



**LOW MU TILES**



**ENDURANCE**



**4WD TERRAIN**

AARC is a  company

[www.aarconline.com](http://www.aarconline.com)



## AUSTRALIA'S UNIQUE VEHICLE PROVING GROUND

**The Australian Automotive Research Centre (AARC) offers an extensive range of evaluation facilities to all vehicle and component manufacturers**

AARC occupies a 1000 hectare site near Anglesea, 125km south-west of Melbourne and is the largest privately owned and independently operated automotive testing facility in Australia.

Test facilities encompass virtually all driving conditions found in Australia, accommodating vehicles from passenger cars and four wheel drives to heavy trucks and mining equipment. There are many test roads and a variety of surfaces, including a 4.2km hot mixed surface road designed for testing component and vehicle durability.

Other roads and sites include a series of gravel and dirt surfaces designed specifically to test road and in-cabin noise, suspension, braking and traction control

systems, dust entry, cooling systems, chassis durability for trucks, and many other aspects of vehicle performance. There are also areas designed and approved for testing and development relating to Australian Design Rules (ADR).

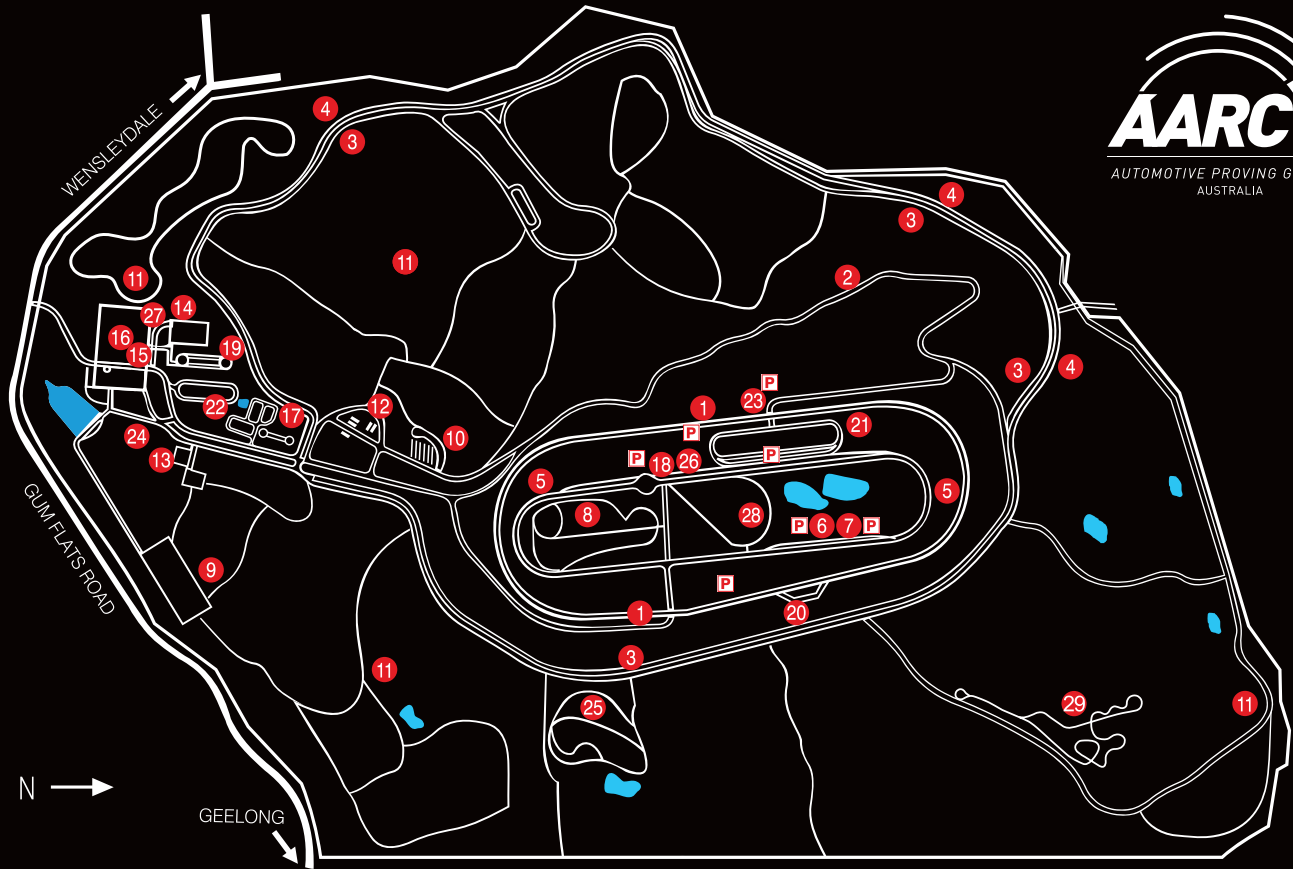
AARC also offers extensive testing for four wheel drive components and vehicles. There are many kilometres of roads and tracks with varied terrain, gradients and surfaces. Test areas include vehicle fording, mud bath, rocky terrain, and approach and departure angles.

