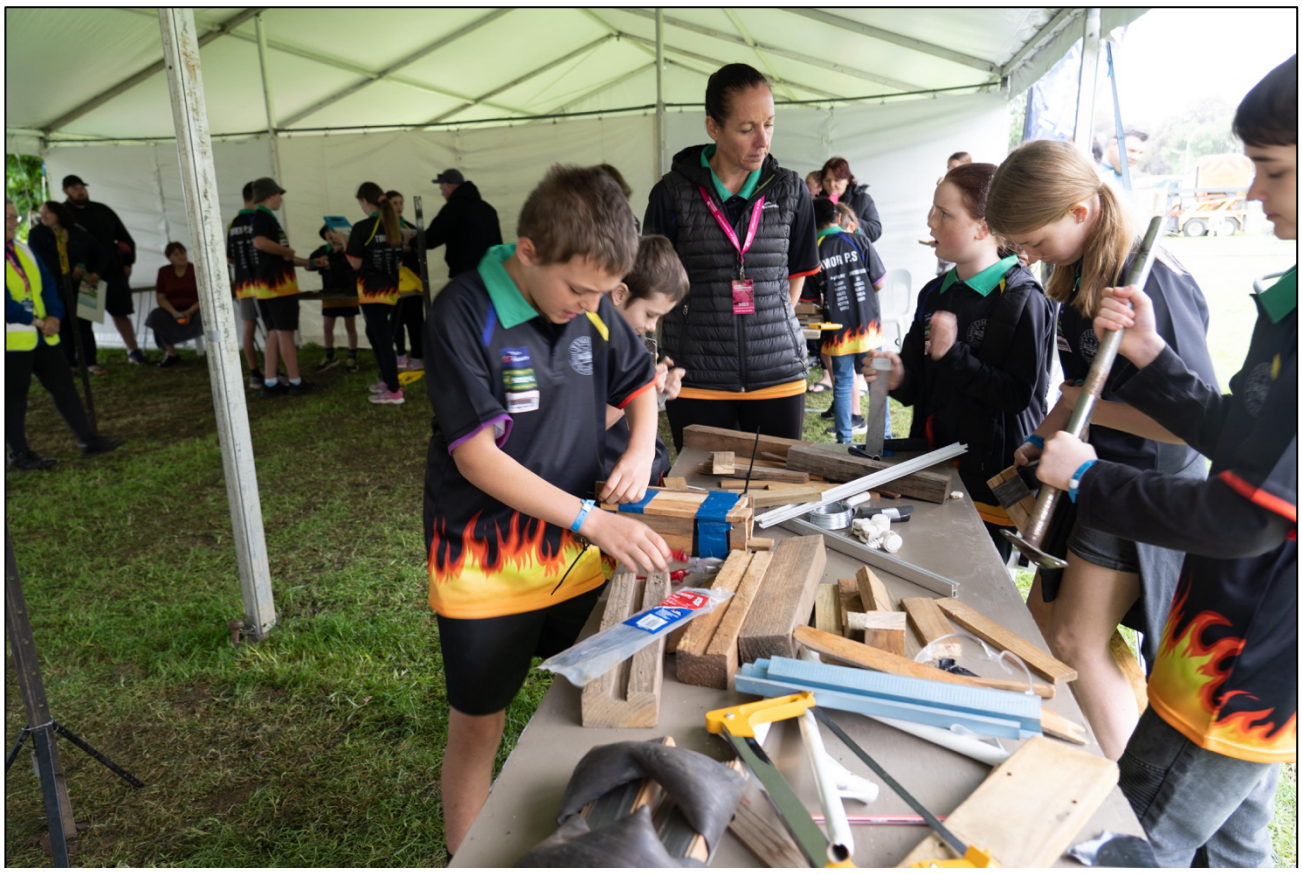
JUNKYARD CHALLENGE 2024 SCHOOL'S HANDBOOK



MARYBOROUGH, VICTORIA
THURSDAY 21 NOVEMBER 2024

Version 2024.01

Coordinators: Mary and Laurie Preston

Do you have creative problem solvers and budding engineers?

The 'Junkyard Challenge' provides a unique but accessible challenge for students of all ages to engage with a one-day / two hour activity in Maryborough during the Energy Breakthrough.

The Energy Breakthrough presents a unique opportunity for students to extend their learning experience beyond the boundaries of formal education.

The following specifications have been framed so that the efforts and experiences of all participants are maximised, to be bound only by the constraints of safety and the spirit of healthy, but friendly competition.

