

QINETIQ

Hurn Proving Ground

When realistic and challenging on and off-road trials are required, QinetiQ's Hurn Proving Ground has it all.



Automotive Test & Evaluation

Building Battlefield Reliability

QinetiQ's Hurn Proving Ground is the UK's only purpose built military vehicle test facility where vehicles can be tested over representative terrains and obstacles that may be encountered in service. Platform performance can be fully demonstrated and limitations explored in order to inform design, development and enhance battlefield reliability.



Hurn Main Site:

- 632 acre secure environment
- World class Test and Evaluation facility
- UK MOD approved secure (List X) site
- Reliability and performance tests representative of a user defined, battlefield mission
- Facilities:
 - Secure hangars and vehicle plant park
 - Compound lock ups
 - Tilt table – largest platform in the UK
 - Weighbridge
 - Articulation gauges
 - Under vehicle clearance and knife edge
 - Straight and level track
 - Steering pad
 - Gravel lane
 - Sand lane
 - Rough track
 - Wading tank and gap crossing
 - Peat bogging tank
 - Clay bogging tank
 - Bridging gaps
 - Stepped obstacles
 - Magnetic signature collection

Barnsfield Heath:

- High speed test track
- Cross-country/Digging area
- Off-road tracks
- Gravel and tarmac Figure of Eight courses
- Suspension testing
 - Compound articulation course
 - Boulder course
 - Concrete setts
 - Cannonball course
 - Sinewaves x 3
 - Concrete random course





QinetiQ's Land Platform automotive test capability brings together the world class facilities of the Hurn site with a team of automotive and trials Subject Matter Experts. The team has a long and proven track record of delivering a flexible and cost-effective approach to planning and conducting vehicle trials, adding value to customer programmes through their extensive domain expertise and tailoring trials to specific requirements.

Specialist Vehicle Assessment

We reduce risk to programmes throughout our trials design, conduct and analysis services. We offer:

- Trials design, planning and support
- Automotive performance trials
- Ride and handling assessments
- Performance Based Mobility Specification (PBMS) requirements and evaluation
- Shock and vibration measurement trials and analysis
- Reliability, durability and shakedown trials
- Design, test and certify safe and secure equipment transportation methods
- Legislative compliance assessments
- Environmental trials, climatic and Electro-Magnetic Compatibility (EMC) testing
- Full instrumentation support and data analysis
- Modelling and simulation
- Weapon system stability



World-class Proving Ground

The QinetiQ Hurn Proving Ground is a 632 acre secure environment providing a world-class vehicle Test and Evaluation (T&E) facility and the ideal location for your automotive assessments. A UK MOD approved secure (List X) site, Hurn Proving Ground has the equipment and facilities to support your vehicle T&E requirements.




Originally constructed in the 1950s and extensively developed and upgraded over the years, the facility enables us to carry out reliability and performance tests representative of a user defined, battlefield mission.

We are able to investigate performance across the full range of terrain types from metalled roads, to the most rigorous cross country and repeatable reference tracks. If necessary, on site earth moving equipment can be used to construct bespoke obstacles to test and evaluate vehicles against demanding requirements.

