

## PRESIDENT'S MESSAGE

## BY HEATH CURNOW

It is pleasing to note the many achievements of the association during the past three years during some otherwise tough economic times with the shortage of government funding, the cancelled East West link in Victoria and similar projects and the implications of a downturn in mining particularly iron ore pricing. As the 2014-2015 season starts to draw to a close here at AustStab we are geared up for the fresh challenges ahead as we continue to strive towards our fundamental objectives.

AustStab, continues to be focussed on educating those calling for stabilisation works to ensure the desired outcomes are met. This is achieved by setting national standards of performance and partnering with CPEE to deliver stabilisation courses nationally.

Support for AustStab association continues with active working relationships with other agencies and associations:

- State Road authorities across the country
- AustRoads,
- Leading universities from around the country, engineering consultancy firms,
- ARRB (Formerly Australian Road Research Board),
- Civil Contractors Federation (CCF)
- AAPA (Australian Asphalt Paving Association)
- IE Aust (Institute of Engineers Australia)
- CCAA (Cement Concrete and Aggregates Australia)
- Consult Australia
- Full range of stabilisation binder suppliers
- Accredited Contracting Members.

For the stabilisation industry as a whole there are many new challenges and exciting opportunities that we face in the coming years. Aside from the economical challenges facing the industry at the moment, one of the biggest challenges

for AustStab is to continue to ensure the high quality standard required to ensure stabilisation works are successful.

As a contracting practitioner, I constantly see contracts calling for lime stabilisation works that specify lime without nominating which type of lime. Quicklime has the highest concentration of calcium and is typically what the industry uses for lime stabilisation on site. Other types of lime are available on the market however they are usually cheaper and with less calcium content therefore less beneficial or not applicable. It is important to ensure:

- lime saturation tests often using hydrated lime in the laboratory are converted to quicklime for use on site.
- Also note the Available Lime Content to ensure you are getting the right concentration of active ingredient.
- Remember to do mat tests across the width of the spreader run and check the delivery dockets. Accredited contractors have verified that they understand the importance of this process.

This will help ensure the success of your lime stabilisation works.

The other challenge we face in ensuring the longevity of the industry is ensuring stabilisation works are completed with the correct equipment and experienced personnel. Using an AustStab/ARRB nationally accredited contractor at least provides some comfort that the contractor has the required capable equipment, experienced staff and project experience at a business. Either way it is still imperative that the mobile mixing plant be used with a centrally mounted mixing chamber to ensure all material is thoroughly mixed throughout the full depth and width of the pavement layer. Non purpose built attachments and agricultural machinery and blade mixing using a grader will lead to



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stabilisation failures and the detriment of the stabilisation industry. Ensure pavement success by ensuring you are getting the correct binder applied with the correct purpose built machinery.

Note that the 2015 AustStab Awards of Excellence nominations are currently open. Submissions close on 8th June 2015. Again I'd like to thank Caterpillar for their sponsorship of the awards.

The awards will be presented to the winners at the Annual Gala Dinner following the AGM this year will be held in the Yarra Valley in Victoria. Thanks again to Wirtgen Australia for their continued support and sponsorship of the opening dinner at the conference. This year we also thank Astec for providing a barista for breakout sessions during the third day of the conference.

# CEO'S MESSAGE

## BY LEAH FISHER

AustStab has contributed to *Roads & Civil Works Magazine* for a number of years, and we have had a successful relationship with the previous publisher and editorial team during that time. The magazine has always presented the AustStab message in a manner consistent with the brand of AustStab - which is that AustStab provides technical and contracting expertise in the area stabilisation in the Australian market.

Stabilisation in Australia is going through exciting and challenging times.

As I travel around Australia, the messages that I receive from local and state government is consistent. Stabilisation will form a major portion of the solution for pavement maintenance moving into the future, as it addresses an increasing need to focus on quadruple bottom line reporting to the end road user.

The experience in stabilisation is growing, with the technology continuously being recognised as a viable solution to the reducing financial budgets and increasing community expectations, while maintaining the road infrastructure network. In March 2015 we celebrated our 1000th delegate attending our much valued training course delivered with the Centre of Pavement Engineering Education (CPEE) (see story page 42). Education is still being sought after by the market.