- This event is held on THURSDAY during the Energy Breakthrough.
- Any significant specification changes from previous editions been highlighted and underlined in blue.
- **Key specifications that the Organisers wish to bring to the attention of Team Managers have been highlighted in bold.**
- If changes are made to these specifications prior to the event, Team Managers will be notified via email and a new edition will be published on the website.
- The Energy Breakthrough Organisers have the final authority to decide if any team participates in the event, based on safety and their interpretation of the following rules.
- All enquiries regarding these specifications should be emailed to enquiries@eb.org.au

1.ENTRIES

Categories, Classes and Quotas

Category	Class	Quota
Junkyard Challenge	Primary school students in Years 3, 4, 5 & 6 Secondary school students	12 Teams

Team composition

- All entries are to be team entries and must consist of current school students.
- All team members are expected to be Involved equally in the Challenge.
- Teams in the Junkyard Challenge must have:
  - a team of four (4) students
  - at least half of whom must be female.

Category caps, changes and waitlists:

- A maximum of **two entries per school** will be accepted in Junkyard Challenge
- Additional entries from a school will be placed on a waiting list and will be notified if accepted into the event.
- Correspondence regarding the status of entries on a waiting list will be made directly to a Team Manager only.

2. ASSESSMENT

Overview

- The Energy Breakthrough Junkyard Challenge is unique in that the teams complete an activity which encompasses Design and Construction along with Display and Presentation at the same time.
- Points are awarded following a Rubric which relates to the Challenge selected.
- The Rubric will be sent to participating schools in Term 4.

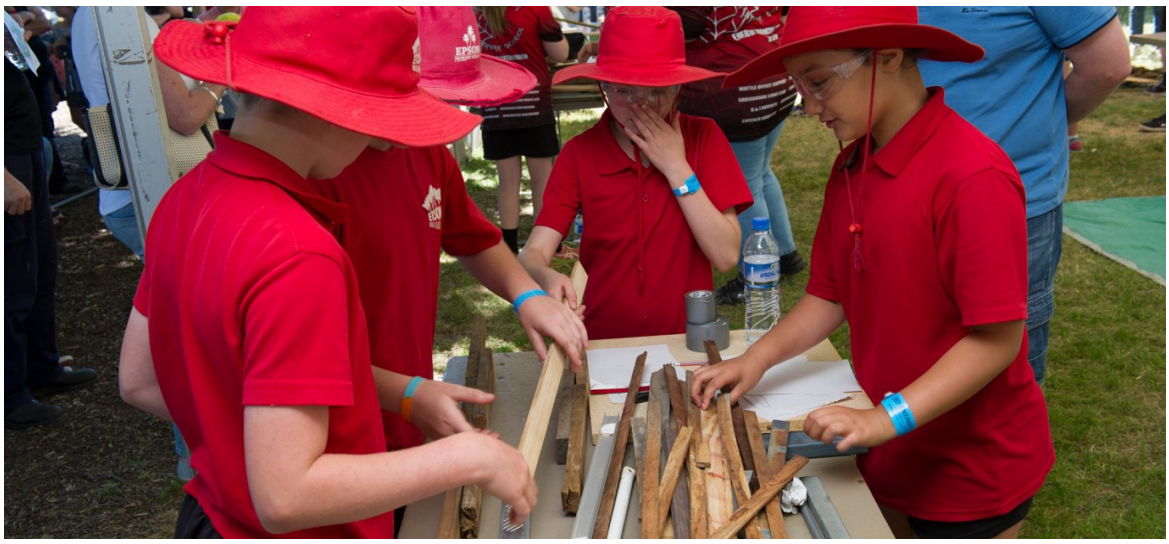
Junkyard Challenge tasks

- There are several Challenges which have been used in the past the Junkyard Challenge more will be added to our list and **one of these will be presented to the teams on the day.** This year's Challenge will be **SIMILAR** to the past challenges (but not exactly the same).
- **To prepare:** Students will be provided with a selection of activities – in Term 4 - which encourages problem solving; use of a range of equipment (i.e. drills); develop cooperation with team; work with of a range of materials.

Scrutineering & Safety

- **Students will be asked to complete and bring to the event their Licence;** which requires them to be capable of using a drill; using a variety of small tools; be aware of the need to walk around workspaces.
- Junkyard Challenge designs will be observed during their construction for any safety issues.
- Students will be supervised when using drills - on a central table.
- All students will be provided with protective glasses to wear when drilling.
- All team members MUST always display good occupational Health and Safety practices – or risk being excluded from the event. (Safety glasses are a MUST when drilling.

4. Types of Possible Challenges



There are several Challenges which have been used in the Junkyard Challenge in the past and more will be added to our list.

One Challenge will be presented to the teams on the day and it's intended that the challenge has an element of surprise to challenge the student's spontaneity.

This year's Challenge will be SIMILAR to the past challenges (but not exactly the same).

Example Challenge 1: Junkyard Challenge – *Crafty Cranes*

- Create an innovative structure that will move a 4 kilogram weight 1 metre away from its starting position.
- Each team will have a star picket (fence post) securely driven into the ground to provide the base for their crafty crane.