Under jointly agreed conditions, AARC allows the construction, by its clients, of engineering test sites specific to that client. This ensures clients can conduct exactly the research and development they require.



## PROVING GROUND FACILITIES

- 1 HIGHWAY CIRCUIT: Bitumen-4.2km
- 2 GRADIENT SECTION: Bitumen-2.2km
- 3 SECOND CLASS SURFACE (Gravel No.1)
- 4 SECOND CLASS SURFACE (Gravel No.2)
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#### SUMMER

December to February  
Temp. range 15-40°C  
Average maximum 24°C



#### AUTUMN

March to May  
Temp. range 11-35°C  
Average maximum 19.5°C



#### WINTER

June to August  
Temp. range 4-22°C  
Average maximum 13°C



#### SPRING

September to November  
Temp. range 8-32°C  
Average maximum 17°C

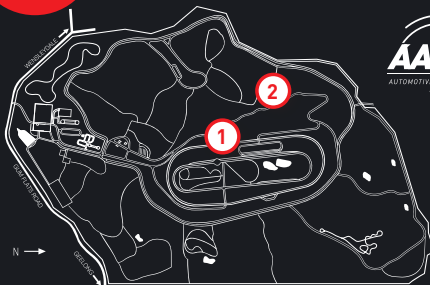


#### AVE. ANNUAL RAINFALL

1965 to 2004 – 801mm  
2005 to 2009 – 651.6mm



# HIGHWAY CIRCUIT



## TECHNICAL SPECIFICATIONS



**4.2km long**  
& 7.6m wide



**11.2m**  
wide superelevant curves



**Hotmix**  
follows natural  
topography

Extra lane of 10mm spray seal surface  
on each curve to give overall width of 11.2m.

Fully fenced preventing wildlife entering  
circuit, allowing testing 24 hours a day.

Suitable for use in testing by cars, trucks and  
motorcycles for:

- component and vehicle durability and general development
- Lane Keeping Assist and associated Driver Assistance functions
- product launches and demonstrations.



**11.2M WIDE CURVES**

EVEN 5% INCLINE



## GRADIENT SECTION

### TECHNICAL SPECIFICATIONS



**2.2km long**  
by 6m wide



**Hotmix**  
surface



**5% - 10%**  
decline & even 5% incline



Can be linked to Highway Circuit and 2nd Class Road to significantly increase testing distance.

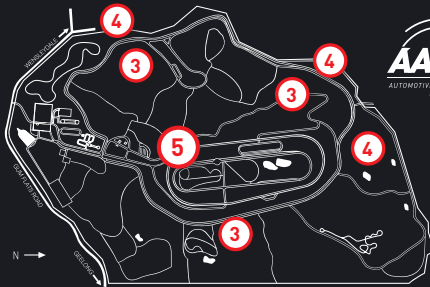
Winding road that can be closed to operate in the opposite direction if required.

Suitable for use in testing by cars, trucks, buses and motorcycles for:

- component and vehicle durability and general development.
- engine retardation, engine torque and general driveability.



## SECOND CLASS SURFACE — GRAVEL



### TECHNICAL SPECIFICATIONS



**9.6km**

long gravel roads



**2 x 8m**

wide roads



**Follows**

natural topography

1 x 1km gradient section  
18% grade has 10mm spray seal surface.

Suitable for use in testing by cars, trucks, buses, military vehicles and mining equipment.

Test general durability, dust entry, traction control, electronic stability control programs, body damage, stone chipping etc.



