

## *Category 3: Excellence in Sustainability*

# Merimbula Airport Foamed Bitumen Stabilisation – Symal Infrastructure

Chris Cleaton, Regional Manager – Victoria  
Stabilised Pavements of Australia



## *2022 AustStab Awards of Excellence*

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# Project Details

- Location: Merimbula Airport, NSW (South Coast NSW) within Bega Valley Shire Council – this airport receives up to 3,000 aircraft movements annually
- Scope: Foamed Bitumen Stabilisation
- Area: 73,000m<sup>2</sup>
- Depth of recycling treatment: 260mm
- Supplementary additive: 1% 50/50 Lime/Flyash
- Primary additive: 2.5% C170 bitumen
- Wearing course: 14/10 double/double sprayed seal
- Recycling of existing pavement materials and a thin overlay of DGB20 for levelling surfaces
- Client: Bega Valley Shire Council  
Principal Contractor: Symal Infrastructure  
Stabilisation Contractor: Stabilised Pavements of Australia Pty Ltd

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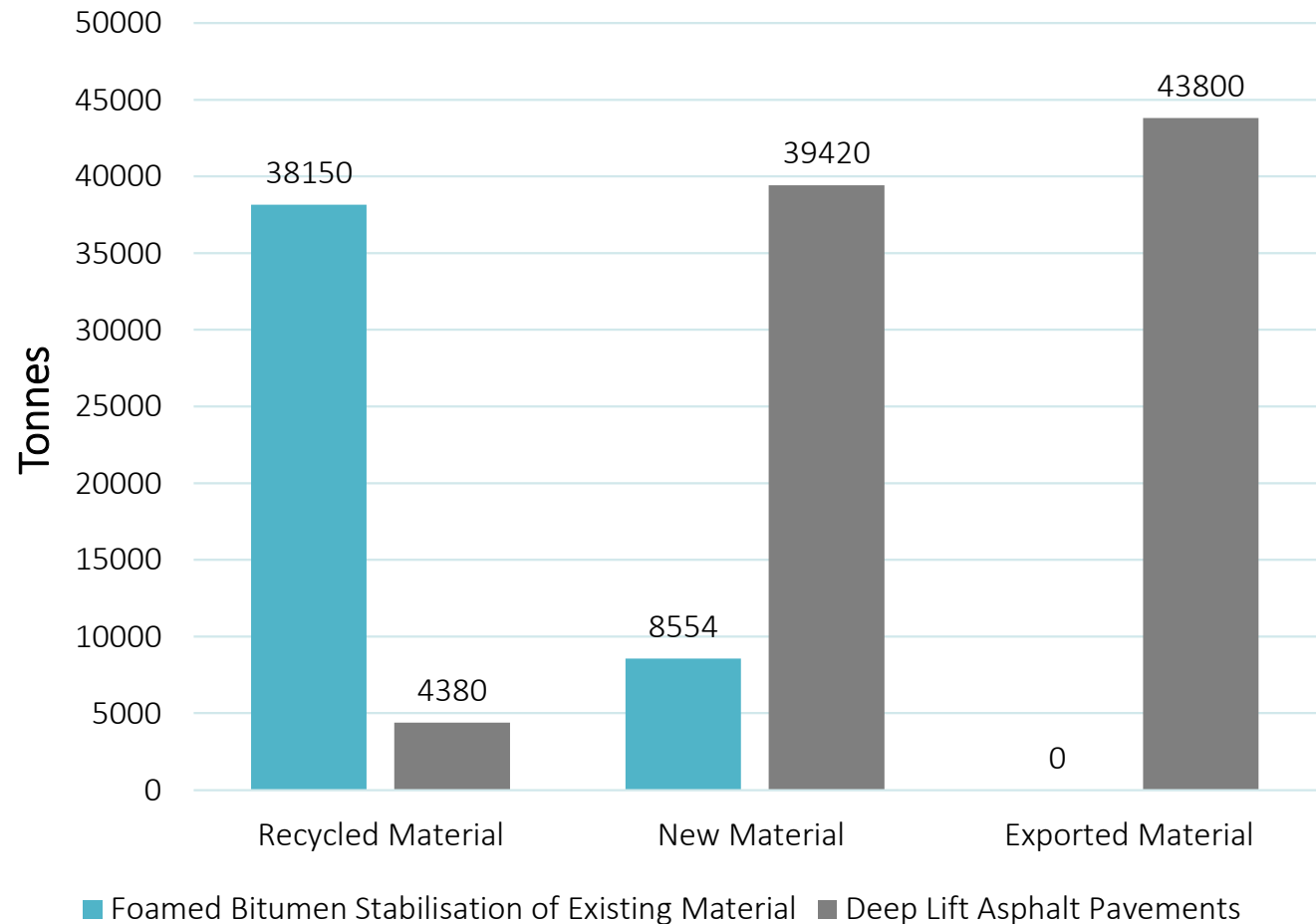
# Stabilisation of the existing materials for sustainable airport pavements – A more sustainable alternative to deep-lift asphalt pavements



