



THE SMARTER ROAD

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An aerial, black and white photograph of an airport tarmac. The foreground shows a wide, paved taxiway with white directional arrows and the number '17'. In the middle ground, several aircraft are parked at gates, with ground service equipment and personnel visible. The background features airport buildings and a cloudy sky. A vertical blue and white bar is on the right side of the image.

Smart Design

SMART DESIGN



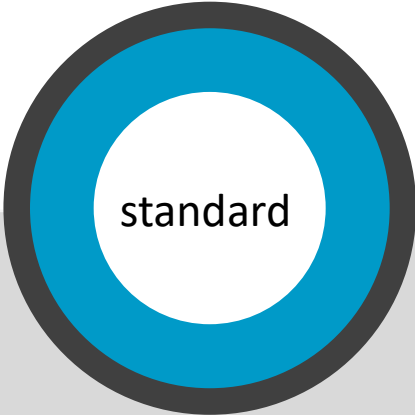
EME2

High Modulus Asphalt

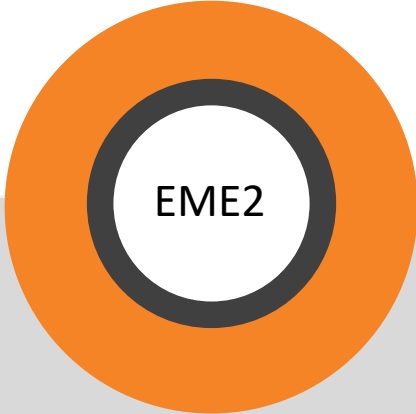
Handle heavy repetitive loads

Structural Mix

EME2 VS STANDARD ASPAHLT



VS



50mm SM14 asphalt
50mm DG14HS asphalt
250mm DG20HM asphalt
(placed in 3-4 layers)

50mm SM14 asphalt
50mm DG14HS asphalt
190mm EME2 asphalt
(placed in 2 layers)

