

## **FME** and **Banana Shire Council** Roads **Re-segmentation Project**

Peter Lefel



#### **PRESENTATION AGENDA**

- Project background
- Road Assets Review process
- Data processing
  - Final steps

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**Project background** 

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Banana Shire Council maintains 3929kms of public roads, consisting of 1159kms of Sealed Roads and 2770kms of Unsealed Roads. There are over 700 individual roads.





Council is currently undertaking a revaluation of its road assets and as part of this process, the Asset Team has determined that the previous method of road segmentation was not a practical and sustainable method.

Each asset has a unique ID that is identical in Councils asset management system; Assetic MyData and

in the GIS MapInfo table.





#### Assetic Database Road example

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Urban roads are currently reasonably well segmented, generally from intersection to intersection,

However,

Rural roads are currently segmented where there is a change in surface, eg. from sealed to unsealed.

Therefore current road segments can range from a length of 5ms up to 42kms.





Urban Roads example







Over many years of capital renewal and upgrade work, the initial road segments had become fragmented, with the new segments being the exact size of the length of renewal activity applied, for example, a 5km single road segment could now have had numerous sections of re-sheeting, resealing or rehabilitation applied and these could be ranging in length from 50m to the length of whatever was done, all requiring a new Asset ID.















It has been determined that Council needs to develop a new process of planning, delivering and recording its Capital renewal and upgrade program in a realistic and sustainable way.

Therefore, the decision has been made to re-segment all roads to a specific length, and

only plan, deliver and record work in multiples of these segments.





The segments need to be of a size that is financially manageable to deliver, for example, if a 380m section of a rural road has been identified as requiring a reseal, it is financially manageable to allocate funds for the 500m to be sealed, or if a 2.7km length of road is requiring a re-sheeting, then funds for 3km can be allocated.





The new segmentation rules adopted by the Asset Team are as follows: In Urban areas, all road segments are to be 250m in length, or from intersection to intersection, and In Rural areas, all road segments are to be 500m in length

These length rules are not hard and fast, especially in regards to roads segments that, due to processing, might be as small as 2m. These smaller segments are combined with the adjoining full length segment.





As well as the new segments, new road centre lines and new road chainage files, consisting of points at 10m and 100m intervals, were generated from the new segments.

Depending on the road location, for example, when intersecting with Highways and Roads maintained by State, a centre line can be longer than a road segment.



Chainages and centre line impact due to intersection with State Road example

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#### Three FME workbenches are used to:

- First step: Generate the new road segments, at the required lengths, depending on whether an Urban or Rural road, and ensuring the sections of sealed/unsealed road along are road are maintained, and generate the new road centre lines
- Second step: Generate the two new chainage files from the new road centre lines
- Third step: Populate the road segment file start and end chainage attributes from the new 10m chainage file





All roads were processed individually, and reviewed at each step, as the original data contained issues, due to segment line mis-joins and vector line orientations, that impacted on the output.

Some roads could be overly complex with numerous sections of a Sealed road interspersed along an Unsealed road. A simple road would take as little as 15 minutes to apply all 3 steps, but complex roads with many different segments and various data issues could take up to 4 hours to complete.



**Road assets review** 

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#### **Spreadsheet input**

Contains comments on each road from all the Works Coordinators responsible for the roads within their individual areas of maintenance,

comments on correct road start and end points, and

any issues around road names/road signs/chainage direction/rural addressing



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Spreadsheet Asset review comments example



#### **Roads Vector data input**

Reviewed by Asset Management Coordinator.

The working roads MapInfo Table data set edited to identify all road segments impacted by the demarcation rules adopted for Council controlled roads intersections with Transport and Main Roads (TMR) State controlled roads. This rule impacts where the chainages start and the different location for the start, and end in some cases, of the road centre lines and segments. In Urban areas, all roads were broken at each intersection as per the new rule





Intersections with State Road examples .

Single road and road that continues through State Road



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# New Asset ID format and Rules

- Adoption of new simpler Asset ID format
   change from RD-2\_1 to RD2.1 and
- adoption of new road segment length sizes:

Rural roads - 500 metre segment lengths Urban roads – Road intersection to intersection or 250 metre lengths



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Old Asset ID format and New Asset ID format examples

#### Data processing

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## Step 1 New segments and new centre lines

FME workbench generates new road segments, with relevant segment lengths as per the new rules, and

generates the new road centre line as per the corrected alignment from the review vector data



## Step 1 New segments and new centre lines

Uses two data sets for this process;

- the Road segments MapInfo Table with review additions as noted above, for the generation of the new road segments and the new road centre line, and
- the original Road centre lines MapInfo Table – source of attributes for the new centre line













## Step 2 New chainage files

Uses the newly generated road centre line file to create 2 new sets of chainages; chainage points with intervals of 10m, and 100m. with start point of 0m but no chainage point for the end point of the complete road segment, and with the correct symbology and attributes.



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## Step 2 New chainage files

Different road aspects affect the start points of the chainages

- due to intersection with State controlled roads, and
- some fragmented roads have chainages the whole length but the final segments and centre line do not exist where there is no road.

And requires a separate centre line for these chainage creations compared to the centre line for the segments



No road exists but centre line and chainage does

Populating **Road segments** attributes from chainages

Populating the new road segments **Chainage From** and Chainage To Fields with the values from the new 10m chainage file. And requires a separate centre line for these chainage creations compared to the centre line for the segments



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Populating **Road segments** attributes from chainages

The final road segment Chainage To field is a manual input with the exact distance as measured along the segment from the last valid 10m chainage point to the end of the road segment.

In addition, fragmented roads also have a manual measurement added to the Chainage From/To field – example Theodore road

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## Populating Chainage To field with manual measurement

# Data processing final steps

WORLD TOUR

A 2 A



Currently, this project is still going.

I have completed approx. 475 roads out of over 700 shire public roads.

Upon completion of the processing of all the Roads, and

after review by all parties, and acceptance of the new segments , centre lines and chainages,

all the separate files will be combined as follows





1. Road Segment files will be combined into a single Production Road Segments file

using an FME workbench to sort by Road Number and Asset ID





2. Road Centre Line files will be combined into a single Production Road Centre Lines file

using an FME workbench to sort by Road Number





3. The 10m and 100m Road Chainage files will be combined into a single Production 10m Chainage file and

a single Production 100m Chainage file

using an FME workbench to sort by Road Number and Chainage (0m value is the chainage start point)





# THANK YOU!

https://www.banana.qld.gov.au/

peter.lefel@banana.qld.gov.au