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 that allows vehicles to be tested over representative terrains and obstacles that can be encountered in service. Platform performance can be fully demonstrated and limitations explored in order to inform design, development and enhance battlefield reliability.

Specialist Vehicle Assessment

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 the leverage of their extensive domain expertise and tailoring trials to specific requirements. 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)
- 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 choice to undertake 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

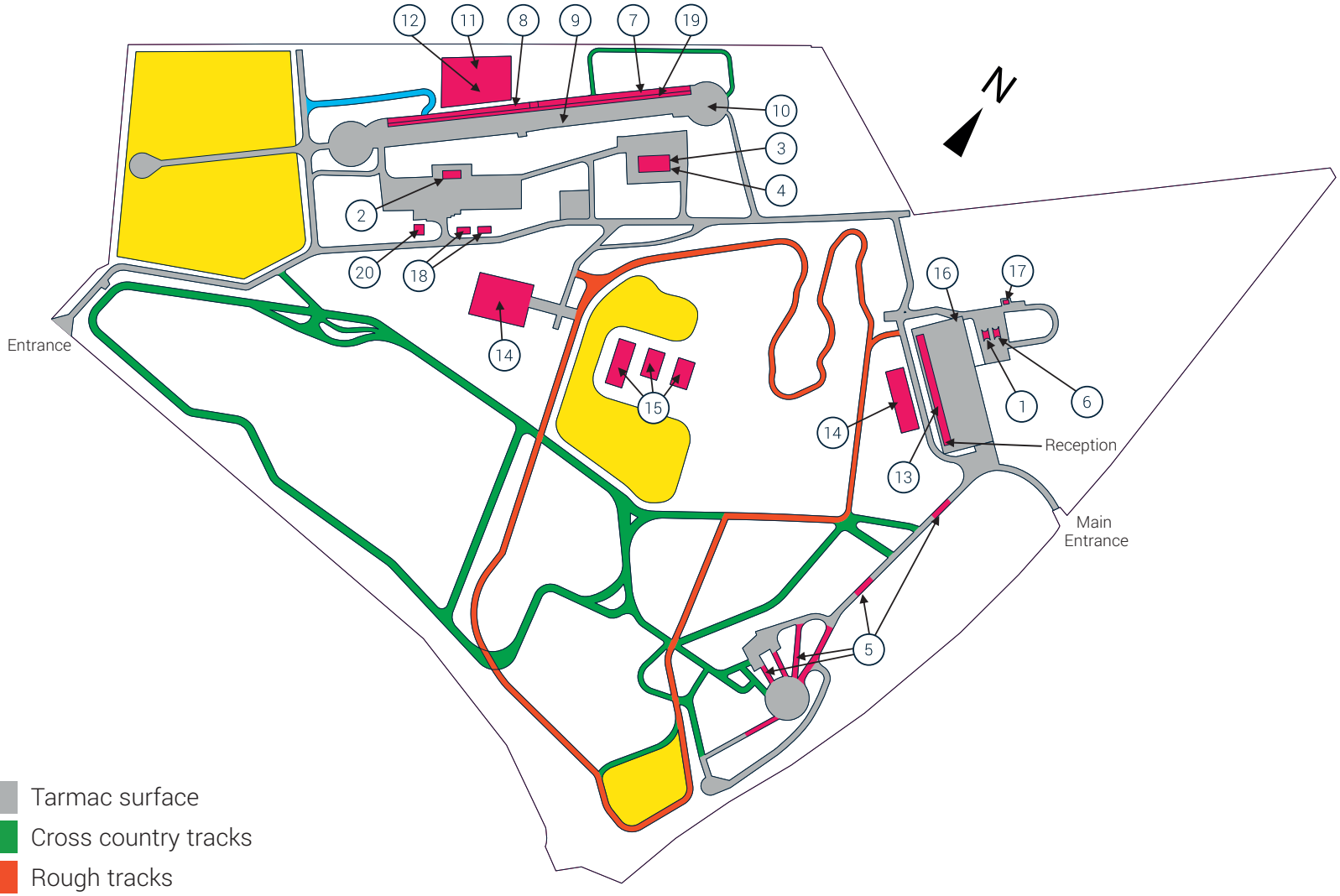
developed and upgraded over the years, the facility enables us to carry out your reliability and performance tests representative of a User defined, battlefield mission. We are able to explore performance across the full range of terrain types from metalled roads, to the most severe cross country and 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 or the most stretched targets.

