



**TRANSPORT
TECHNOLOGIES
OF THE FUTURE**



VERY LIGHT RAIL
NATIONAL INNOVATION CENTRE

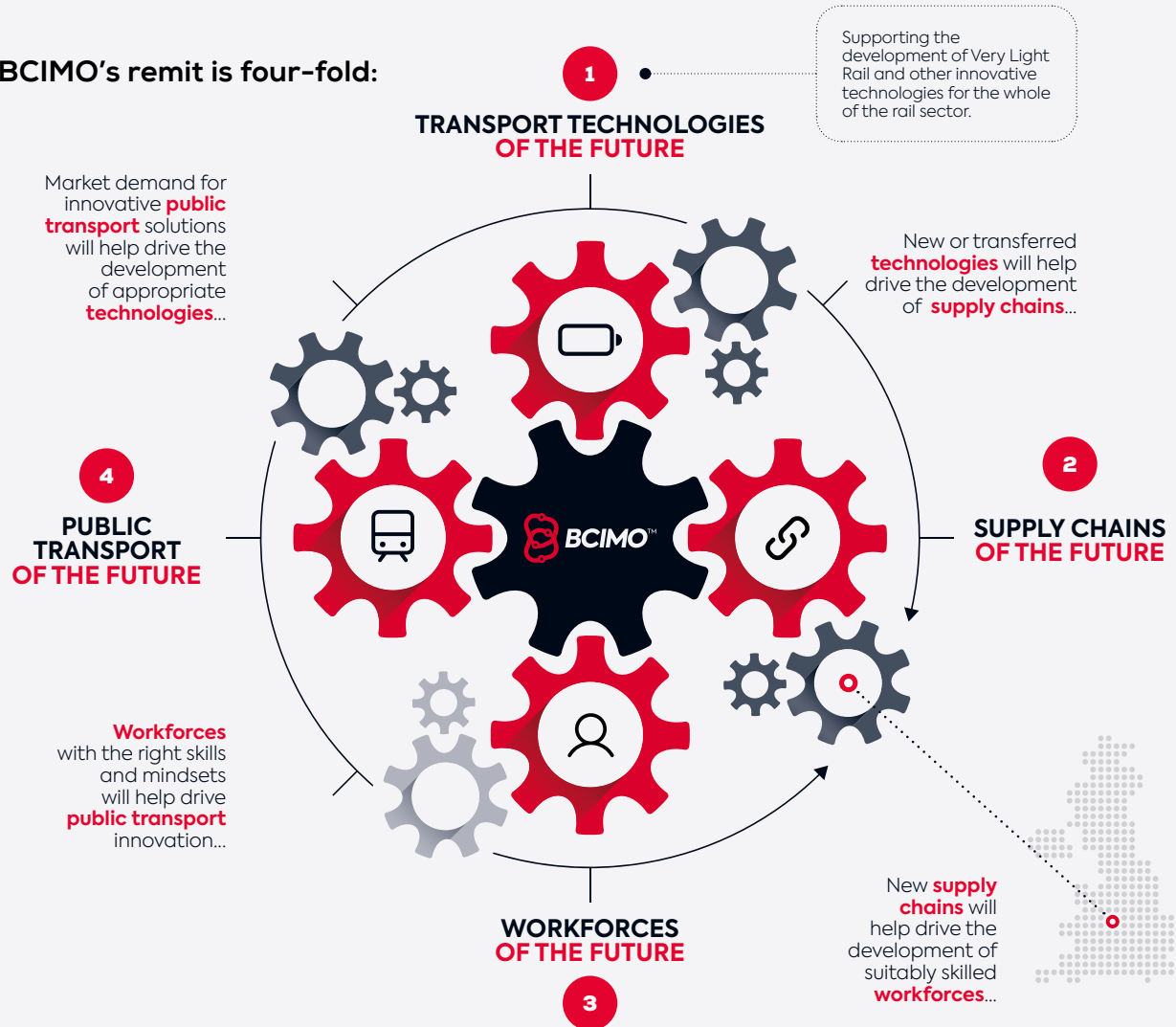
**RAIL DEVELOPMENT
& TEST SITE**



INTRODUCTION TO **BCIMO**

The Black Country Innovative Manufacturing Organisation (BCIMO) is a not-for-profit Research and Technology Organisation (RTO) established to oversee the delivery, launch and operation of the Very Light Rail National Innovation Centre (VLRNIC).