150mm improved subbase

Subgrade



Smart Material Use

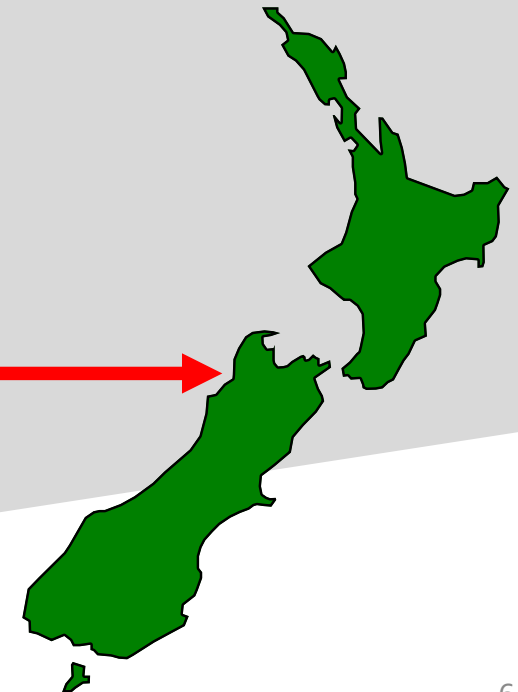
SMART MATERIAL USE



SH6 Glenhope to Kawatiri

Site passes through national forest

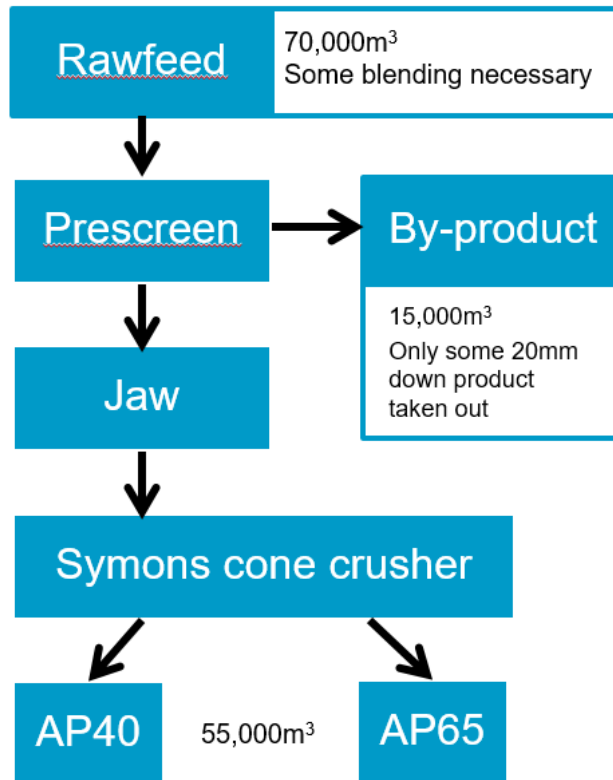
10.5 km realignment



SMART MATERIAL USE

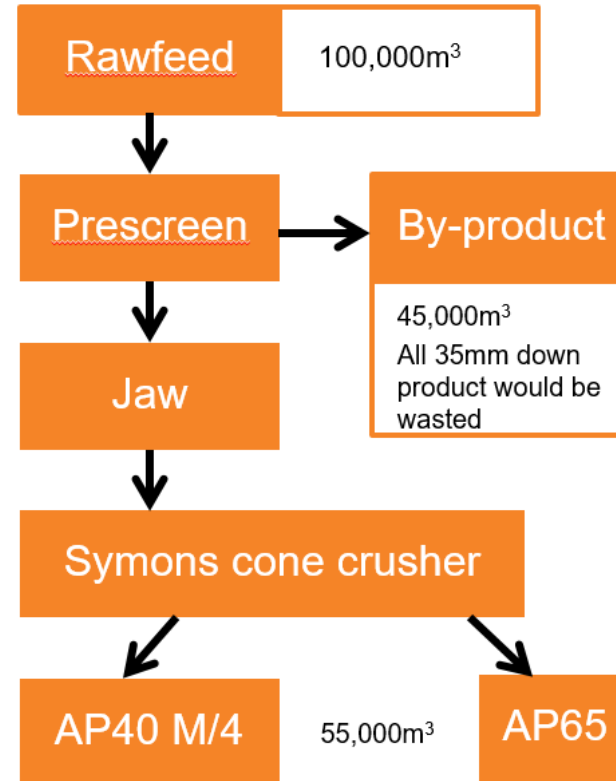
B/3 AP40

What actually happened



M/4

What would have happened



RAP (RECYCLED ASPHALT PAVEMENT)



Used in NZ for over 10 years

Old asphalt surfacing milled up

Reused in new asphalt products

Aged binder

Performance enhancing properties

CRUMB RUBBER



Fulton Hogan Research Project

Optimisation of CR binders

Asphalt & Chip Sealing

Stability and low odour

Performance enhancing properties

CRUMB RUBBER - TYPES



STRAIGHT CRUMB RUBBER

Whole tyres cut or ground into small pieces

DEVULCANISED CRUMB RUBBER

Tyre tread cut or ground into small pieces and processed to remove sulphur bonds

MODIFIED PELLETISED CRUMB RUBBER

Blend of modifiers and crumb rubber into useable form

CRUMB RUBBER - CHALLENGES



STABILITY

ODOUR

SUPPLY

BIOBITUMEN



Reducing Bitumen Usage

Extensive quality testing for performance

A number of options

Available in NZ

Creating internal specification for use

RECYCLED CONCRETE



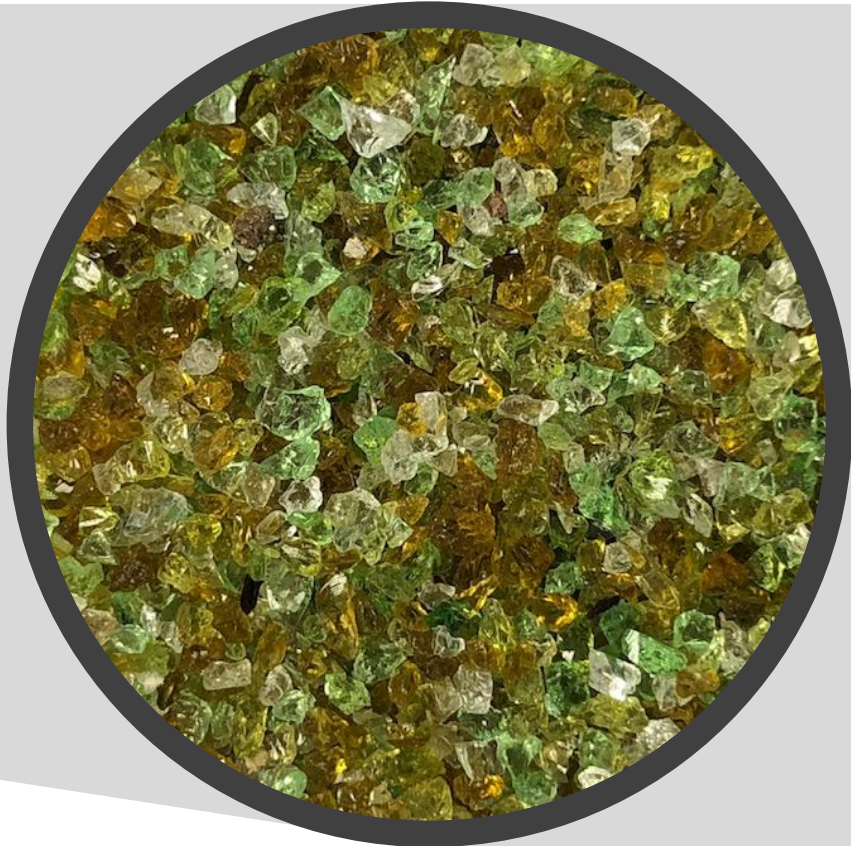
Specified in M/4

Performed better than virgin aggregates

Used in a number of projects

Still not widely used/ specified

CRUSHED GLASS



Subbase Aggregate

1mm Sand

Inclusion is now business as usual in
Canterbury

Interest from councils around the
country

PlastiPhalt®



Used in NZ for over 10 years

Old asphalt surfacing milled up

Reused in new asphalt products

Aged binder

Performance enhancing properties

PlastiPhalt®



R.O.S.E scheme

Collects used oil containers

Previously have gone to landfill

PlastiPhalt®



The plastic oil containers are shredded and re-used

The plastic is encapsulated into the binder

Resulting in great load-bearing ability

And a lower carbon footprint

PlastiPhalt®



KEY LEARNINGS

4 years of development

Trials included:

- Bitumen assessment
- Asphalt designs
- Asphalt performance testing

Focusing on delivering everywhere

PlastiPhalt®



56,700

4L container oil containers saved from landfill