

# **2018 Newcastle Science and Engineering Challenge Program Report**

Report Prepared by  
**Brian Atkins Regional Chair and Paul Griffiths Deputy Regional Chair**  
on behalf of the Newcastle Challenge Coordinating Committee



*New Space City Campus  
The University of Newcastle*



**Science and Engineering Challenge:**

***2018 Winners***

***BHERT Awards for***

***Outstanding Collaboration in  
Community Engagement***

***Newcastle S&E Coordinating Committee***

***Supported the Application***



**The Newcastle Science and Engineering Challenge is supported by  
seventeen Rotary Clubs from the Greater Newcastle Area District 9670  
in Newcastle, Lake Macquarie, Maitland, Cessnock, Lower Hunter  
and Port Stephens areas**



## THE SCIENCE AND ENGINEERING CHALLENGE



The Science and Engineering Challenge is designed to inspire year nine and ten students to consider future STEM careers by involving them in a series of fun and engaging science and engineering-based activities that would not be available in a school classroom.

These activities themselves involve a wide range of STEM challenges including building model bridges, planning electrical supply grids and even building functional catapults.

## NEWCASTLE SCIENCE AND ENGINEERING CHALLENGE

This community-based program commenced in Newcastle in 2001 and now in its 19th consecutive year with the continued strong partnership between The University of Newcastle's Faculties of Science, Engineering and Built Environment, and Rotary International's District 9670 Rotary Clubs as community partners from Newcastle, Lake Macquarie, Maitland, Cessnock, Lower Hunter and Port Stephens areas.

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### ROTARY INTERNATIONAL DISTRICT 9670, 2018 REGIONAL CHALLENGES

**Newcastle Challenge : Western Plains Challenge Dubbo :  
Upper Hunter Challenge Muswellbrook : Outback Challenge Cobar**

Please note the winners of these Regional Challenges and other Regional Challenges from throughout NSW competed in the 2018 NSW State Final Super Challenge which was hosted, organised, coordinated and funded by the 2018 Newcastle Science and Engineering Challenge Coordinating Committee.

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### NEWCASTLE SCIENCE AND ENGINEERING CHALLENGE COORDINATING TEAM 2018

- Newcastle Regional Chair for 2018 Newcastle Challenge Series, 2018 NSW Super Challenge Series and Discovery Days 2018 Brian Atkins Past District Governor Rotary District 9670 (Rotary Club of Waratah)
- Deputy Newcastle Regional Chair Coordinating Committee for 2018, Newcastle Challenge Series the 2018 NSW Super Challenge Series and Discovery Days 2018 Paul Griffiths (Rotary Club of Williamstown)
- The University of Newcastle, Faculty of Engineering and Built Environment and Director of National Challenge Operations Dr Terry Burns
- The University of Newcastle Challenge Event Manager Michael Cassey
- The University of Newcastle, Past Head, School of Mathematical and Physical Sciences Professor John O'Connor
- Engineers Australia and Rotary Representative, Earl Heckman (Rotary Club of Maitland) 2018 Discovery Days Coordinator for Maitland, Avondale, Newcastle, Cessnock and Port Stephens.
- Rotary Representative from Rotary Club Newcastle Enterprise Bob Aus and Newcastle Challenge Treasurer
- Rotary Representative from Rotary Club of Newcastle Enterprise Keith Finnie and Newcastle Challenge Secretary
- The Challenge Team Volunteer and Friend of the Rotary Club of Belmont Fiona Hilliar
- Rotary Representative from Rotary Club of Newcastle Enterprise Margaret McLachlan
- Rotary Representative from Rotary Club of Williamstown Graham Giddey
- Rotary Representatives Laurie McGrath Rotary Club of Wallsend-Maryland
- Rotary Representative Clarice Hamling from Rotary Club of Waratah
- Valley Homes Director and Community Representative Craig Baumann

## 2018 NEWCASTLE CHALLENGE SERIES

### VENUE AND DATES

The 2018 Newcastle Science and Engineering Challenge was held for the sixth time at The Forum Sports and Aquatic Centre at The Newcastle University, University Drive, Callaghan NSW on Friday 27 July, Monday 30 July to Friday 3 August 2018. This venue again proved to be very successful with 60 high schools invited to participate.



46 high schools competed over the six Challenge days with a total number of 1,032 students.

A total of 73 teachers, 9 guests, 179 event staff from the University Challenge Team, Rotarians, partners and volunteers, with a total of 1,442 people attended these events.