Stabilisation will currently allow 100 per cent of quarry products in a current pavement to be recycled to produce a new pavement with a 25 year life span, when designed and constructed properly. This has been the case in Australia for more than the 20 years of AustStab's existence. Often when I talk to people, both in practice and in academic circles, there seems to often be the feeling that the process is something new and exciting, failing to recognise the long-tested and established practice.

With reducing budgets, it is vital that stabilisation works are constructed in a timely manner, with all works preceding and subsequent to stabilisation works being completed well.

There are extremely competitive times in the Queensland and Western Australian markets, with the decline in royalties to the regions. This has in turn placed additional pressure on state budgets, with State Treasuries battling the Federal Government for allocation of the Goods and Services taxes and other funding. We strongly believe that knowing the fundamentals of stabilisation contracting are applied to every job will ensure that quality long term solutions are provided by every contractor delivering every stabilisation and pavement recycling job in Australia.

AustStab is currently continuing to review all aspects of our strategic plan and will deliver the new strategic plan at the Annual General meeting. The meeting will be hosted at the Yarra Valley lodge in Victoria, on 27 - 29 July 2015. This year will mark the celebration of the 4th AustStab Awards of Excellence, sponsored by Caterpillar, with new categories for the Young Stabiliser of the Year and Best Overall Award Winner. We will review some a winner in this edition of the magazine.

I take this opportunity to thank
Heath Curnow and David Berg for their
contributions to AustStab as the President
and Vice President of AustStab for the
last three years. This will be Heath's final
President's contribution. I have found
Heath and David's guidance and leadership
of AustStab to be supportive, gentle and
consistent.

They have been able to view the market of Australia as a whole, and provided a clear mandate for ensuring that the market stays open and welcoming to all, whilst



AS I TRAVEL AROUND AUSTRALIA, THE MESSAGES THAT I RECEIVE FROM LOCAL AND STATE GOVERNMENT IS CONSISTENT. STABILISATION WILL FORM A MAJOR PORTION OF THE SOLUTION FOR PAVEMENT MAINTENANCE MOVING INTO THE FUTURE.

ensuring that the technical integrity of the association is maintained. I wish them both well in their future endeavours both within AustStab, and beyond.



# ENTRIES OPEN FOR AUSTSTAB 2015 ANNUAL AVVARDS OF EXCELLENCE

LEADERS AND TRENDSETTERS IN INDUSTRY STABILISATION AND INNOVATION WILL BE RECOGNISED FOR THEIR ACHIEVEMENTS, AS NOMINATIONS FOR THE AUSTSTAB 2015 ANNUAL AWARDS OF EXCELLENCE OPEN.

AustStab's Council, with the support of Caterpillar, present the fourth annual awards night, which promotes and recognises excellence in the stabilisation industry in Australia.

## NOMINEES MAY BE ELECTED IN FIVE CATEGORIES AT THE 2015 AWARDS:

#### Work Health & Safety

The Work Health & Safety section covers three areas: best workplace heath and safety management system; the best solution to an identified workplace health and safety issue; and the best workplace health and safety practices in a small business.

#### Excellence in Research or Education

Recognising outstanding achievements in pavement stabilisation and research, this annual award may include a grant of \$500 due to the potential importance to pavement sustainability and research in Australia winners may bring.

#### Innovation in Excellence in Sustainability

Nominees for this category must demonstrate economic, social and environment sustainability in pavement stabilisation and recycling and outline a brief overview of sustainable alternatives and the benefits and costs associated.

## Recycling in Local Government

The Recycling in Local Government category recognises how Local Government has adopted innovative recycling practices and pursues initiatives that result sustainable management of the environment. Evidence included needs to demonstrate that the project is involved in efforts to apply sustainable development and promote the best practices in the development, conservation and preservation of the environment. Examples include: recycling construction materials, household waste and reducing greenhouse gas emissions through the alternate use of recycled materials.

#### Young Stabiliser of the Year

Aged 35 years and younger, the Young Stabiliser of the Year award applies to a stabilising professional who has shown a significant achievement in pavement stabilising; a demonstrated understanding of the role and purpose of stabilisation in the construction industry; and have proficiency in the use of communication skills in stabilisation projects.

#### Overall Winner of the Year

If deemed appropriate by the judges, an Overall Winner of the Year will be awarded. To be eligible, the winner must demonstrate excellence in stabilisation. Only annual Award Winners will automatically be eligible for the Overall





Winner of the Year Award in the year of their win.

