition
5	5%	Unserviceable

Fair value (FV) calculation

If an asset component has no residual value, the fair value can be calculated as follows:

$FV = RSP * \text{Gross replacement cost}$

**Table 2:** Example of FV calculation

Area (square metres)	10,000
Unit rate per sq. m.	\$50
Gross replacement cost	\$500,000
Assessed level of remaining service potential	64%
Assessed DRC (pre-renewal)	\$320,000
The seal was then renewed.	
Cost of renewal work	\$250,000
Has the unit rate used to determine the GRC changed?	No
Has the overall gross service potential of the seal changed?	No
Assessed gross replacement cost	\$500,000
Reassessed level of remaining service potential	95%
Assessed DRC (post renewal)	\$475,000

## 5 Benefits of doing Assets Management by Council (DIY)

1. You have a better understanding of your asset portfolio and a very good knowledge of the asset's condition.
2. You can develop some realistic replacement costs (RC), compare to percentage sample inspection and develop an RC based on the sample.
3. The assets can be inspected by Council staff thereby reducing inspection costs and increasing efficiency, since they are local, compared to engaging a third party to undertake inspections.
4. Asset capitalisation is easy since you have access to the entire calculation. Especially if you do the asset valuation in the short life / long life method and report both components as one asset, you must combine both gross, fair value, useful life and remaining useful life.
5. If you develop a satisfactory asset register you can use that data to develop a meaningful asset management plan.
6. Encourage council to do in house asset management. Start with a small asset class, create a template, and once you have completed one asset class, applying the principles to another asset class is relatively easy.
7. Asset management is an ongoing continuous process. Doing this by yourself will improve the efficiencies and maintain consistency.
8. Asset valuation is a periodical activity. If you do it yourself more than 75% of the data can be reused for the next revaluation and it will be relatively easy.

## 6 Conclusions and Recommendations

There are no right or wrong answers in most activities in managing assets.

Methodical, consistent, systematic, and continuous improvements are the key in asset management.

Keep the bare minimum data in asset registers which can be used by the asset management

practitioners and work crew while covering reporting and legislative requirements.

It is important to keep it simple (KISS principle).

Think twice, take initiative, save the Council money which will then benefit the community.

## **Acknowledgements**

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