Independent Advice/Assessment

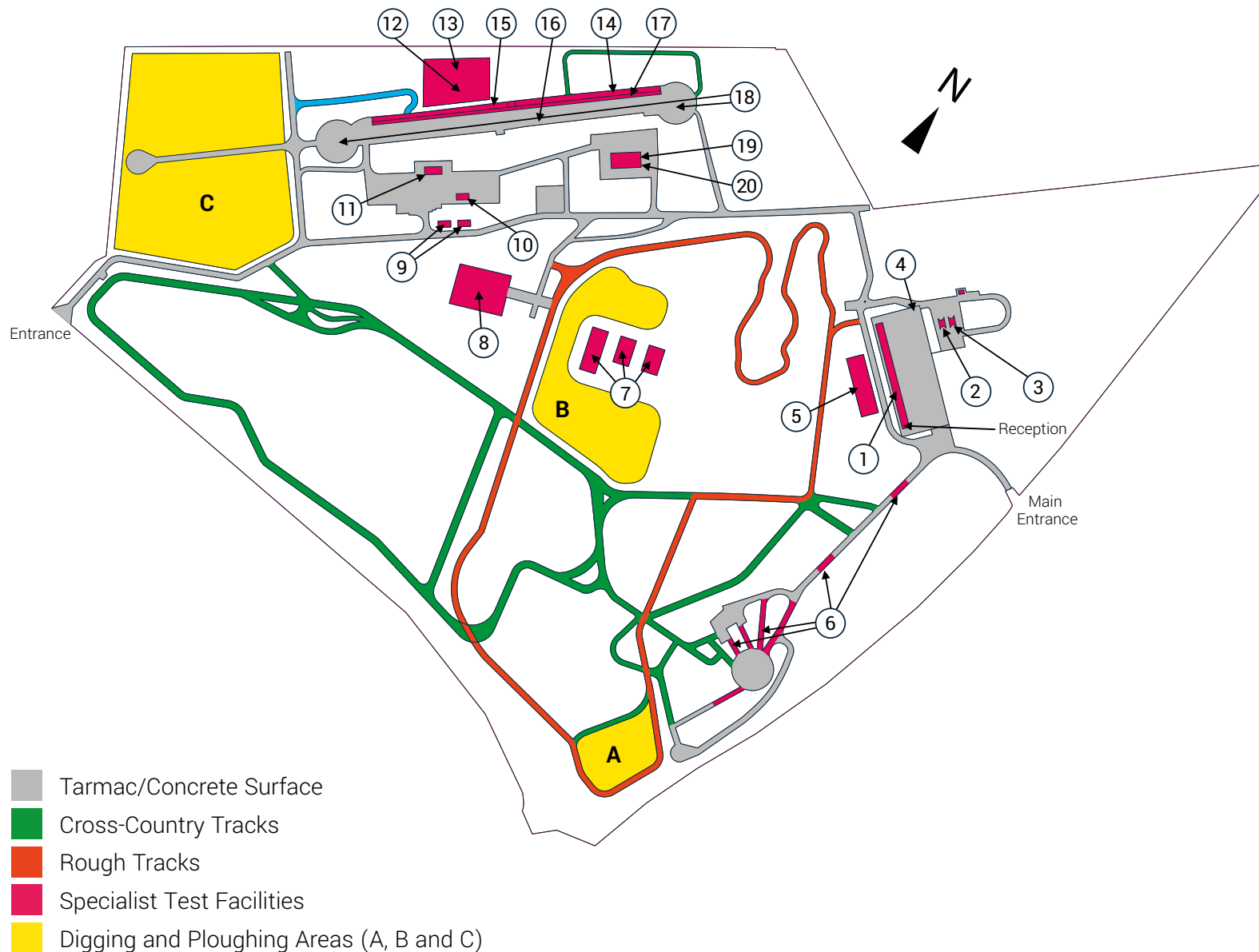
Our analysis doesn't just stop with a pass or fail, the QinetiQ team, through our world-class T&E services and support can provide you with focused, impartial advice. We've developed long lasting and valued partnerships with our customers by providing solutions, instead of easy answers.



A military helicopter is flying in the upper left portion of a clear blue sky. Below it, a dense line of green trees separates the sky from a muddy, construction-like field. In the lower right of the field, a military tank is visible, partially obscured by the dark blue diagonal overlay. The foreground is dominated by this dark blue overlay, which contains white text.

Reliability,
durability and mobility
on automotive platforms

Hurn Proving Ground Main site



Rough track

Graded, compacted hogging gravel track for testing traction, handling and reliability. Surface contains some washboard effect with varying degrees of depth.

- 5m wide
- Woodland and open areas
- Multiple curves for varying speed changes.



Sand track

A dedicated sand track for testing traction, handling and reliability.

- 5m wide
- Multiple path choices
- Banked curves
- Hill climbs



Straight and level track

Flat and level, high adhesion asphalt surface for acceleration, speed, braking and manoeuvres such as the lane change, slalom, etc.