BCIMO's remit is four-fold:



INTRODUCTION TO THE VLRNIC

This brand-new centre of excellence has been constructed thanks to funding from the European Regional Development Fund (ERDF), Dudley Metropolitan Borough Council (DMBC), the Black Country Local Enterprise Partnership (BCLEP) in partnership with the Midlands Engine Investment Fund (MEIF), the West Midlands Combined Authority (WMCA), the Coventry and Warwickshire Local Enterprise Partnership (CWLEP) and Coventry City Council.

The VLRNIC encompasses a three-storey innovation centre, located on the site of the former railway station in Dudley, West Midlands, and a brand new 2.2km test track located along part of the mothballed South Staffordshire line leased from Network Rail.

This purpose-built facility will support the delivery of BCIMO's goals, and in particular the development of **Transport Technologies of the Future**, which will deliver a range of benefits including:

- Lower cost - to build, operate & maintain
- Low or zero operating emissions at point of use
- Carbon reduction across the whole life cycle
- Fewer disruptions during construction
- Self-propulsion (no expensive or unsightly overhead lines)
- Safety engineering and regulations appropriate to use case
- Improved urban and rural connectivity
- User-centred design
- Digital DNA
- Future autonomy



OUR USP

'IT'S THE ONLY
ONE OF IT'S
KIND IN THE UK'

What makes the VLRNIC and BCIMO unique?

EXEMPTION. We have a license exemption from the Office of Road and Rail, which means you can develop and test your railway innovations away from the constraints of the mainline operating environment.

EXTENSIVE. We are home to a broad range of facilities, including two world firsts - our 15m radius loop and our rapid battery charger - all accessible in a single location.

EXPERT. We offer fully independent and multi-disciplinary advice, support, and expertise, assisting your smooth progress through product acceptance and into commercialisation.

EFFICIENT. We take an integrated systems approach to the development of future public transport solutions, including end-to-end journeys.

ENCOMPASSING. We look at the bigger picture with regards the development of future public transport industries such as Very Light Rail.