Independent advice/assessment

Our investment doesn't just stop with a pass or fail, the QinetiQ team, together with its world-class T&E services and support can provide you with focused, impartial advice. Our dedication to providing the right answer to your requirements, instead of the easy answer will give you the confidence in QinetiQ as the right choice and encourage long lasting and valued partnerships between us to develop.

Reliability, durability and mobility on automotive platforms

Hurn Proving Ground Main Site



- Tarmac surface
- Cross country tracks
- Rough tracks
- Specialist test facilities
- Digging and ploughing area

1. Tilt platform
2. Weighbridge
3. Compound and simple articulation gauge
4. Under Vehicle Clearance
5. Test Gradients
6. Wading tank / Gap crossing
7. Sand lane
8. Gravel lane
9. Straight and level track
10. Training circle pad
11. Peat bogging tanks
12. Clay bogging tanks
13. Secure hangar storage and offices
14. Storage compound
15. Dry bridging gaps
16. Water ingress facility
17. 40t breakout rig
18. Concrete knife edge and ramp gauge
19. Shale lane
20. Stepped obstacles

Tilt platform

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

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

Weighbridge

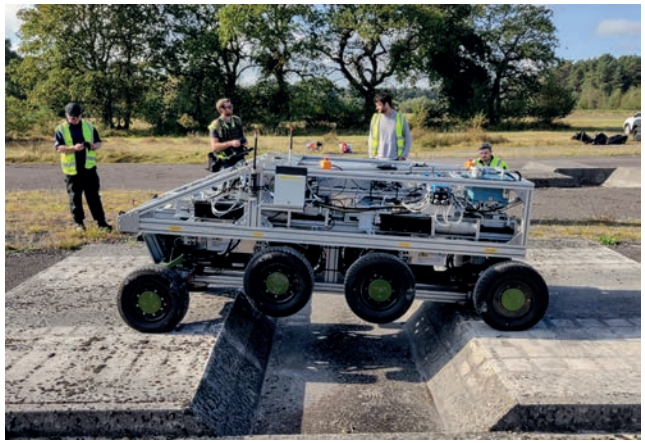
Fully calibrated weighbridge to determine mass distributions and centre of gravity (CofG) position.

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

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 and 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)

Gradients

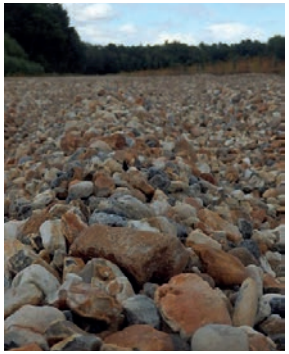
Gradients to test performance, traction, brakes and electronic aids.
Tarmac test gradients at:

- 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)
- Various soft soil test gradients the steepest nominally at 31%

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, multi-pass trials and recovery.

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

Wading tank / Gap Crossing facility

Wading tank for the measurement 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
- Size of gap can be set to user requirements.

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 width
- 3 large 57m diameter turning areas

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 Lubricants (POL) and washdown facilities
- Overhead gantry cranes (3 tonne), four post vehicle ramp, 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:

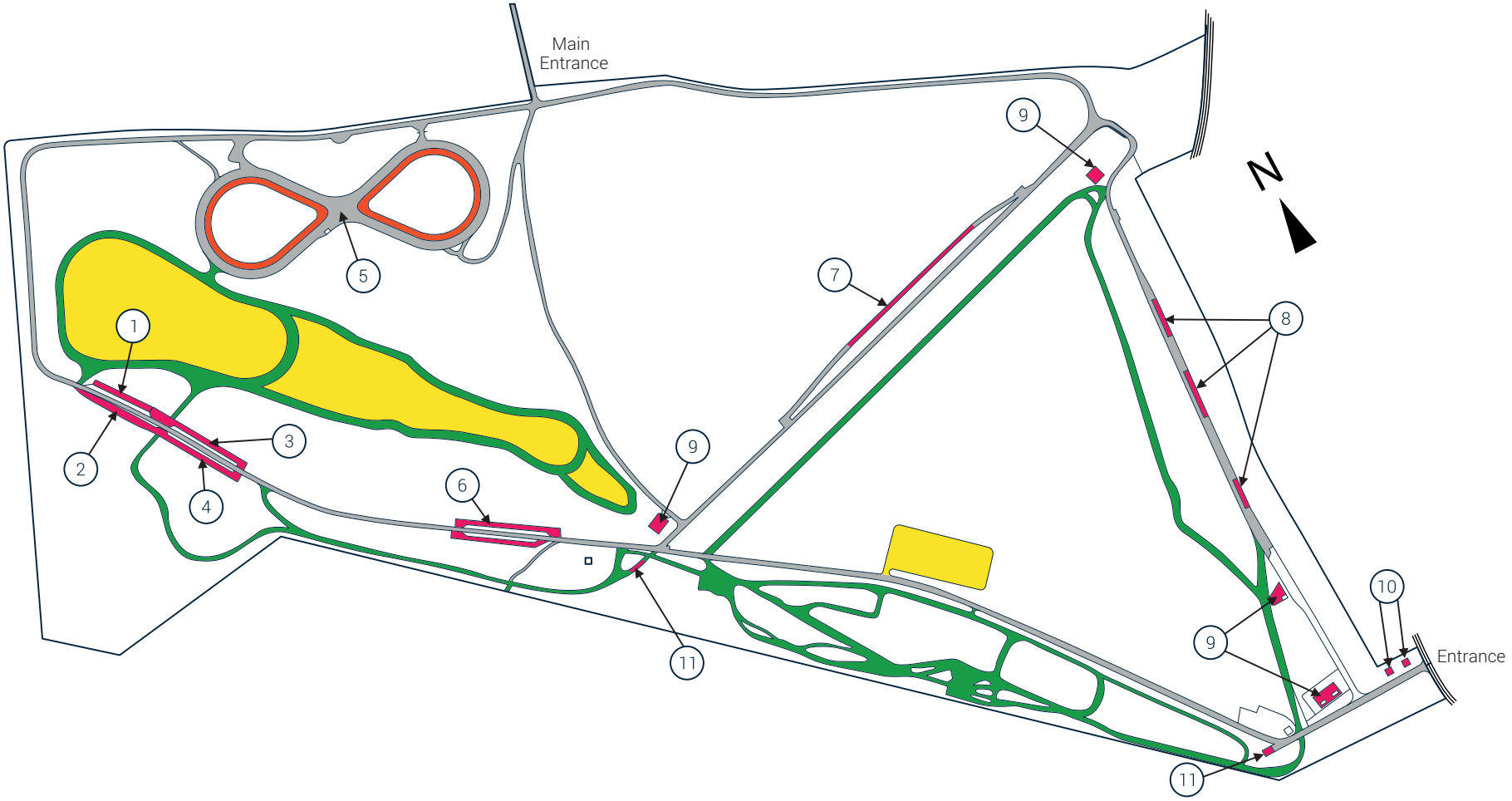
- 150mm, 200mm, 350mm, 600mm, 750mm, 800mm, 900mm
- Additional chamfered edges are available at 350mm, 600mm, 750mm and 900mm heights.

Vehicle Magnetic Signature Collection

The Vehicle Magnetic Signature Collection capability is primarily available at QinetiQ Hurn, but can be deployed to any suitable customer requested site to collect 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



1. Boulder course
2. Compound articulation course
3. 2 inch setts
4. 1 inch setts
5. Figure of 8 handling course
6. Cannonball
7. Concrete random course
8. Sine waves
9. Storage compounds
10. Storage huts
11. Concrete knife edge and ramp gauge

- Tarmac surface
- Cross country tracks
- Rough tracks
- Specialist test facilities
- Digging and ploughing area

Testing to extremes, underpinning reliability

Off-road

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

- A 7km off-road circuit for definitive reliability, durability and mobility testing with many additional route options
- Varied off-road features, including sand, water, gradients, cambers, bends, mud and gravel
- Dedicated gravel track/rough road circuit
- Dedicated sand/cross country circuit