The award winner may be nominated by AustStab to compete in the 2015 Engineers Australia Awards of Excellence.

## Submissions require the following inclusions:

In 1000 words or less, the applicant must provide an overview of the initiative, including:

- The initiative name as it should appear on the award
- The name of the entrant
- Key initiative staff
- The objectives of the initiative
- A description of the operating environment or context and how that affects the initiative
- Any specific challenges that were encountered in the implementation of the initiative

A five-slide PowerPoint presentation must be submitted for display at the awards ceremony covering:

- The title of the initiative and the title of the submitting organisation
- A description of the initiative undertaken
- Key points of interest about the initiative

- Evidence of success
- Supporting data for the application

Evidence of the initiative in action, including in .PDF format, as relevant:

- Images that represent the entry in JPG, PNG or GIF format.
- Supporting evidence of success stories or: audit data, cost analyses, customer experience survey results, documentation you have designed or anything that will help the judges to understand the impact of your work.
- Limit: Five A4 pages of submission.

Entry to the AustStab 2015 Annual Awards of Excellence is made through an online submission at the AustStab website at www.auststab.com.au

Entry to the awards is open to Australian private and public organisations. Entrants do not need to be members of the Association to be eligible, must be accredited contractors, or be in the process of achieving accreditation in accordance with the AustStab ARRB Accreditation Scheme.

Nominations close June 8, and judging will be completed June 22.

Finalists will be invited to the awards gala dinner to be hosted at the Yarra Valley.

## THE 2014 AUSTSTAB AWARDS OF EXCELLENCE FINALISTS AND WINNERS:

### Category One: Work Health and Safety

**Winner:** Stabilised Pavements of Australia: Risk Reduction - Foamed Bitumen Foaming Agent

**Highly Commended:** FK Gardiner and Sons Pty Ltd: 100 Days of Safety

**Finalists:** Accurate Asphalt and Road Repairs Pty Ltd: Cultural Change through the implementation of accredited safe work systems

FK Gardiner and Sons Pty Ltd: Gore Highway - Building Sustainability for the Future

## Category Two: Excellence in Research or Education

**Winner:** Ausroads - RIIRC309A - Conduct Stabiliser Operations

**Highly Commended:** Reuben Royce Lucero -Effect of Using Lime to mellow clay subgrades in low trafficked road pavements

#### Category Three:

Innovation or Excellence in Sustainability in pavement stabilisation

**Winner:** Negri Contractors Pty Ltd - Melbourne Airport - Delta <u>Infill GSE</u>

**Highly Commended:** QRCG - Great Alpine Road, Bruthen Rehabilitation The City of Gold Coast - Sustainable Pavement Management

**Finalist:** King and Campbell - Glenview Park, Yippin Creek

## Category Four: Excellence in Recycling in stabilised

Keira Road Mount Keira

pavements in local government

Winner: Wollongong City Council - Mount

**Highly Commended:** The City of Gold Coast - Pavement Recycle Finalist: Mildura Rural City Council - NDRRA Flood Recovery Program



# WOLLONGONG CITY COUNCIL'S STABILISING SUCCESS

## AWARD-WINNING MOUNT KEIRA PASS STABILISATION PROJECT PUT TO THE TEST IN WILD WEATHER

Storms battering the NSW region in April put Wollongong City Council's award-winning Mount Keira Pass Stabilisation project to the test.

Wollongong City Council Senior Geotechnical Engineer Peter Tobin says that a recent visit to the site, commonly plagued by rockfall and heavy rain, was proof of the project's success.

"There wasn't even a leaf on the ground, it justified its worth in the storm," he says.

Wollongong City Council won the award for Excellence in Recycling in Stabilised Pavements in Local Government category at last year's AustStab Annual Awards of Excellence with their Mount Keira Pass Stabilisation project.

Mr. Tobin says the Mount Keira Road pass was often troubled by rockfall and had a dangerously angled road.

After rockfall onto the road and a subsequent risk assessment in 2012, the council was told it had to close the road.