**FULL DAY ACTIVITIES:** Catapult, Gold Fever,

**HALF DAY ACTIVITIES:** Stringways, ElectraCity, Grasping at Straws, Confounding Communications, Turbine and Helter Skelter Shelter

### PARTICIPATING SCHOOLS

**DAY 1: 27 July 2018: Newcastle Science and Engineering Challenge** Hunter Valley Grammar School, Hunter Sports High, Hunter School of the Performing Arts, St Phillip's Christian College Cessnock, Kurri Kurri High School, St Phillip's Christian College Port Stephens, Maitland High School

**DAY 2: 30 July 2018: Newcastle Science and Engineering Challenge** Maitland Christian School, Newcastle Grammar School, Kotara High School, Callaghan College Wallsend Campus, Newcastle Waldorf School, St Joseph's Campus Lochinvar, Maitland Grossmann High School

**DAY 3: 31 July 2018: Newcastle Science and Engineering Challenge** St Paul's Catholic College Booragul, St. Mary's Catholic College Gateshead, Cardiff High School, Dungog High School, Toronto High School, Tomaree High School, West Wallsend High School, Medowie Christian School

**DAY 4: 1 August 2018: Newcastle Science and Engineering Challenge** San Clemente High School, St Pius X High School, Rutherford Technology High School, Irrawang High School, Bishop Tyrell Anglican College, Wyong Christian Community School, St Phillip's Christian College Waratah, Whitebridge High School,

**DAY 5: 2 August 2018: Dolleina Newcastle Science and Engineering Challenge** Hunter Christian School, Warners Bay High School, Francis Greenway High School, Macquarie College, Avondale School, Callaghan College Waratah Campus, Merewether High School, Lambton High School

**DAY 6: 3 August 2018: Newcastle Science and Engineering Challenge** Morisset High School, Lakes Grammar Anglican College, Newcastle High School, Charlton Christian College, Belmont Christian College, Mount View High School, All Saint's College St Peter's Campus Maitland, Belmont High School

### THE WINNERS

Congratulations to the following winning high schools with the highest three schools progressing to the 2018 NSW Science and Engineering Super Challenge (State Final).

Day 1: Hunter School of the Performing Arts	1149.76
Day 2: St Joseph's Campus Maitland	1084.37
Day 3: St Mary's Catholic College Gateshead	1395.49
Day 4: St Pius X High School Adamstown	1338.58
Day 5: Merewether High School	1259.97
Day 6: ASC St Peter's Campus Maitland	1456.85





## 2018 NSW SUPER CHALLENGE (STATE FINAL) IN NEWCASTLE

The 2018 NSW Super Challenge (State Final) was held at The Forum Sports and Aquatic Centre at The Newcastle University, Callaghan on Tuesday 28, Wednesday 29 and Thursday 30 August. *A special thanks to Chris Dale and the staff of The Forum Sports and Aquatic Centre for hosting our Newcastle Challenge program 2013-2018, our sixth year.*



A total of 24 winning high schools from throughout regional New South Wales qualified for the 2018 NSW Super Challenge (State Final) in Newcastle. Competing high school teams did not know in advance which activity they were to attempt. The activities were drawn out by ballot at the beginning of each Challenge day. A total of 61 teachers, 5 invited guests, 88 event staff from the University Challenge Team, Rotarians, partners and volunteers, with a total of 850 people attending this event. The schools engaged in the following activities with a total of 683 students selected to compete in eight activities.

**FULL DAY ACTIVITIES:** Catapult, Gold Fever,

**HALF DAY ACTIVITIES:** Stringways, ElectraCity, Grasping at Straws. Confound Communications, Turbine and Helter Skelter Shelter

## PARTICIPATING SCHOOLS



**DAY 1:** Keira High School, Albury High School, Henry Lawson High School, Santa Sabina College, Mackillop College, Bowral High School, Macquarie Anglican Grammar School, Cobar High School

**DAY 2:** Danthonia School, St Pius X High School, Gosford High School, Bishop Druitt College, St Columba Anglican School, Coonabarabran High School, Camden Haven High School, Tuggerah Lakes Secondary College Tumby Umbi

**DAY 3:** All Saints College St Peter's College Maitland, St. Mary's Catholic College, William Carey Christian School, Shore School, Epping Boys High School, Thomas Reddall High School, St Patrick's College, Caroline Chisholm College

## THE WINNERS

Congratulations to the following schools:

Day 1:	Keira High School	1320.09
Day 2:	Danthonia School	1229.97
Day 3:	All Saints College St Peter's Campus Maitland	1284.47

***Congratulation to Keira High School Wollongong on their invitation to compete in the Science and Engineering Challenge 2018 National Final in Humpty Doo DARWIN NT on 26 October.***



## NATIONAL FINAL HELD IN HUMPTY DOO (NT)

The 2018 National Final of Science and Engineering Challenge was held in Humpty Doo, Darwin Northern Territory on Friday 26 October 2018.