**9.6KMS OF GRAVEL**



# ADR TYPE APPROVAL CIRCUIT

## TECHNICAL SPECIFICATIONS



**3.2km long**  
by 7.6m wide



**Hotmix**  
surface



**Global**  
regulations compliant



## ADR COMPLIANT

Designed for high Mu brake tests to:

- **ADR:**  
ADR 31/04 Brake systems for passenger vehicles and ADR 35/06 Commercial vehicle brake systems
- **CHINA:**  
GB12676-2014 & GB/T13594-2003 Braking for vehicles & trailers (China)
- **UN GTR:**  
Global Technical Regulation No. 03 – Motorcycle brake systems

- **ECE:**  
ECE R13.11 – Vehicles of categories M, N and O with regard to braking  
ECER13-H-01 – Passenger Cars with regard to braking  
ECE R78.04 – Vehicles of categories L1, L2, L3, L4 and L5 with regard to braking  
ECE R131 – Motor Vehicles with regard to the Advanced Emergency Braking Systems (AEBS)  
ECE R139.00 – Passenger cars with regard to Brake Assist Systems (BAS)  
ECE R 140.00 – Passenger cars with regard to Electronic Stability Control (ESC) Systems

Even grade 0.75%.

Curves 125m radius 7% superelevation.

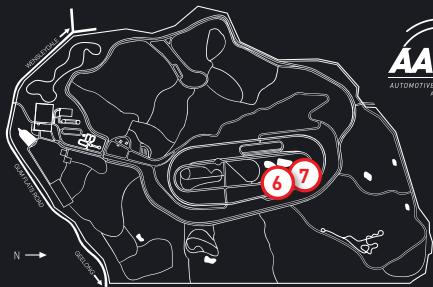
200m section simulates wet road conditions.

Compliance with Australian Design Rules:

- ADR 31/04 Brake systems for passenger vehicles
- ADR 35/06 Commercial vehicle brake systems



## LOW MU CERAMIC TILES



### TECHNICAL SPECIFICATIONS



**120m long**  
by 4m wide



**0.1 Mu**  
friction coefficient



**Wet surface**  
& split use testing

Water application to surface.

Co-efficient of friction of surface 0.1 Mu.

Hotmix surface adjacent to tiled area to allow split use testing, both wet and dry.

Suitable for use by cars for development of ABS, traction control systems and electronic stability program systems.



**CERAMIC TILES**





## WET & DRY TESTING

Test for low Mu requirements for the following regulations:

- **ADR:**  
ADR 31/04 Brake systems for passenger vehicles and ADR 35/06 Commercial vehicle brake systems
- **CHINA:**  
GB12676-2014 & GB/T13594-2003 Braking for vehicles & trailers (China)
- **UN GTR:**  
Global Technical Regulation No. 03 – Motorcycle brake systems
- **ECE:**  
ECE R13.11 – Vehicles of categories M, N and O with regard to braking  
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ECE R 140.00 – Passenger cars with regard to Electronic Stability Control (ESC) Systems



## LOW MU BASALT TILES

### TECHNICAL SPECIFICATIONS



**120m long**  
by 4m wide



**0.3 Mu**  
friction coefficient



**Wet surface**  
& split use testing



Overall length 120 metres long:

- 1st section tiles 70m long x 4m wide
- 2nd section tiles 50m long x 8m wide

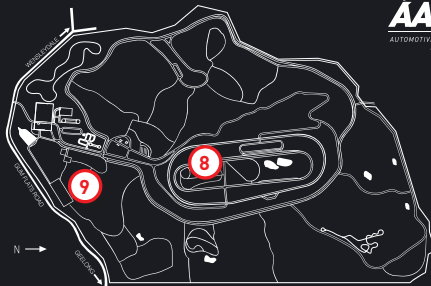
Hotmix surface adjacent to tiled area to allow split use testing, both wet and dry.

Suitable for use by cars for development of ABS, traction control systems and electronic stability program systems.

Approved by the UK's Vehicle Certification Authority (VCA) for ECE Regulation 13.10, Annex 13, Appendix 4 and ECE Regulation 13H, Annex 6, Appendix 4.



## VEHICLE HANDLING — GRAVEL



### TECHNICAL SPECIFICATIONS



#### 30m long

hotmix section for  
split surface tests



#### Various radii

curves



#### Surfaces

coarse aggregate  
to fine gravel

Two areas, each approx. 1km in length.

Suitable for use by cars, trucks,  
military vehicles, motorcycles for  
ABS system, traction control systems,  
electronic stability program systems and  
suspension development.



Several flat gravel roads, includes:

- curves of various radii
- straight sections of several hundred metres.
- 1 large flat area.
- 1 x 30m long x 3m wide hotmix section to allow split braking on gravel and bitumen.
- different surfaces including coarse aggregate and fine gravel.