Example Challenge 2: Junkyard Challenge – *Better Bridges*

- The challenge is to build a structure which will span 1.5 metres using recycled material, this structure will support 4 litre (4 kgs) bottles of water.

Example Challenge 3: Junkyard Challenge – *Terrific Towers*

- The challenge is to build a structure; standing at least 1.5 metres above the ground; the structure must support 4kgs of weight; the weight will be at a minimum of 1 metre above the ground.

Equipment provided

- The types of materials available will be a mystery to the teams, but they are likely to include recycled items – some useful, some not! It will be up to the team to decide which materials they would like to use and how they will build their structure.
- Electric drills will be available to share in central locations.

TOOL KIT

EACH team will receive this BASIC PACK consisting of:

- Design pack: Paper & pencils.
- Retractable tape measure.
- Fine nib texta.

Tools:

- Scissors.
- Pliers.
- Hacksaw (2 blades)
- Retractable Stanley knife.
- Safety Glasses (2 per team).
- Cutting board (NOT TO BE USED IN STRUCTURE)

Connectors:

- Gaffer tape.
- Rayon cloth tape.
- Roll of thin tie wire.
- Zip ties.
- Bag of Rubber bands
- Ball of string.
- bike tubes

Junkyard Materials

- Materials will be available on the day to assist your construction! *(That's the mystery)*
- There will be a workstation where several adults will supervise the children using the drills, spare Stanley blades also available.
- All team members will have their 'Tools and Equipment Licences signed off by their supervising teacher /mentor prior to the event.
- **Licences will be provided to schools in term 4 via the Team Manager's Hub on the website.**
- Optional: teams may display a team banner up to A2 size.

Process

- **The teams will start with a 15-minute discussion time and then have 75 minutes to build their structure.**
- **Each team may bring a mentor with them to help during the discussion phase and to assist in the sharing of ideas, supervise students and maintain safe practice.**
- **After the first 15-minutes of build time all adults must step back into advisory roles only.**
- *Points will be deducted for adult intervention after these initial 15 minutes period.*
- Please respect that this is a thinking-doing-learning engineering experience for young people.
- The Mentors could be a parent/teacher. If the team is unable to organise a mentor, please let the Planning Committee know prior to the event.
- Students may Barter & Swap what is in the junkyard collection during the time.

Finished Product

- The structure MUST be able to support 4kgs.
- Presentations will be made immediately after the Challenge is completed.

Judging Criteria:

A judging rubric will be emailed to participating schools in Term 4.

"The Challenge Trophy"

- Judges will be looking for the structure that resolves the task, effectively and elegantly. Fitness for purpose and aesthetically pleasing, will win the day.

Special Award – "Working under Pressure"

- For the team that has demonstrated throughout the entire project – consistently sharing ideas & tasks and therefore working together to solve issues as they arise. Your machine may not work the best, but you could be the best working team.

Useful ideas

- As this challenge requires students to respond in diverse and interesting ways, it is suggested that participants utilise the internet to gain insights and options as to how they might respond to the project task, in the lead up to the event. Information is power.