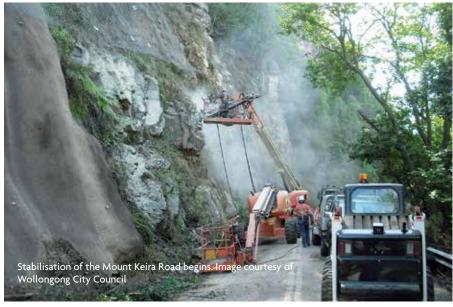
By December 2013, the Wollongong City Council had put together a stabilisation project that used geotechnical processes it hadn't tried before and work was soon underway.

The stabilisation side of the project involved recycling elements of the existing road itself.

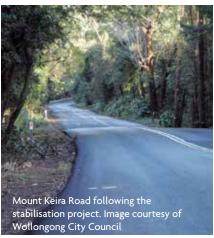
"We had a winding road with blind corners. We got that equipment in, ground it up and reshaped it," says Mr. Tobin. "It was all done on site, not one shovel was taken to and from the site."

"Everyone put their heads together and we came up with a design that everyone was happy with," he says.

The project included roughly 500 metres







of rockfall hazard reduction work, 180 metres of lower embankment anchoring and no fines concrete reconstruction, 400 metres of asphalt and spray seal works and 2100 square metres of stabilisation using lime slag.

The project was constrained due to the fact that the area surrounding the site was all National Park. This meant that not one piece of machinery could be set in the wrong place, says Mr. Tobin.

The works were completed in October 2014, ahead of time and at nearly half the cost of a normal project, he adds.

At the recommendation of its contractors, Specialised Geo, the Wollongong City Council submitted the project to the AustStab 2014 Annual Awards of Excellence.

Mr. Tobin says the project stood out at the awards as recycling was more often than not used in urban streets rather than in mountainous passes.

He says that the council is very proud at the success of the Mount Keira Road Stabilisation project and that the Wollongong public have made great use of the area.

Nominations for the AustStab 2015 Annual Awards of Excellence are now open.

# LEARNING MORE ABOUT PAVEMENT RECYCLING AND INSITU STABILISATION

THE 1000TH STUDENT OF A JOINT COURSE BETWEEN AUSTSTAB AND CPEE TALKS ABOUT WHY YOU'RE NEVER TOO EXPERIENCED TO LEARN NEW TRICKS.

#### **COURSE SUMMARY**

Pavement Recycling and Insitu
Stabilisation includes discussion on
the types of various stabilising binders
used in road construction, their
properties, manufacturing, and chemical
reactions during the stabilisation
process and safety considerations
associated with their use. The types of
binders described are; lime, cement,
cementitious pozzolans, bitumen,
chemical and synthetic polymers.

- Types of Stabilisation Undertaken
- Relative Costs of Stabilisation
- Binder Types
- Characteristics of Materials
- Material Mix Design
- Structural Design of Insitu Stabilised
  Pavements
- Construction Process & Pitfalls, Equipment & Design Detailing
- Rehabilitation
- Types of Specifications & Contracts
- Case Studies and Open Forum

### **2015 DATES**

20 – 21 May, Horsham, VIC

10 – 11 June Cloncurry, QLD

8 July

Launceston, TAS

22 – 23 July

Rockhampton, QLD

12 – 13 August Perth, WA It's been 44 years since Ray Hussey got his first summer construction job with his local shire.

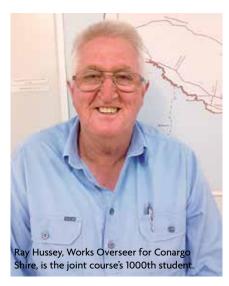
In addition to seeing the Windouran shire amalgamate with the now Conargo shire that he continues to work for, Mr. Hussey has been at the centre of history, watching road construction techniques modernise in Australia

"My first job was driving a tractor that was towing a roller," he says. "Since then I've done everything from patching roads to driving graders and trucks. I was even the noxious weed inspector for a while."

For the past 20 years, Mr. Hussey has been the Works Overseer for the Conargo Shire, a job that requires he stay on top on the latest road maintenance and construction techniques. So when his Director of Engineering emailed him about a Pavement Recycling and Insitu Stabilisation course in Wagga Wagga this past March, he took up the opportunity.

Mr. Hussey happened to be the 1000th student who has taken part in the course, a joint project by AustStab and the Centre for Pavement Engineering and Education (CPEE). The course offers a review of the types of stabilisation, as well as more detailed presentations on types of binders, material characteristics, and design and mix detailing. It offers sessions on specifying and case studies for practical outcomes.