## COARSE AGGREGATE TO FINE GRAVEL



## ROCKY TERRAIN & MUD BATH



## 4WD INTRODUCTION

### TECHNICAL SPECIFICATIONS



#### Vehicle

familiarisation, testing  
& comparison



#### Varied

terrain & gradients  
& rocky section



#### Mud & water

crossings



Allows vehicle familiarisation, testing and comparisons of various features. Can be linked to other tracks that return to the Introduction area.

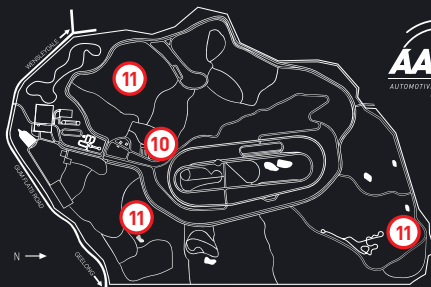
Varied terrain with a range of gradients and surfaces. Vehicle fording, mud bath, rocky section, articulation.

Ramp over, approach and departure angles.

Suitable for some crossover vehicles, 4WD passenger vehicles, fire tankers, military vehicles, heavy trucks.



## 4WD GRADIENTS



### TECHNICAL SPECIFICATIONS



**27% to 60%**  
vehicle incline  
capability



**3 surfaces**  
gravel, clay,  
concrete



**4 tests**  
Hill hold, Descent,  
Traction, Retardation

Vehicle familiarisation, testing and comparisons, retardation systems, hill descent, hill hold systems, traction control systems.

Linked to an extensive network of 4WD tracks and trails.

Suitable for some crossover vehicles, 4WD passenger vehicles, fire tankers, military vehicles, heavy trucks.



**UP TO 60% INCLINE**

## 4WD BUSH TRAILS & TRACKS



## 4WD TRACKS

### TECHNICAL SPECIFICATIONS



#### Australian

4WD tracks  
& trails



#### Slopes

gullies, ridge  
lines, etc.



#### All weather

conditions  
suitable



Replicates typical Australian  
4WD country:

- forest, bush trails and tracks
- follows natural topography, gullies, ridge lines etc.
- some sections suitable for all weather conditions

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Some tracks link up with 4WD Introduction  
Area and 4WD Gradient Section.

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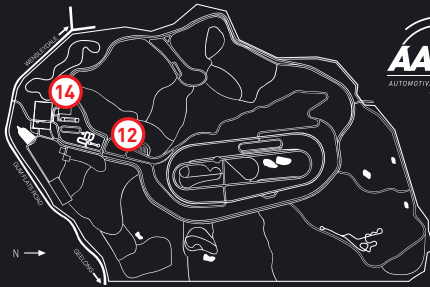
Vehicle familiarisation, testing and comparisons,  
retardation systems, hill descent, hill hold  
systems, traction control systems.

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Suitable for some crossover vehicles, 4WD  
passenger vehicles, fire tankers, military  
vehicles, heavy trucks.



## PARK BRAKE FACILITIES



### TECHNICAL SPECIFICATIONS



**Concrete**  
grades



**Australian**  
design rules  
compliant



**Up to 30%**  
grades

Park brake compliance with Australian Design Rules.

12, 18, 20, 30% grades.

Suitable for cars, trucks, buses.



**UP TO 30% GRADE**



## STABILIZED CEMENT SURFACE



## HEAVY VEHICLE MANOEUVRING

### TECHNICAL SPECIFICATIONS



**Heavy vehicle**  
design



**100m x 60m**  
stabilized  
cement surface



**Steering systems**  
figure eights,  
lock to lock turns, etc.



Designed for heavy vehicles.

Stabilized cement surface 100m x 60m with  
at least 50m radius clear of any vegetation  
and obstructions.

Used for steering systems, specific manoeuvres,  
figure eights and lock to lock turns.

Noise testing of mining equipment.

Vehicle tracking of new vehicle technologies.