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# Environmental Outcomes

- 260mm recycling using Foamed Bitumen compared with 250mm asphalt....
- Greenhouse gas emissions calculated using SPA's Environmental Calculator
- Deep lift asphalt option includes 10% RAP as recycled materials
- New materials include anything imported to site, such as binders, asphalt, sprayed seal, DGB20
- Exported materials include anything carted away from site – for deep lift asphalt, this is all the existing pavement that foamed bitumen stabilisation was able to recycle and regenerate into a new pavement

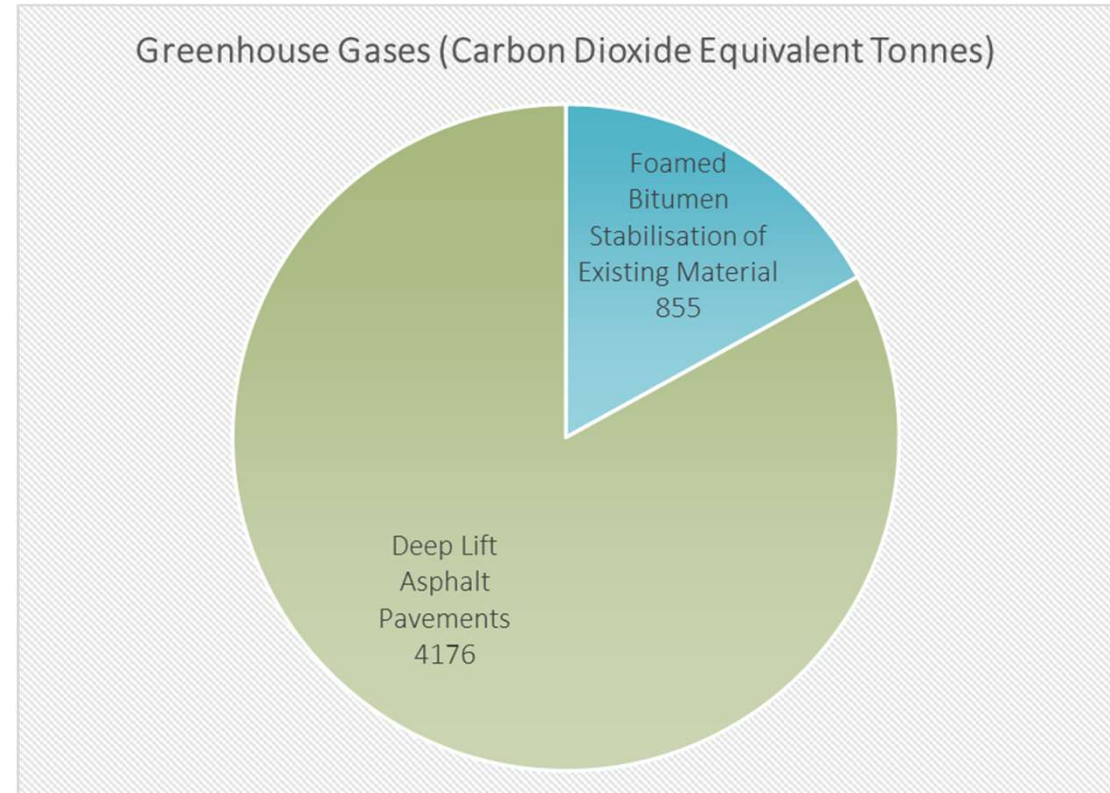


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# Environmental Outcomes

- 260mm recycling using Foamed Bitumen compared with 250mm asphalt....
- Greenhouse gas emissions calculated using SPA's Environmental Calculator
- 80% reduction in emissions by pavement recycling using foamed bitumen stabilisation
- External sources used for emission factors include:
  - Dilger, A., Riley, C., Young, S., Bengtsson, J. & Kneppers, B., C 2013, 'construction materials emission factors', *Greenhouse Gas Assessment Workbook for Road Projects*, ICE V2.0 2011, and Cement Australia



- Manufacturing of materials
- Construction activities
- Fuel consumption for truck movements

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# Social Outcomes

- Extremely efficient productivity
- A foamed bitumen stabilised pavement has given council the option for future upgrades to larger planes, they only need to apply AC wearing course on top
- 1,200 t of bitumen used in 15 shifts averaging 4 loads per day. Total program 18 shifts including the stand down days due to lack of supply issues
- Best production day was 6,000m<sup>2</sup> of supplementary binder mixed in and 8,100m<sup>2</sup> of Foamed Bitumen stabilisation with compaction to levels
- The project had its challenges, with the program hampered by binder supply issues lack of transport arising during the project. However, the team rallied and only 3 days were added to the program

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Pavement Recycling and Stabilisation Association

# Cost Outcomes



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# Quality



- Photo shows recycled foamed bitumen stabilised pavement undergoing final compaction prior to seal
