

Model Roads Pilot Project

Project Aims

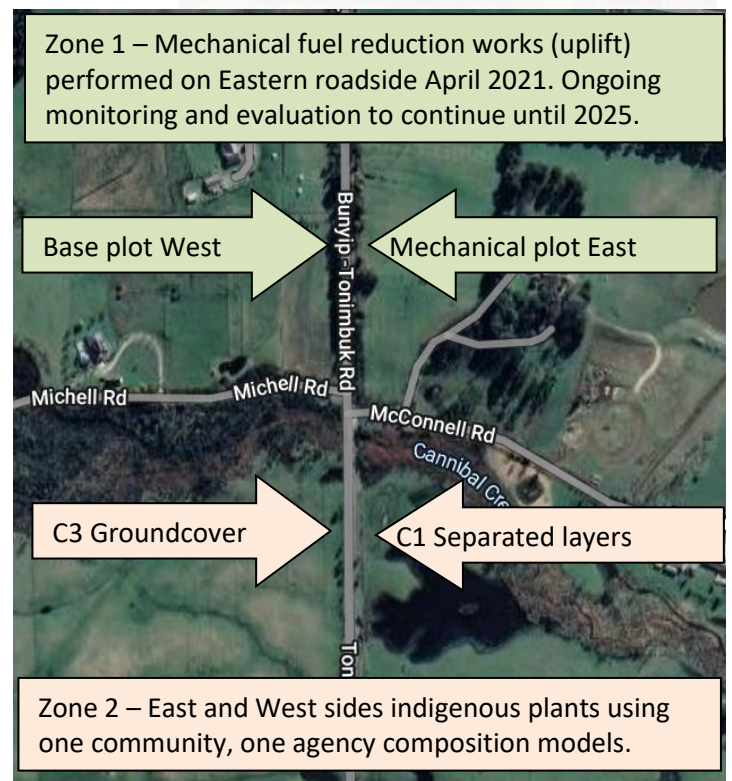
With funding from the Victorian Government Safer Together Program, Cardinia Shire Council worked with local community, SME's and agencies to:

- Identify optimal roadside planting strategies to reduce risk and impact of “wicking” during bushfire.
- Observe, record and report roadside fuel loads through different model designs.
- Help inform future roadside planting strategies in bushfire prone areas using indigenous, lower flammability species.
- Contribute to balancing bushfire risk reduction along roadside reserves with the retention and enhancement of ecological values.
- Reduce the risk and impact of bushfire along roadside reserves by minimising the ability for bushfire to spread via roadside vegetation.

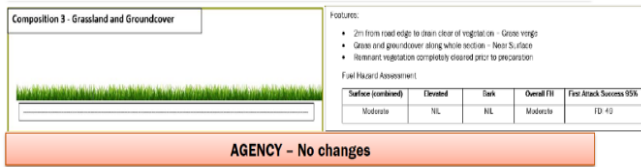


Project Method

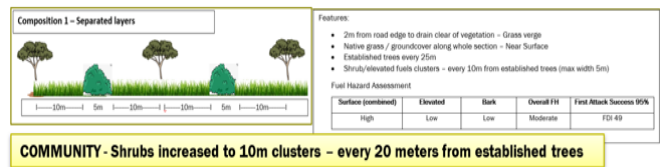
- Using different fuel reduction strategies in separate zones such as mechanical fuel reduction.
- Planting indigenous species with low flammability / high moisture retention properties along a North-South roadside reserve previously impacted by bushfire.
- Segmenting the model roadside reserves and implementing different principles to designated planting zones to collect data about fuel load variants, and fuel moisture content in each segment.
- Using data captured to help inform bushfire risk mitigation, roadside vegetation management strategy and retention of ecological values of relevant vegetation.



Zone 2 West – Agency design composition



Zone 2 East – Community design composition



Project Developments

- Year one (2021) of the project was affected by covid restrictions interrupting the regular maintenance schedule. Supplementary replanting occurred May 2022.
- Plot compositions were reduced from four to two (East and West) to enhance data richness.
- Years two-three (2022-23) of the project were affected by unusual mortality of tube stock (approx. 80%). Investigations found that both East and West plots were infected with Phytophthora.
- Plot maintenance to continue for a further 12 months, with final botanical report due April 2024.

Project Outcomes

- Increased understanding of environmental factors affecting roadside vegetation regrowth to inform future projects.
- Vegetation assessment conducted April 2021 and will benchmark future annual assessments as the plots develop.
- Increased planned and spontaneous indigenous vegetation growth to roadside reserve.
- Data collection on mechanical fuel reduction works (uplift) and regrowth rate.

Zone 1 West vs East post works (uplift)



Zone 2 West C3 Agency design



Project Learnings

This project and circumstances around its implementation have produced valuable transferrable learnings.

Optimal planting time

The project commenced approximately 2 years post bushfire event. This provided time and conditions for invasive species and pasture grasses to become established in the plots reserved for planting. This resulted in more intensive plot preparation works and ongoing maintenance to manage legacy seed stock.

Optimal planting time to repeat this type of project may be immediately post fire event, requiring less intensive preparation and maintenance while tube stock is establishing.

Soil testing to inform site selection

Unusually high plant mortality prompted soil testing at the site in March 2023. This confirmed the presence of Phytophthora on both East and West plots. Higher than average rainfall during 2022 in Bunyip North, ancillary drainage and large volumes of heavy cartage vehicles using the road may have been contributing factors to this development.

Future site consideration for any type of revegetation works should include soil testing for suitability prior to selection and during implementation.

Pasture grass surrounding vegetation considerations

Pasture grass and livestock paddocks border both East and West test plots. The invasive coverage and rapid growing nature of pasture grass presented a challenge to maintain the plots using the standard maintenance schedule. Maintenance treatment via slashing and waterway friendly herbicide was effective in part; however manual hand weeding inside the plant guards was still required and at increased intervals. Clean, suitable mulch was transferred to a portion of the West plot in March 2022 for monitoring. This area recorded reduced rates of pasture grass growth, requiring significantly less intensive maintenance.

Subsequent site selection would be best to include buffered/delineated zones from invasive and undesired species such as shelter belt, clean mulch or gravel.

Mechanical works (uplift)

Mechanical uplift in Zone 1 was employed to remove ladder fuels to a height of 2 metres in 2021 for the purpose of treatment comparison. This occurred at the same time as Zone 2 plots were prepared and planted. The costing for this option was twice that of the Zone 2 preparation for planting, per 200 metres. Zero maintenance has been performed since these initial works. The mechanical uplift treatment, whilst originally more expensive, required no ongoing maintenance costs and retained its reduced bushfire fuel value after 2 years.

Mechanical uplift could be seen, where appropriate, as a viable, low maintenance, lower overall cost, long term alternative for reducing fuel loads and breaking up vertical fuel continuity along roadside reserves.

Future Actions

- Annual monitoring, data collection and reporting to continue.
- Botanical survey due 2024.
- Final project report due post April 2025.