SEATS UP TO 35



## CONFERENCE ROOMS

### TECHNICAL SPECIFICATIONS



#### 3 Rooms

seats up to 35 people



#### Whiteboards

projection screens &  
flatscreen TVs



#### Conference

or classrooms



Several purpose built rooms:

- Two 8m x 8m in size
- One 8m x 4m in size

Equipment includes whiteboards and  
projector screens

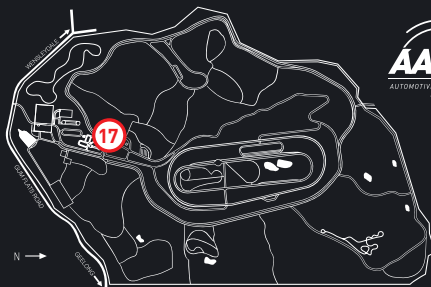
Suitable for:

- Group discussions
- Media briefing
- Product trials

Kitchen attached for tea, coffee etc.  
Arrangements for catering on site can be  
made to suit your requirements.



## VEHICLE VALIDATION PRECINCT



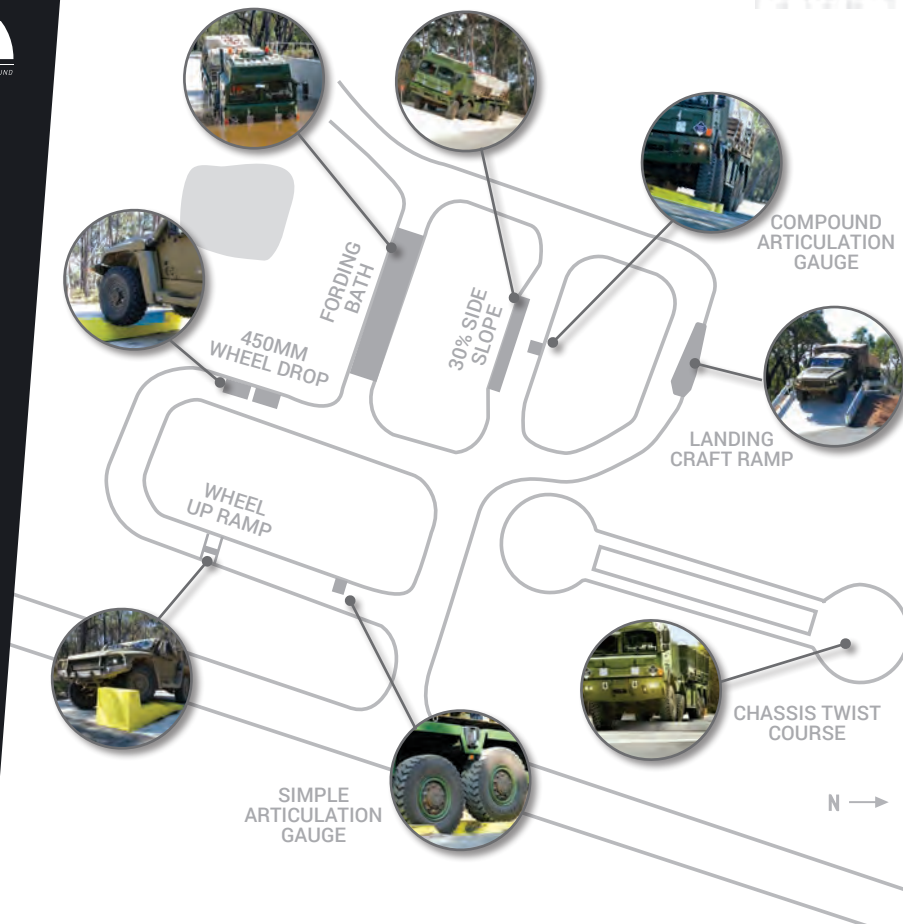
The newly completed Vehicle Validation Precinct (VVP) at AARC has been developed in response to the present and future testing needs of tenants and other users of the proving ground.

It encompasses facilities suitable for use by cars, trucks and military vehicles to Land 400 specifications.

### Facilities include:

- Fording Bath to 2.4m
- 30% Side Slope
- Compound Articulation Gauge
- Landing Craft Ramp
- 450mm Wheel Drop
- Wheel Up Ramp
- Simple Articulation Gauge
- Chassis Twist Course

## 8 FACILITIES - LAND 400 SPECIFICATIONS





# VEHICLE VALIDATION PRECINCT



## FORDING BATH

Concrete Fording Bath with width of 6.5m.

Water depth variable to 2.4m.

Ascend/descend gradient of  $14^{\circ}$  at one end.  
Ascend/descend gradient of  $27^{\circ}$  at the other end.

Fitted with rails on both sides for the safety of observers.