- 716m length
- 8m wide
- 3 large 57m diameter turning areas



Tilt platform

Hurn is home to the largest operational tilt platform in the UK. This is used to determine static stability and centre of gravity (CofG) height.

- 60 tonnes capacity
- 13.4m x 5m
- 52° maximum inclination (tolerance +/-0.2°)



Articulation gauges

Simple and compound articulation gauges built to meet mobility guidelines for testing structural integrity, mobility and extreme axle articulation.

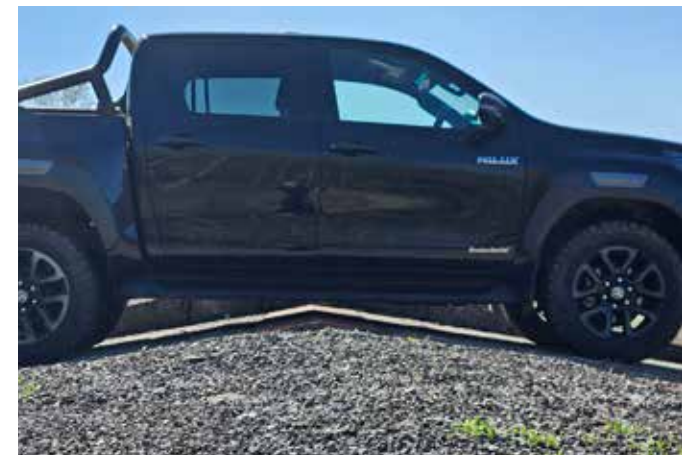
- Medium Mobility Load Classification (MMLC)
- Improved Medium Mobility Load Classification (IMMLC)
- High Mobility Load Classification (HMLC)



Under vehicle clearance

A test of under vehicle/break over for wheeled vehicles in line with Defence Standard guidelines.

- Medium Mobility Load Classification (MMLC)
- Improved Medium Mobility Load Classification (IMMLC)
- High Mobility Load Classification (HMLC)



Weighbridge

Fully calibrated weighbridge to determine mass distributions and centre of gravity (CofG) position.

- 60 tonnes capacity
- 12.2m x 3.7m
- Accurate to +/- 20kg





Wading tank/ Gap Crossing facility

Wading tank for the measure of in water performance and water ingress.

- 13.7m x 8.2m
- Variable depth up to 1000mm maximum
- Prepared and unprepared fording
- Can be used as a gap crossing facility
- Variable size gap crossing



Gravel lane

A dedicated gravel lane for testing traction drawbar pull.

- 183m x 8m
- 38mm gravel
- 1m depth



Sand lane

A dedicated sand lane for testing traction, power and drawbar pull. Ideal for soft soil mobility, multipass trials and recovery.

- 183m x 8m
- 1m depth
- Can be covered for environmental controlled trials
- Explosive Ordinance Disposal (EOD)/mine detection trials

Gradients

Gradients to test performance, traction, brakes and electronic aids. Tarmac test gradients at:

- 5% (1 in 20)
- 7% (1 in 14)
- 10% (1 in 10)
- 19% (1 in 5)
- 24.5% (1 in 4)
- 31% (1 in 3)
- 40% (1 in 2.5)

We can also perform various soft soil test gradients, the steepest nominally at 31%.

Steering pad

57m diameter steering pad with polar diagram radial lines 10° apart and circles every 3m (radius) out.

- Understeer/oversteer
- Vision plots
- Steady state handling
- Turning circles



Clay bogging tank

A clay bogging tank for mobility, recovery and self-recovery assessments and training.

- Graduated 0.7m to 1.4m depth
- 80m length
- Anchor points for self-recovery
- Prepared hardstanding for recovery vehicles

Peat bogging tank

A peat bogging tank for mobility, recovery and self-recovery assessments and training.