Mr. Hussey says the course was not only engaging, but delivered content he was able to apply immediately. He's currently overseeing a project that involves linking up a gravel road with an adjoining shire, and sealing it up to where it meets the



Victorian border.

He says the course was great, not only because of the information provided via the course, but also from what he learned by meeting up with staff from other shires to compare notes.

"You meet other people and learn about what they're doing, and what you can bring back home," he says.

Mr. Hussey says a major advantage of the course was its location in Wagga Wagga. He says often he needs to travel to Darwin or other major cities to attend these courses, making it a burden on the council.

Mr. Hussey certainly recommends the course to other professionals involved in road maintenance.

"Even if you just take away 50 per cent of what's offered, it's still a lot," he says. "People should take advantage of learning more about the technology that's out there."



## AUSTROADS REFINES FOAMED BITUMEN DESIGNS

AN AUSTROADS TRIAL IS SHOWING HOW FOAMED BITUMEN CAN BE A WORTHY OPTION FOR MAJOR VICTORIAN ROADS.

The irony of degrading current roads as a consequence of fixing up sections hasn't escaped Matthew Kovess, Stabilisation Manager at Downer Australia.

In a country as vast as Australia, Mr. Kovess says it's a sad reality that local roads are damaged from the transport of crushed rocks from quarries, and asphalt from plants, to road maintenance sites.

"The less we can transport materials, the better," he says. "Just think about the carbon output of quarrying and transporting rock. It's a wasteful process, where our roads already contain high quality crushed rock. The more we can reuse of these current materials, the better."

Fortunately, the practice of recycling current materials in the maintenance of our roads is growing, and the latest joint project initiated and funded by Austroads, with funding provided by AustStab and VicRoads, is helping promote that growth, by confirming the failure mechanism of the pavement. In Australia the failure mechanism is believed to be in fatigue.

The use of foamed bitumen in Australia dates back to trials in the 1960s and 1970s, via rudimentary, agricultural equipment. As technology improved in the 1990s, foamed bitumen became a more feasible project on Australian roads. Over the past five years, Kovess explains that road authorities in Queensland and Western Australia have stabilised many roads using the foamed bitumen process, appreciating the advantages over laying down new bitumen.

"A lot of it comes down to the availability of suitable materials and budgets. It's not a cheap solution, however it's certainly a lower cost one compared to some alternatives," he explains. "If you want flexible pavement, especially in an area that's prone to flooding, it's a great option. It's also quite handy to recycle existing materials."

Kovess says the practice is likely more popular in Queensland and Western Australia, because there are more areas with only remote access to an asphalt plant. This makes recycling local materials an even more attractive option.

To help encourage Victorians to use foamed bitumen on its major highways, the joint project is looking to learn more about how to improve the process, by a rather counter-intuitive method – by setting up the trials for failure.

"The trials are being under-designed so that we can asses the results of how exactly they failed," explains Kovess. "From there, we can compare our expectations and what happens on site to our lab results, and make improvements from there."

The first trial that was purposefully underdesigned was at the Calder Highway in 2013. The two key failure modes the team was looking at were fatigue and rutting.

It took not even a week for the team to learn a quick lesson from that trial. The team hadn't brought in any additional materials. Both the shape of the road and the ride were poor, and without any additional materials, they weren't able to fill in or shape out the road and get it level. Just a week after the treatment, the first 10 metres of the road took a huge hit.

Another lesson learned from that trial was the need to remove existing asphalt patches. This lesson was one taken from laboratory trials following the first onsite trial. The Downer laboratory tested materials sampled from a future site with different levels of recycled Asphalt, ranging from 20 to 40 per cent. During this process, they compared different mix levels used in Queensland and Victoria/NSW to see which mix would work out best. They found that the ideal mix was 3 per cent bitumen, 1.5 per cent hydrated lime, and the lowest end of recycled asphalt at 20 per cent.

With these lessons in tow, VicRoads nominated a second trial site on the Western Freeway at Ballan, approximately 78 kilometres northwest of Melbourne,





the main freight route between Adelaide and Melbourne.

This time, the team brought in imported crushed rock, that they could level out at 20 to 30 millimetres over the areas. Before applying the rock, they removed existing asphalt patches, so that they could better control the asphalt mix to the ideal requirements tested in the laboratory.