## TECHNICAL SPECIFICATIONS



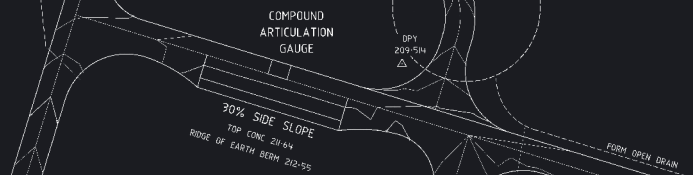
**2.4m**  
maximum depth



**12m**  
base length

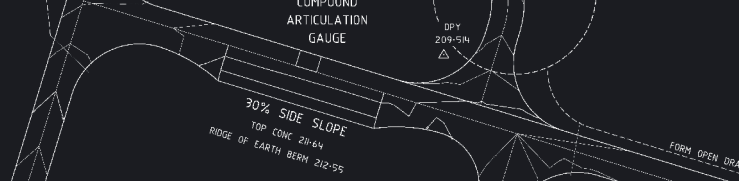


**Slopes**  
of  $14^{\circ}$  &  $27^{\circ}$





# VEHICLE VALIDATION PRECINCT



## 30% SIDE SLOPE

Concrete side slope  
of 30% gradient.

Length of 36m.

### TECHNICAL SPECIFICATIONS



Lateral stability



36m length



Width of 5m

## LANDING CRAFT RAMP

Width of 4m.

Ramp angle of 26°.

Fitted with safety rails.

### TECHNICAL SPECIFICATIONS



Concrete  
ramp



26° angle



4m wide



# VEHICLE VALIDATION PRECINCT



## SIMPLE ARTICULATION GAUGE

Width of 3m.

Concrete obstacle with maximum height of 300mm.

### TECHNICAL SPECIFICATIONS



**Concrete trench obstacle**



**Suspension system**



**300mm maximum height**

## COMPOUND ARTICULATION GAUGE

Width of 3m.

Concrete obstacle with maximum height of 475mm.

### TECHNICAL SPECIFICATIONS



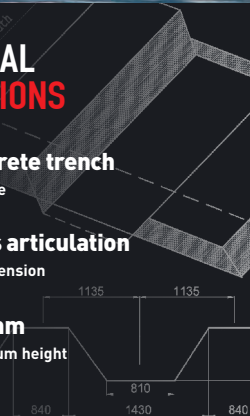
**Concrete trench obstacle**



**Tests articulation of suspension**



**475mm maximum height**





# VEHICLE VALIDATION PRECINCT



## 450MM WHEEL DROP

Width of 3m.

Approach from either  
end of obstacle.

### TECHNICAL SPECIFICATIONS



**Concrete  
obstacle**



**450mm  
drop/climb**



**3m wide**

## WHEEL UP RAMP

Width of 900mm.

Wheel ramp heights of  
225mm and 455mm.

Left or right wheel can  
mount the obstacle.

### TECHNICAL SPECIFICATIONS



**Concrete  
obstacle**



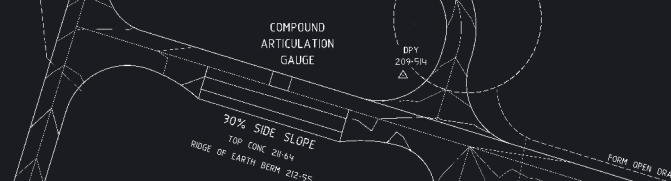
**Pivot turn**  
in both directions



**Ramps at**  
225mm and 455mm



# VEHICLE VALIDATION PRECINCT



## CHASSIS TWIST COURSE

Rebuilt and upgraded in 2016.

Concrete ribs at 45° to direction of travel. Each Rib has a height of 150mm at one end and 330mm at the other end.

One metre of flat concrete surface beyond ribs along full length of the course. Concrete turning circles of 30m diameter at each end of the course.