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 set 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 8 course

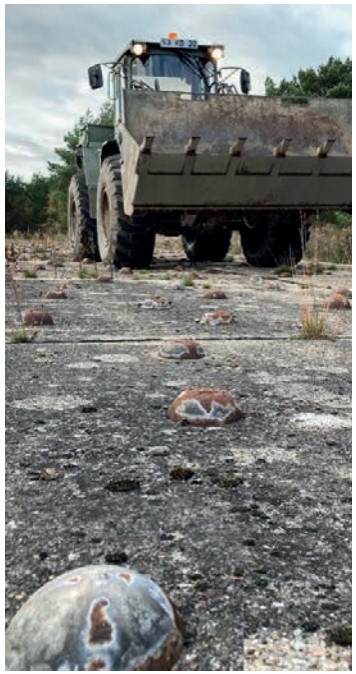
Figure of 8 metalled road for continuous running, towed cooling and automotive handling.

- 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 / 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

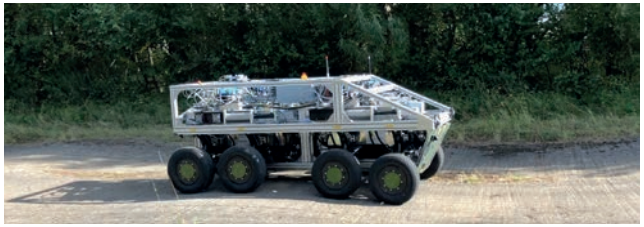
A comprehensive digging and ploughing area (sand and sandy gravel) with unlimited scope for plant trials, creating obstacles, mine clearance, unmanned vehicles and robotics. The whole area can be tailored to meet varying customer requirements.

- 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
- 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