A total of eight high schools from all over Australia which included the wild card entry from NT qualified for the National Final. Competing high school teams did not know in advance which activities they were to attempt. The activities and high schools were drawn by ballot at the beginning of the National Challenge day.



The schools engaged in the following eight activities for the National Final, with 247 students competing.

**FULL DAY ACTIVITIES:** Gold Fever- The Bridge (A revised format for the first time in SEC history) World Sailing Spectacular.

**HALF DAY ACTIVITIES:** Mission to Mars, Flat Pack, Babe, Future Power, Helter Skelter Shelter and Turbine.

### FINAL RESULTS AND ONGRATULATIONS TO ALL THE PARTICIPATING SCHOOLS

1.	Launceston Christian School (Tasmania)	1320.20
2.	Whitefriars College (Victoria)	1178.96
3.	Darwin High School (Northern Territory)	1140.82
4.	St. Peter's College (South Australia)	920.38
5.	Riverside Christian College (Queensland)	821.13
6.	Perth College (Western Australia)	786.29
7.	St. Phillip's College (Northern Territory)	764.55
8.	Keira High School (New South Wales)	626.90

**THE WINNING HIGH SCHOOL OF THE SCIENCE AND ENGINEERING CHALLENGE  
2018 NATIONAL FINAL REPRESENTING TASMANIA  
LAUNCESTON CHRISTIAN SCHOOL**



## 2018 SCIENCE AND ENGINEERING CHALLENGE PROGRAM SPONSORS

We wish to acknowledge the sponsorship and continuing financial support of the following companies and Rotary Clubs who make the Science and Engineering Challenge in Newcastle sustainable.

Please Note: Unlike most other Regional Challenge program held across Australia, because of this fantastic sponsorship no entry charges apply to our high schools for our Newcastle Challenge program and the NSW State Final (Super Challenge).

**Dollina Renton and Alexander Tickle, Dolleina Pty Ltd:**

Principal Partner, Naming Rights Event Sponsor of Day 5 Newcastle Challenge

**Port of Newcastle:**

Principal Partner, Naming Rights Event Sponsor of Day 3 Newcastle Challenge

**Laing O'Rourke:**

Principal Partner, Naming Rights Event Sponsor of Day 6 Newcastle Challenge

**Maitland City Council:**

Iron Level Activity Sponsor of Day 4 Newcastle Challenge and two Days at the NSW Super Challenge

**GHD:**

Iron Level Activity Sponsor of Day 4 Newcastle Challenge and two days at the NSW Super Challenge

**Thales Australia:**

Iron Level Activity Sponsor of Day 4 Newcastle Challenge

**Office of the NSW Chief Scientist and Engineer:**

Principal Partner, Naming Rights Event Sponsor of Day 1 Newcastle Challenge and the NSW Super Challenge.

**Australian Defence Force Recruiting:**

Principal Partner, Naming Rights Event Sponsor of Day 2 Newcastle Challenge and NSW Super Challenge

**Rotary Club of Rutherford-Telarah Inc:**

2018 Iron Level Event Sponsor Newcastle Challenge

**Rotary Club Williamtown Inc:**

Iron Level Event Sponsor Newcastle Challenge

**Rotary Club Morisset Inc:**

Iron Level Event Sponsor Newcastle Challenge

**Rotary Club Charlestown Inc:**

Iron Level Event Sponsor Newcastle Challenge

**Rotary Club Toronto Inc:**

Iron Level Event Sponsor Newcastle Challenge

**Rotary Club of East Maitland Inc:**

Iron Level Event Sponsor Newcastle Challenge

**Rotary Club of Raymond Terrace Inc:**

Iron Level Event Sponsor Newcastle Challenge



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*Thank You*  
TO OUR SPONSORS



## 2018 DISCOVERY DAYS SPONSORS

We wish to acknowledge the sponsorship and continuing financial support of the following companies who make the Discovery Days in Newcastle sustainable:

**Port Waratah Coal Services**

**Daracon Group**

## 2018 SCIENCE AND ENGINEERING DISCOVERY DAYS PROGRAMS TEAM

### Maitland, Avondale, Newcastle, Port Stephens Cessnock and Discovery Days

- Newcastle Regional Chair PDG Brian Atkins (Waratah Rotary Club)
- Deputy Newcastle Regional Chair Paul Griffiths (Williamstown Rotary Club)
- Coordinator, Maitland, Avondale, Newcastle, Port Stephens and Cessnock Discovery Days Earl Heckman (Maitland Rotary Club)
- The University of Newcastle Director of National Challenge Operations Dr Terry Burns
- Challenge Event Manager Michael Cassey
- The University of Newcastle, Jessica Kearney (Maitland Discovery Days)
- The University of Newcastle, Chris Hendry (Avondale, Newcastle (St Therese's PS and St Mary's Catholic College Gateshead), Port Stephens and Cessnock Discovery Days)
- Committee Member and Treasurer Bob Aus (Newcastle Enterprise Rotary Club)
- Committee Member Margaret McLachlan (Newcastle Enterprise Rotary Club)
- Committee Member David Thomas (Williamstown Rotary Club)
- Committee Member Moira Sullivan (Schools Contact and Liaison)
- Committee Member Jennifer Wood (Retired School Teacher)

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## 2018 NEWCASTLE SCIENCE AND ENGINEERING CHALLENGE DISCOVERY DAYS PROGRAM

### General Statement:

This year we conducted 15 Discovery Days, with a total of **73 schools, 108 team entries, and a total of 3,647** primary school students participating.



### Administration:

Our thanks are extended to all our Committee for another outstanding year, and for their valuable support. Moira Sullivan and Jenny Wood supported by Chris Hendry and Helen Beckett provided excellent liaison with the primary and high schools. Terry Burns' Challenge Team did an excellent job throughout the 15 days of competition. **Sincere thanks also to Brian and Jo Marsden for their valuable support throughout the program.**

### Competition days:

The feedback from the school teachers was extremely positive, the trophies were very well received, **and the Science show each day was a highlight.** Generally, the participating high schools were excellent, and students appeared to enjoy the experience.

### Report presented by Earl Heckman - 10 November 2018

On behalf of the 2018 Newcastle Science and Engineering Challenge Coordinating Committee, I wish to extend a special congratulation to the Discovery Days Program Coordinator Earl Heckman, Treasurer Bob Aus, the Committee members and the Challenge Team from University of Newcastle for presenting and running this highly successful program in 2018.

Brian Atkins - Newcastle Regional Chair

## Discover Days Program Dates and status for 2018:

**Maitland:** Wednesday 8 August to Friday 10 August  
ASC St Mary's campus, Maitland  
16 schools / 23 school teams, a total of 595 students  
Venue was excellent, and staff was extremely helpful  
3 days of competition successfully completed, invited back next year  
Team Leader – Jessica Kearney

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**Avondale:** Monday 13 August and Tuesday 14 August  
Avondale School, Cooranbong  
2 days of competition successfully completed  
10 schools / 12 school teams, a total of 317 students  
Venue was excellent, and staff was extremely helpful  
2 days of competition successfully completed, invited back next year  
Team Leader – Chris Hendry



**Newcastle:** Tuesday 4 September to Friday 7 September  
St Therese's Primary School, New Lambton  
18 schools / 28 school teams, a total of 712 students  
Venue was excellent, and staff was extremely helpful  
3 days of competition successfully completed, invited back next year  
Team Leader – Chris Hendry

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**Port Stephens:** Thursday 27 September  
Tomaree High School, Salamander Bay  
6 schools / 9 school teams, a total of 246 students  
Venue was excellent, and staff was extremely helpful  
1 day of competition successfully completed, invited back next year  
Team Leader – Chris Hendry  
(special thanks to members of Nelson Bay Rotary Club)



**Newcastle:** Tuesday 16 October to Thursday 18 October  
St Mary's Catholic College, Gateshead  
14 schools / 21 school teams, a total of 549 students  
Venue was outstanding, and staff was extremely helpful  
3 days of competition successfully completed, invited back next year  
Team Leader –Chris Hendry  
(special thanks to members of Belmont Rotary Club)

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**Cessnock:** Tuesday 23 October and Wednesday 24 October  
Cessnock High School  
8 schools / 12 school teams, a total of 305 students  
Venue was excellent, and staff was extremely helpful  
3 days of competition successfully completed, invited back next year  
Team Leader – Chris Hendry





## ACKNOWLEDGEMENTS

Our 2018 Challenge year commenced with the Newcastle Challenge Dinner and Presentation Night. We extend our grateful appreciation to President Christopher Baldwin and the members and partners of the Rotary Club of Newcastle Enterprise for again hosting the Newcastle Challenge Dinner at Wests Mayfield on 24 July. This was a fantastic evening of *Rotary in Action* when we, with the support of the Challenge Team from the University of Newcastle, presented our exciting 2018 Newcastle Challenge program and acknowledgement of our 2018 Challenge Sponsors.