The team was then ready to start the foamed bitumen treatment process. The first was to apply an initial treatment of hydrated lime, which was supplied by Sibelco and spread by Downer at 1.5 per cent, and mixed with Stabilised Pavements of Australia's stabiliser. The lime works as a secondary binder, helping the bitumen to coat the finer particles and provide early strength. The team then lightly compacted the area to leave a level surface for the bitumen tanker.

At 190 degrees, the tanker with the bitumen and foaming agent was hooked up to the stabiliser. The stabiliser formed a train over 30 metres long, drawing the bitumen out of the tanker and into the mixing chamber, adding cold water and air to foam to over 20 times it's original size.

The bitumen combines with the crushed rock and hydrated lime to create a flexible, high strength and water resistant mix. An 18-tonne pad foot roller then compacted the area, and a grader trimmed it, followed by compaction with a smooth drum. A multi tyre roller shaped and levelled the area.

The pavement cured overnight, gaining strength and drying back. A watercart from Stabilime lightly watered the pavement, and the area received a final trim to level, then the pavement was ready to seal. VicRoads inspected the site, where the team completed a final brooming and prep work, then applied a 14/7 seal onto the foamed bitumen pavement.

Although generally the project went to plan, Mr. Kovess says a few interruptions made for some long days. He says they could have planned for more time to allow on-site product sampling and visits.

The trial period is expected to be complete within three years. Mr. Kovess says they certainly consider the methodology a success, as they were able to improve the process over the Calder Highway trial. They'll now be checking for fatigue or rutting to see how these failures occur, and use those lessons for future trials and more extended applications.

With this success under their belt, Mr. Kovess says he expects to see an increase in the use of this foamed bitumen process in the years to come.

"We're showing that it's suitable for patching and isolated treatments, even on major highways," he says. "Asphalt just isn't always readily available, and this is a cost-effective solution. We're not seeing much more money invested into road maintenance, so we need to come up with better treatment alternatives like this one."

#### **SUMMARY**

Scope: ARRB, VicRoads & AustStab joined together on a second Victoria site as part of AustRoads Project TT11825 Mix Design and Field Evaluation of Foamed Bitumen Stabilised Pavement.

**Site:** Western Freeway at Ballan, 78 kilometres north west of Melbourne, and main route to Adelaide.

**Process**: On site, Asphalt patches were profiled out and side cast, replaced with class 2 crushed rock. On day 2, all areas treated with hydrated like spread at 1.5 per cent and mixed with Stabilised Pavements of Australia's stabiliser. At 190 degrees tanker with bitumen and foaming agent was connected to stabiliser. Forming train 30 metres long, stabiliser drew bitumen out of tanker and into mixing chamber, adding cold water and air to foam over 20 times original size. Bitumen combined with crushed rock and hydrated lime. Compaction with 18-toone pad foot roller, trimmed with grader, follow-up with compaction and smooth drum and multi tyre roller to shape and level. Overnight, pavement cured. A light fan with watercart and final trim to level. Final booming and prep work, then seal applied.

Key Outcomes: Project constructed with less than 15 per cent virgin materials, saving over 400 tonnes from landfill, and reducing impact through less vehicle movement. Cost estimated to be 20 per cent less than alternative to mill and fill with asphalt.

Raw Materials used: 110 tonnes.

Project Manager : Downer/SPA

### **CONTRIBUTIONS:**

Stabiliser: Stabilised Pavements of Australia Spreader: Downer Water cart: StabiLime Bitumen: Viva Energy Hydrated Lime: Sibelco Sealing & Traffic Control: VicRoads

### SPECIAL THANKS:

Geoff Jameson (ARRB) Brian Wright (VicRoads) Total number of contractors: 27

Plant & Equipment: AustStab



## **AustStab**

# Awards of Excellence

4TH ANNUAL AWARDS 2015



## Categories

Category 1: Work Health & Safety

Category 2: Excellence in Research or Education Category 3: Innovation or Excellence in Sustainability

Category 4: Recycling in Local Government

Category 5: Young Stabiliser of the Year

Category 6: Overall Winner of the Year

## **Nominations**

Nominations Open - 15th April 2015 Nominations Close - 8th June 2015 Nominations: www.auststab.com.au

## Gala Dinner

Tuesday 28th July 2015 Yarra Valley Lodge, Chirnside Park