- High quality outcomes and testing undertaken to verify results
- The project achieved conforming modulus and compaction results

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# Principal Contractor Insight

- This project was the first stabilisation project for Symal Infrastructure Project Engineer, Alex Warren. Below are some insights shared by Alex after the completion of the project:

“Through an iterative mix design process, the stabilisation design was reduced by 0.5% bitumen and 0.5% lime by mass, and replaced with 0.5% of fly ash, which unlike the other two components is a waste material produced as a by-product of coal combustion.”  
– Alex Warren, Project Engineer, Symal Infrastructure



“The entire existing pavement and seal was able to be reused in the recycled pavement at Merimbula Airport, which meant that only a minimal amount of material had to be imported to build the pavement to the new levels. Trimmings from the pavement re-shaping works were used to build a new runway shoulder and any excess material was reused in the new taxiways being constructed.” – Alex Warren, Project Engineer, Symal Infrastructure

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# Further Points of Interest

- First job completed under a new foamed bitumen airport specification
- Foamed bitumen was adopted due to high water table and level constraints due to flooding
- Granular material was a long haul away from the job – there was a need to reduce the amount of material being delivered to site
- A foamed bitumen stabilised pavement has given council the option for future upgrades to larger planes, they only need to apply AC wearing course on top
- A large amount of testing was done to refine % of additives for the job
- The use of 50:50 hydrated lime/flyash provided further environmental benefits, by partial use of flyash, which is a recycled manufacturing by-product

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Thank you to all involved in making this iconic and sustainable project possible – to see a short video, visit here:  
[www.linkedin.com/feed/update/urn:li:activity:6907189964245737472](http://www.linkedin.com/feed/update/urn:li:activity:6907189964245737472)



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