## TECHNICAL SPECIFICATIONS



### Trucks

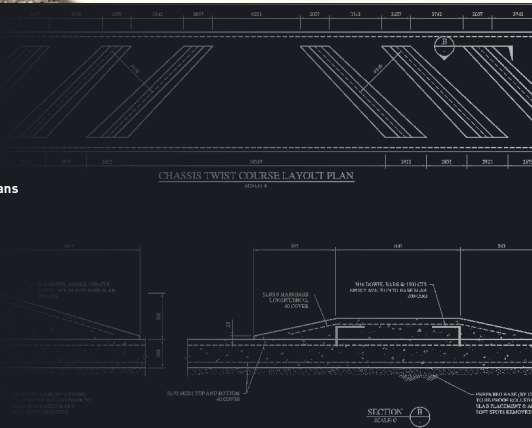
buses, cars & caravans



### Chassis systems

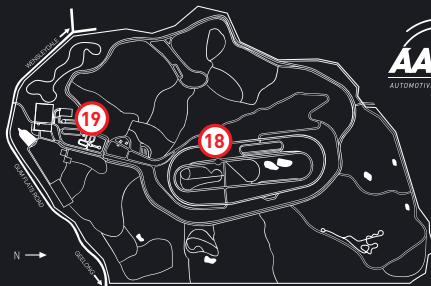


### Suspension testing





## NOISE TEST SITE



### TECHNICAL SPECIFICATIONS



**ADR 83/00**  
external noise



**Flat**  
hotmix surface



**Drive**  
by noise

Assess drive by noise specifically for  
Australian Design Rules Certification –  
ADR 83/00 External Noise.

Clear of vegetation and external obstructions  
to ensure no disturbance from wind and  
related sounds.

Suitable for use by cars, trucks, buses,  
motorcycles.

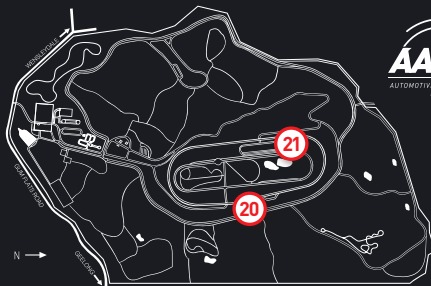


**ADR 83/00**



20

## WATER BATH



### TECHNICAL SPECIFICATIONS



**20m long**  
by 4m wide



**Up to 600mm**  
depth for water entry  
to vehicles



**Brake recovery**  
post immersion

Depth up to 600mm.

Brake recovery post immersion.

Water entry to vehicles and components.

Suitable for use by cars, trucks, buses.



**UP TO 600MM DEPTH**

## ROAD IMPACTS & OBSTACLES



# ROUGH COURSE

## TECHNICAL SPECIFICATIONS



**200m x 4m**

rough straight and  
curved sections, and  
large and small  
concrete corrugations



**800m**

hotmix loop with  
42m radius



**50m**

Chassis Twist section,  
300mm obstacles



Accelerated durability testing  
and stress analysis.

200m x 4m sections of:

- Rough Road
- Corrupt Highway  
(bumped straight 30mm obstacles)
- Bluestone pitchers
- Bumped Curve (50mm obstacles)
- Small concrete corrugations
- Large Sinusoid corrugations with offset.

40m concrete brake pad.

Suitable for use by cars, trucks, buses, caravans,  
trailers for a range of testing from rattles and  
squeaks to suspension, new components and  
accessory items such as roof racks.





## PRODUCT LAUNCH AREA

### TECHNICAL SPECIFICATIONS



#### Ideal

Australian environment  
for product launch



#### Great location

Close to Highway  
Circuit & 5% Gradient



#### Marquee

display friendly

Make your event one to  
remember by hosting it at the  
Australian Automotive  
Research Centre.



AARC's facilities can support:

- Product launches
- Media briefings and conferences
- Technology showcase
- Corporate VIP Days
- Educational events

We will be pleased to assist you with:

- Advice and support regarding event logistics
- Test drivers
- Vehicle loading and unloading
- Catering
- Marquee hire and set up
- Film production



### Kitchen & toilet amenities

Suitable for product launches, 4WD demonstrations, awards.



## BBQ AREA





## WORKSHOPS & OFFICES

### ⚙️ TECHNICAL SPECIFICATIONS



**Hoists**  
can be provided



**Electric vehicle**  
chargers in  
close proximity



**Kitchen**  
& office facilities



To support the testing that is conducted on the tracks and facilities on site, workshops are available for casual hire as well as short term and long term leasing.

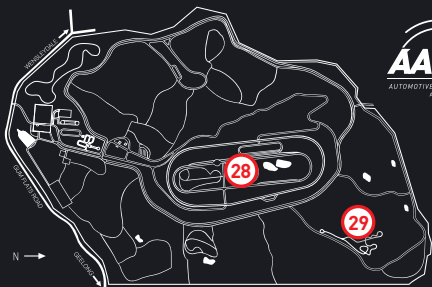
The workshops are suitable for the preparation and evaluation of tests, as well as maintenance work, and can accommodate cars, caravans, heavy trucks, defence vehicles and mining equipment.