3. Junkyard Challenge Schedule

PRE-EVENT

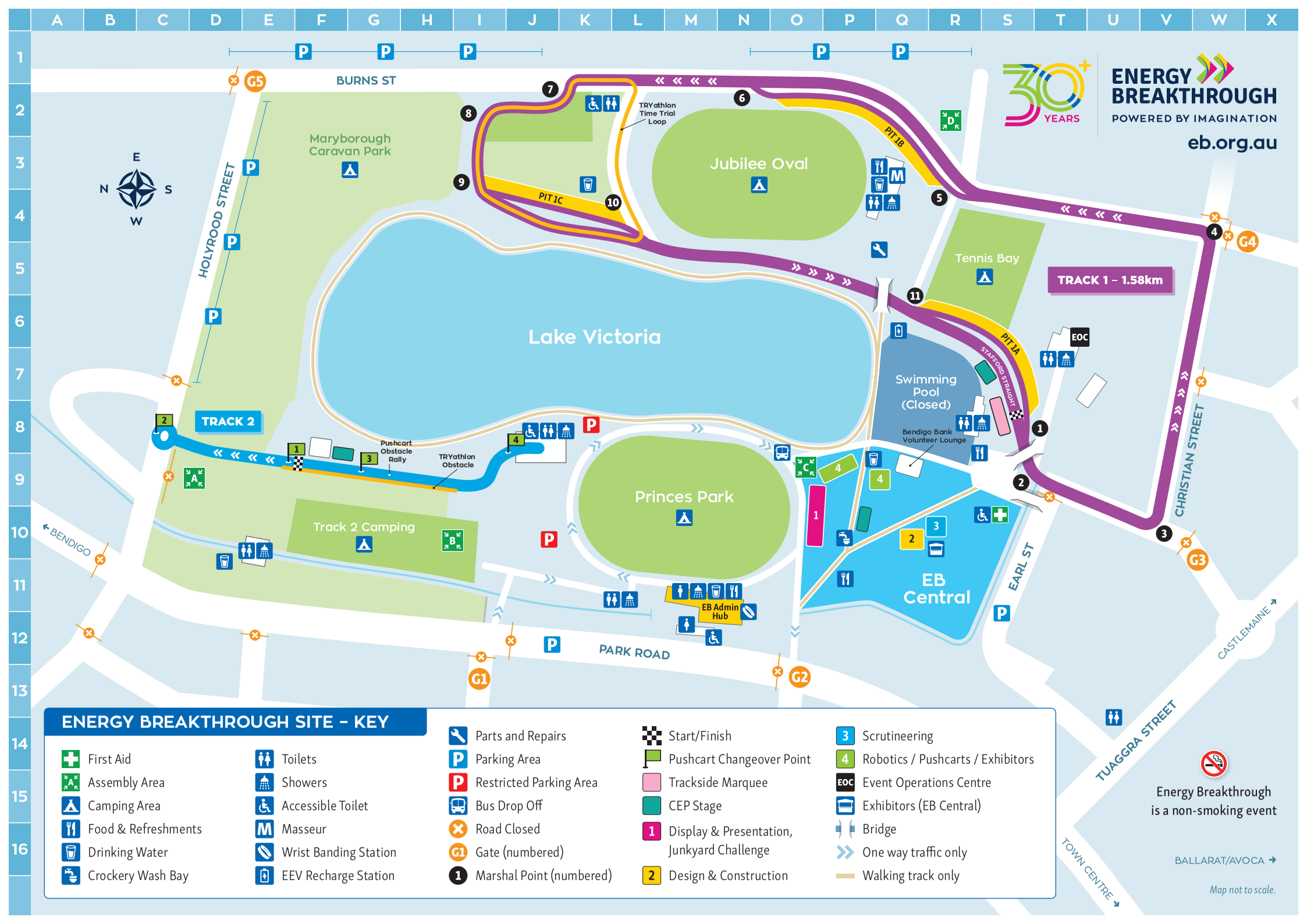
September 2024

Online forms for Camping, Pit Requests, Rider Forms, Arrival Times all OPEN via myEB online portal.

THURSDAY 21ST NOVEMBER

Start Time	Activity	Category	Location/s
From 8:30 AM	Teams Check-in and collect wristbands, etc.	Junkyard Challenge	EB Admin Hub
9:50 AM	Briefing and welcome for all teams	Junkyard Challenge	EB Central
10:00 AM	Team Discussion Time (Mentor available)		
10:15AM	'Hands-on' Challenge Starts (Mentor not-available)		
11:30AM	'Hands-on' Challenge Concludes		
11:30 – 11:45 AM	Judging		
11:45AM	Junkyard Challenge Presentations		
12:00PM	Clean Up		

*** PLEASE NOTE THAT THIS TIMETABLE IS SUBJECT TO AMENDMENTS.**


30+ YEARS
ENERGY BREAKTHROUGH
POWERED BY IMAGINATION
eb.org.au
BURNS ST
HOLYROOD STREET
Maryborough Caravan Park
TRYathlon Time Trial Loop
PIT 1B
PIT 1C
Jubilee Oval
Tennis Bay
TRACK 1 – 1.58km
Lake Victoria
PIT 1A
STAFFORD STRAIGHT
Swimming Pool (Closed)
EOC
Bendigo Bank Volunteer Lounge
CHRISTIAN STREET
TRACK 2
Pushcart Obstacle Rally
TRYathlon Obstacle
Princes Park
Track 2 Camping
EB Admin Hub
EB Central
EARL ST
BENDIGO
PARK ROAD
CASTLEMAINE
TUAGGRA STREET
TOWN CENTRE
BALLARAT/AVOCA
Energy Breakthrough is a non-smoking event
Map not to scale.
ENERGY BREAKTHROUGH SITE – KEY
First Aid
Assembly Area
Camping Area
Food & Refreshments
Drinking Water
Crockery Wash Bay
Toilets
Showers
Accessible Toilet
Masseur
Wrist Banding Station
EEV Recharge Station
Parts and Repairs
Parking Area
Restricted Parking Area
Bus Drop Off
Road Closed
Gate (numbered)
Marshal Point (numbered)
Start/Finish
Pushcart Changeover Point
Trackside Marquee
CEP Stage
Display & Presentation, Junkyard Challenge
Design & Construction
Scrutineering
Robotics / Pushcarts / Exhibitors
Event Operations Centre
Exhibitors (EB Central)
Bridge
One way traffic only
Walking track only