We thank our guest speaker Professor Darrell Evans, Deputy Vice-Chancellor (Academic) from UoN who presented the keynote address. Professor Evans joined the University of Newcastle in 2017 and is responsible for strategic and innovative leadership to ensure the university delivers on its NeW Futures goals. Darrell is known as an energetic leader with expertise in curriculum development, innovation and enterprise, technology enhancement, learning spaces, quality assurance, and improvement and renewal agendas. He brought all these skills to his presentation.



As always, the table experiment “Turbulent Tower” presented by Chris Hendry provided great Rotary fellowship and a huge challenge to all our guests. There were many representatives at the dinner from the University of Newcastle, Challenge sponsors, Rotary District 9670 and our local Rotary clubs.

Also present, were representatives from our 2017 Newcastle Science and Engineering Challenge (State Final) winners, ASC St Peter’s Campus Maitland. The students were worthy winners of the Rotary Club of Waratah’s Newcastle Science and Engineering Challenge Championship Trophy for the highest scoring high school competing at the 2017 Newcastle Challenge. The school was represented by their Head of Campus Bernard Burgess, supervising science teachers Vicki Grogan and Ken Jordan. St Peter’s Campus also received the Past Rotary District Governor Bob Stent’s District 9670 Memorial Trophy on behalf of Margaret Stent, for the highest scoring high school from District 9670 competing at the 2017 NSW State Final, progressing to the 2017 National Final.

As the Challenge’s community partner in Newcastle with the UON Challenge team, our committee’s organisational structure was outstanding. We wish to acknowledge our Newcastle Challenge Team, Dr Terry Burns, Chris Hendry, Michael Cassey and UON staff, and our activity supervisors and assistants for their great support throughout the entire Challenge program.

I wish to personally thank all our sponsors and their representatives, District Governor Brian Coffey and Carol, District Governor Elect Graeme Hooper and Sue. To our supporting Rotarians and partner from the Rotary Clubs of the Greater Newcastle area, thank you for helping as activity coordinators and activity assistants. This greatly reflects on the outstanding success of our 2018 Newcastle Challenge and Discovery Days programs. It is greatly appreciated.



### ***Newcastle remains the Epicentre of the National Challenge Program.***

As the Newcastle Regional Chair, I wish to extend to our Deputy Regional Chair Paul Griffiths, Treasurer Bob Aus and the hardworking members of our fantastic Newcastle Science and Engineering Coordinating and Discovery Days Teams my grateful appreciation for a fantastic 2018 Newcastle Challenge year.



## **A SPECIAL ACKNOWLEDGEMENT TO DR TERRY BURNS ON HIS RETIREMENT**

It has been a pleasure to work with Terry over the past eight years, and the team wishes Terry and Janice a long, healthy and happy retirement.

**Terry's achievements with the Challenge program are well documented** however it was especially rewarding that he retires holding the trophy for the 2018 BHERT Awards for Outstanding Collaboration in Community Engagement. It is through his leadership, direction, ability think outside the square, encouragement and friendship that this award was gained.

In 2018, the BHERT Awards for outstanding collaboration with and by Australian universities and higher education institutions celebrated their 21st year. The Awards are well-recognised as the pre-eminent recognition of university partnerships, but also act as a barometer of industry-university collaboration in Australia.

The 2018 Awards demonstrated that Australian industry-university and university-community partnerships are becoming the norm and are reaching into every aspect of Australian activity. Congratulations to all involved.

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### **2019 NEWCASTLE SCIENCE AND ENGINEERING CHALLENGE PROGRAM DATES**

**Event: Newcastle Science and Engineering Challenge Date: Friday 26 July (reserve list day), Monday 29 July to Friday 2 August.** Hosted by 2019 Newcastle Challenge Coordinating Committee.  
48 High Schools competing at the Forum Sports and Aquatic Centre, The University of Newcastle

**Event: NSW State Final 2019 Science and Engineering Super Challenge Date: Tuesday 27 August to Thursday 29 August.** Hosted by 2019 Newcastle Challenge Coordinating Committee.  
24 winning High Schools competing at the Forum Sports and Aquatic Centre, The University of Newcastle

**Event: National Final 2019 Science and Engineering Challenge**  
**Venue and Date to be confirmed**

Eight winning high schools from across Australia including a wild card entry will compete at the 2019 National Final

Brian Atkins  
*Newcastle Regional Chair*  
*District Governor 2013-2014 for*  
*District 9670, Rotary Club of Waratah*

Paul Griffiths  
*Deputy Newcastle Regional Chair*  
*Rotary Club of Williamstown*