Features that can be provided include:

- Hoists
- Roller Shutters up to 4.7m high x 4.2m wide
- Close proximity to electric vehicle chargers
- Office and kitchen facilities



## DYNAMIC HANDLING FACILITY



### TECHNICAL SPECIFICATIONS



**62,500m<sup>2</sup>**  
asphalt area  
with 1% grade



**7,500m<sup>2</sup>**  
can be wet  
with sprinklers



**ABS testing**  
stability programs,  
traction control, etc.

Large asphalt area of 62,500m<sup>2</sup> with 1% grade across the area.

An area of 7500m<sup>2</sup> can be wet down with large sprinklers, sloping in one direction, with the remainder sloping in the opposite direction.



## ABS TESTING

Designed for use by cars for the development and testing of ABS, traction control, electronic stability programs, vehicle handling.



Also designed to test for the requirements for GTR 8 Global Technical Regulation No. 08 – Electronic Stability Control Systems (ADR31/03) and ECE R13H ESC.

40% GRADIENTS



29

## OFF ROAD ENDURANCE FACILITY

### TECHNICAL SPECIFICATIONS



**Moguls**  
and potholes



**1.5km**  
course



**40% slopes**  
and pinch



Off Road accelerated durability testing and stress analysis.

Course components include:

- Broken concrete
- Potholes
- Washouts
- Steps
- Moguls
- Pinch
- 40% Gradients

## CONTACTS AND BOOKINGS

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AARC LOCATION

445 Gum Flats Road  
Wensleydale, Victoria  
Australia 3241

## DIRECTIONS

### FROM MELBOURNE

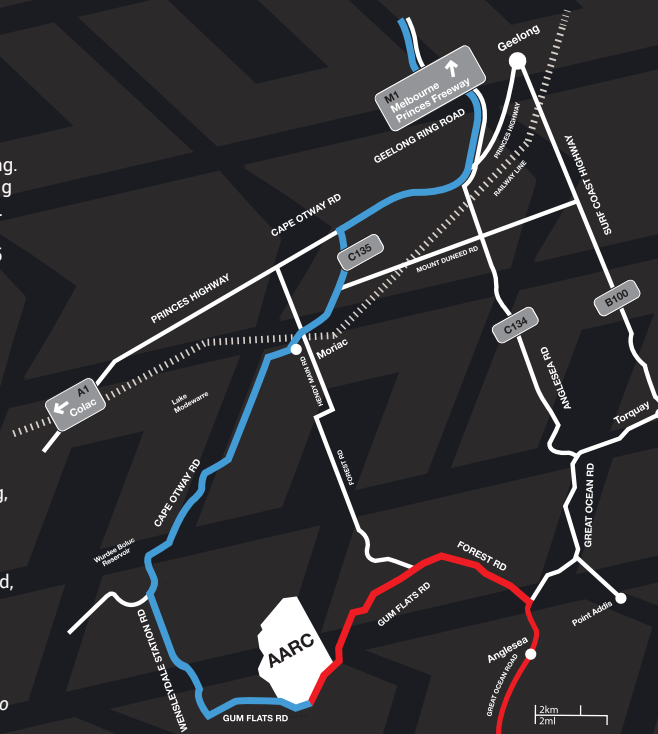
Follow Princes Freeway M1 towards Geelong. Keep right on Princes Freeway/Geelong Ring Road M1 towards Colac/Great Ocean Road. Continue on Princes Highway A1 towards Colac. Exit left onto Cape Otway Road C135 and travel 20km through the township of Moriac. Turn left onto Wensleydale Station Road (adjacent to Wurdee Boluc Reservoir) and travel 6.7km. Turn left onto Gum Flats Road (gravel surfaced) and travel 4.5km to AARC, which is on your left.

### FROM ANGLESEA

Follow Great Ocean Road towards Geelong. Turn left at Forest Road, 3.5km from Anglesea. Travel 5.5km then turn left onto Gum Flats Road. Travel 9.2km along Gum Flats Road, which is mostly gravel surfaced, to AARC, which is on your right.

*Speed limit to ALL users on unsealed roads to AARC is 80km/h.*

*The AARC hours are 7.30am-5pm weekdays. No admittance after 4pm, unless scheduled.*



AARC is a **LINFOX** company

CONNECT WITH US