- Graduated 0.7m to 1.4m depth
- 80m length
- Anchor points for self-recovery
- Prepared hardstanding for recovery vehicles



Secure hangars and vehicle park

- 14 hangar bays and secure vehicle park area
- Fenced, monitored alarm and CCTV
- Petrol, Oil and Lubricant (POL) and washdown facilities
- Overhead gantry cranes (3 tonne), four post vehicle ramp (8 tonne), two post vehicle lift (8 tonne), weighbridge (10 tonne), inspection pit, precision ground level floor (granite)
- Heated, single and 3 phase power, compressed air
- Storage
- Heated office space, internet and kitchen facilities



Bridging gaps

3 dry bridging gaps for the test emplacement and trials of bridging equipment.

- Hard based pads at 5m x 4.8m
- Power supply
- Adjacent secure compound with accommodation facilities
- Bridging gap 1 – 86m length x 25.5m width
- Bridging gaps 2 & 3 – 50m length x 17m width

Stepped obstacles

A series of steps used to assess obstacle negotiation. Vertical step heights at:

- 150mm, 200mm, 350mm, 600mm, 750mm, 800mm, 900mm
- Additional chamfered edges are available at 350mm, 600mm, 750mm and 900mm heights.

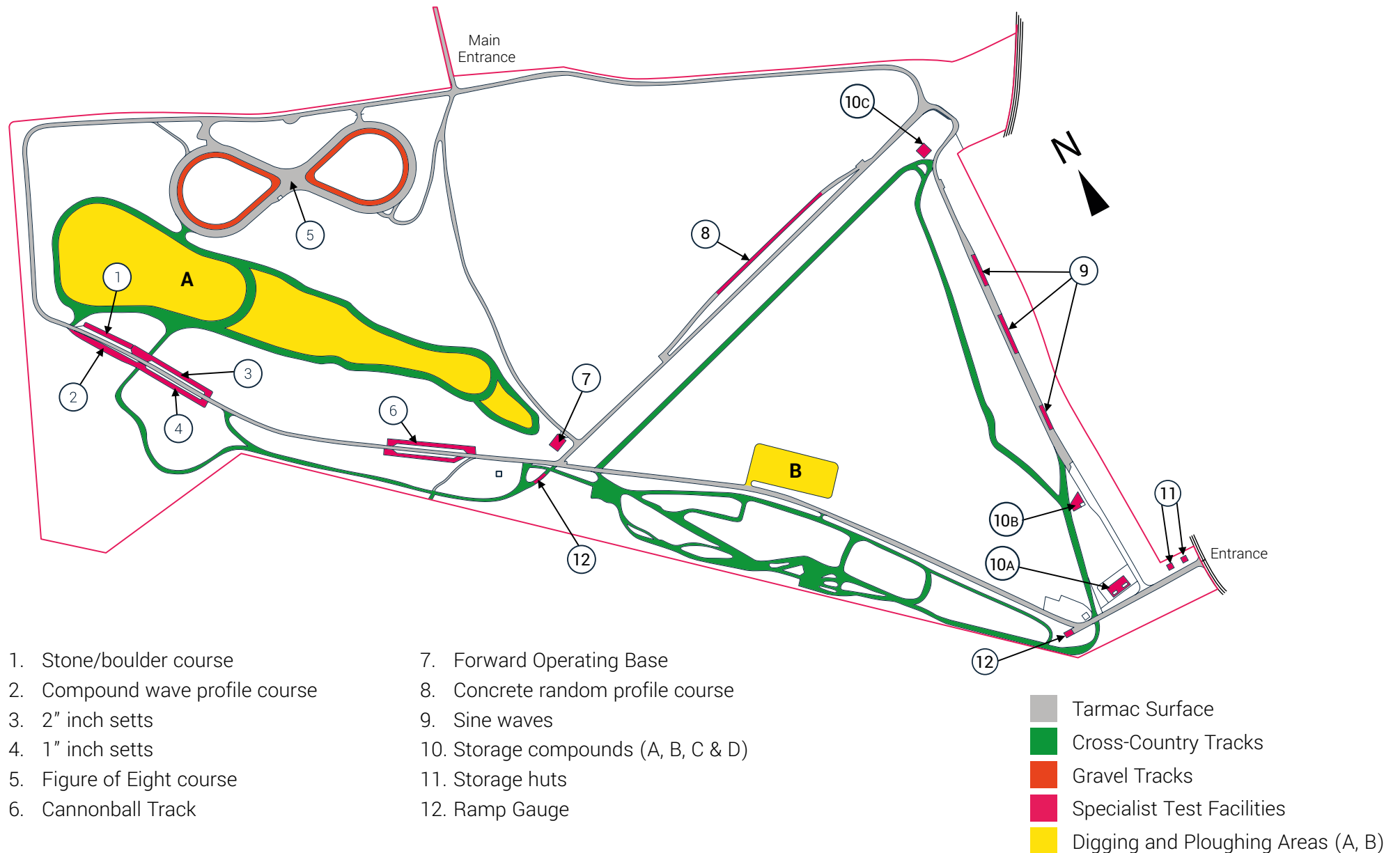


Vehicle Magnetic Signature Collection

The Vehicle Magnetic Signature Collection capability is primarily available at QinetiQ Hurn, but can be deployed to any suitable site, nominated by the customer, to record the magnetic signature of a vehicle.

Magnetic Signature information is essential to assess the threat to vehicles operating in a hostile theatre. Raw magnetic signature data can be provided directly, or used to create a model of the vehicle's magnetic signature, to inform threat analysis.

Hurn Proving Ground Barnsfield Heath site



Off-road

A comprehensive series of off-road tracks and varied terrains which will enable customers to define bespoke yet representative battlefield mission profiles, including:

- An extensive network of demanding off road circuits and terrain types with many route options for definitive reliability and durability testing
- Varied off-road features, including sand, water, gradients, cambers, bends, mud and gravel
- Dedicated gravel track/rough road circuit
- Dedicated sand/cross country circuit

Testing to
extremes,
underpinning
reliability





Compound articulation course