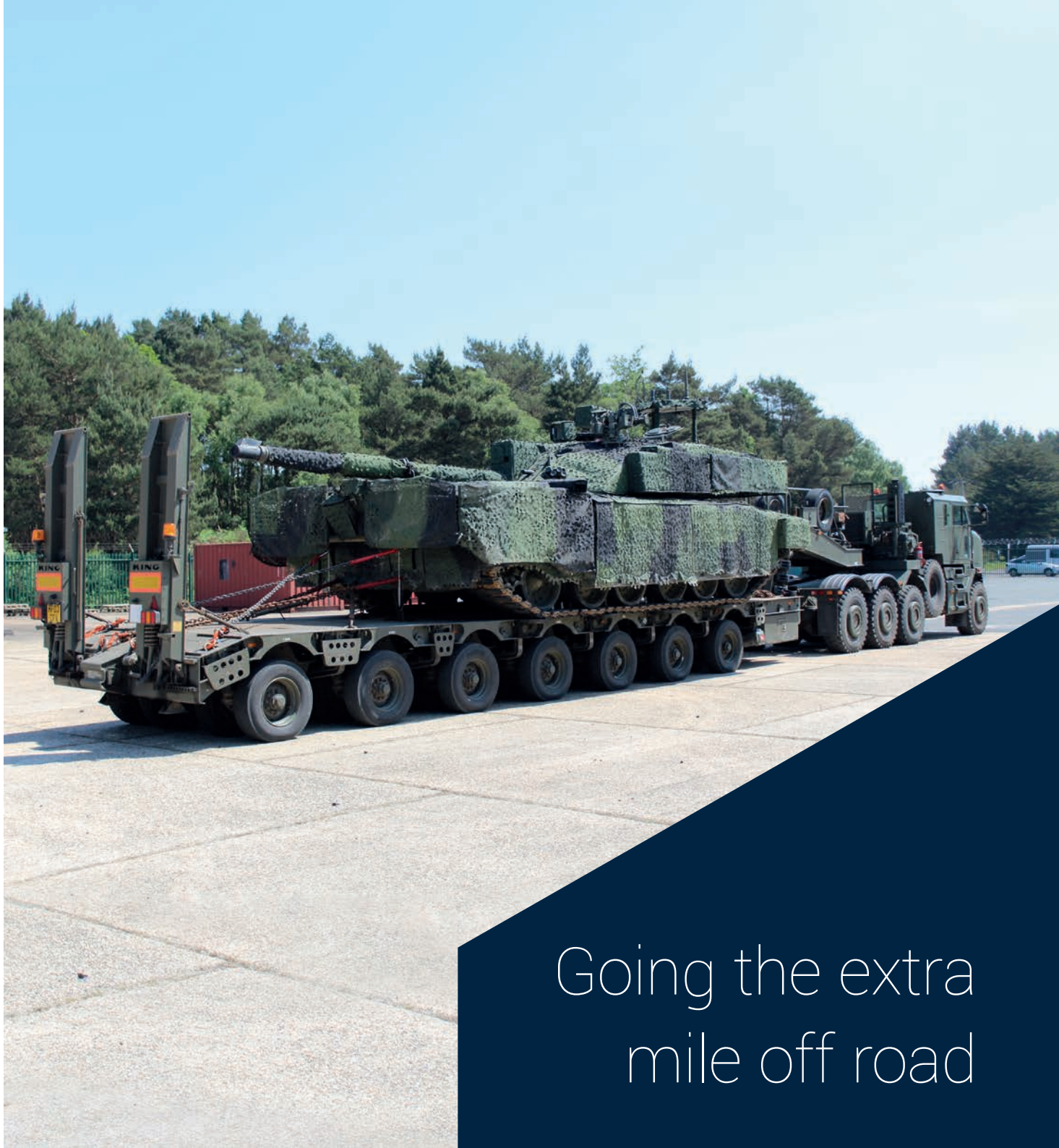




Concrete random course

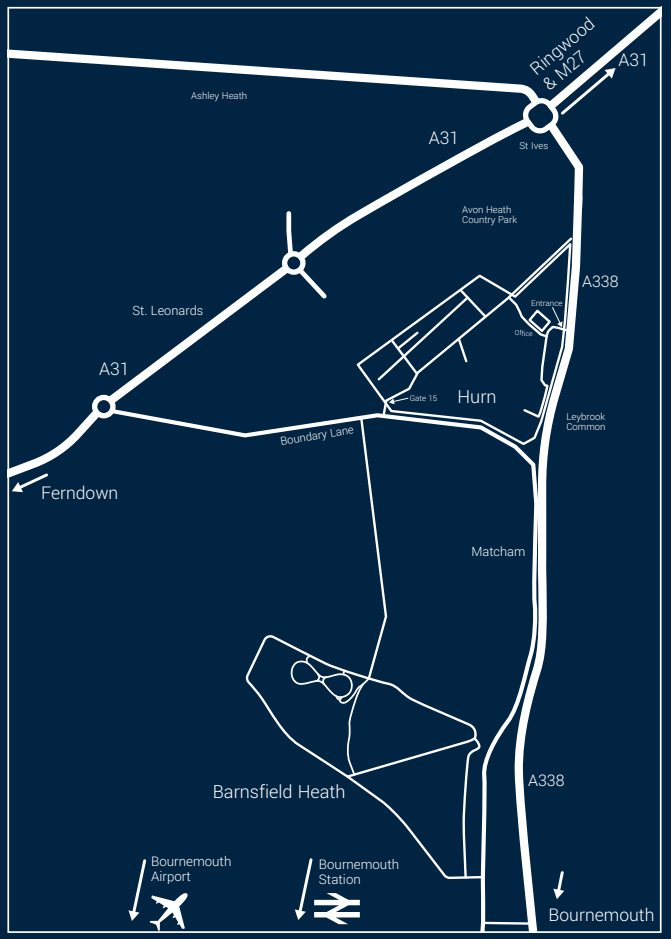
An extreme test course designed to provide vertical force inputs to wheel stations, coherent across the axle for accelerated durability / reliability testing of complete wheeled and tracked platforms.

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



Going the extra mile off road

QINETIQ



Hurn Proving Ground
Boundary Lane, St Leonards
Ringwood, Hampshire
BH24 2SF
United Kingdom
customercontact@QinetiQ.com
www.QinetiQ.com

QINETIQ/21/03943