A series of varying pitch and amplitude compound and sine wave profiles for dynamic axle articulation, ground clearance and mobility testing.

- 116m length
- 8m width
- Cross axle capability



Boulder course

The Boulder Course is designed to represent severe rocky terrain and dry river beds. Boulders are not fixed to allow movement.

- 116m length
- 8m width
- Nominally 300mm boulder size



Concrete setts

4 lanes of concrete setts, in and out of phase for accelerated durability and reliability testing of complete platforms.

- 25mm and 50mm
- 116m length
- 8m width
- Can also be used for shock, vibration and ride comfort assessments





Figure of Eight course

Figure of Eight metallised road for continuous running, towed cooling and automotive handling.

- 8m width
- Internal gravel loop
- 1km circuit length
- Left and right corners



Cannonball course

A test course designed to provide vertical and lateral force inputs to wheel stations for accelerated durability and reliability testing of complete platforms.

- 116m length
- 8m width
- Up to 65mm in height
- Can also be used for shock, vibration and ride comfort assessments

Digging / RAS Test Area

A comprehensive digging and ploughing area (sand and sandy gravel) which can be tailored to meet customer requirements. There is unlimited scope for plant trials, creating obstacles, mine clearance, and testing RAS (Robotics and Autonomous Systems).

- Manufacture of bespoke obstacles
- Building of temporary structures
- Safe area for the testing of unmanned and remotely controlled platforms
- Safe area for the testing and trialling of Robotics and Autonomous Systems
- Mining and demining trials (plough, flail and roller)

Sinewaves

A combination of 3 Sinewave courses to test suspension, weapon stabilisation, pitch frequency and platform dynamics.

- 100mm amplitude @ 4.5m pitch
- 200mm amplitude @ 7m pitch
- 200mm amplitude @ 12m pitch



Concrete random course

An extreme test course designed to provide vertical force inputs to wheel stations, coherent across the axle for accelerated durability/reliability testing of complete wheeled and tracked platforms.

- 160m length
- 8m width
- Mathematically derived random sinewave course profile
- Can be used for shock, vibration and ride comfort assessments
- Ideal for testing weapon systems for stabilisation



Going the extra
mile off road





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