VERY LIGHT RAIL
NATIONAL INNOVATION CENTRE

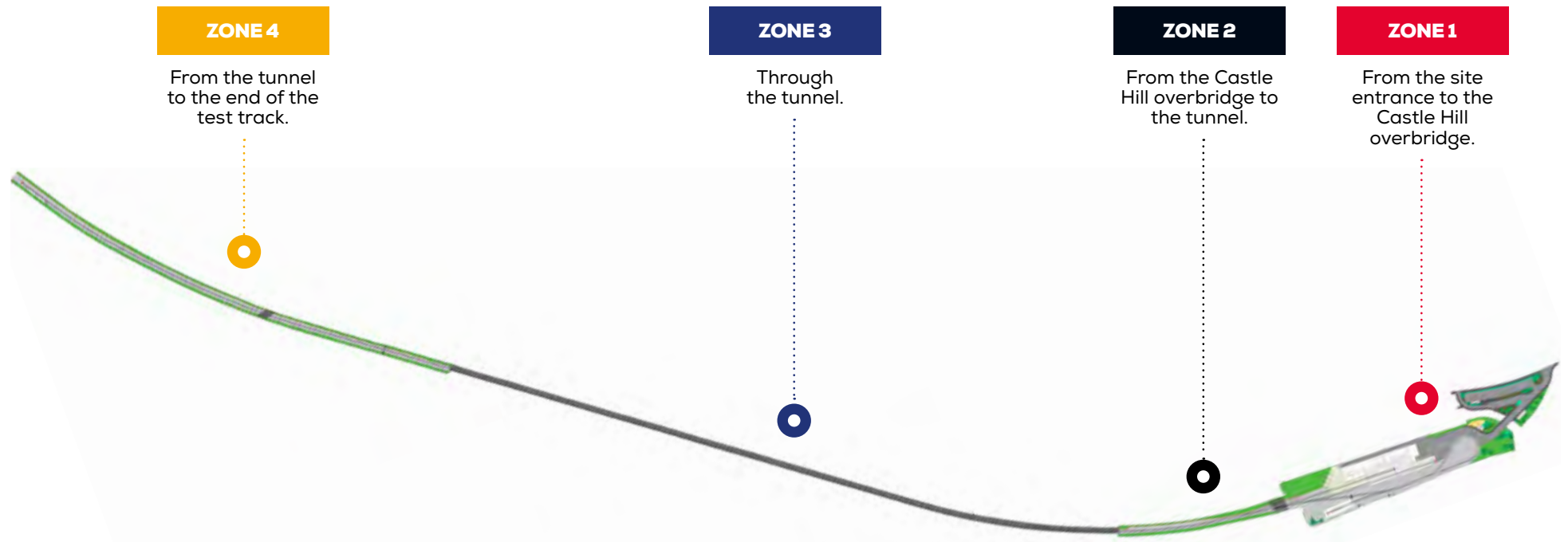
RAIL DEVELOPMENT & TEST SITE

The ground floor Engineering Hall, together with the rail test track, comprises the **Rail Development and Test Site** offering an extensive range of facilities to support the development and testing of future rail technologies.

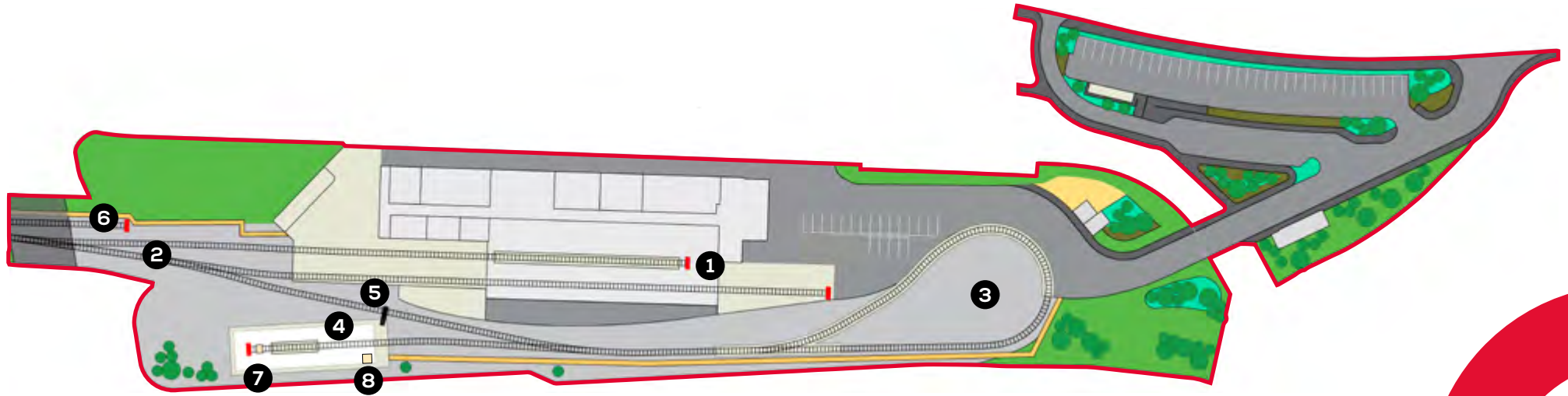


RAIL DEVELOPMENT & TEST SITE

For ease of reference the Rail Development and Test Site is broken down into four zones:



RAIL DEVELOPMENT & TEST SITE



ZONE 1

- 1 Engineering Hall & Test Labs
- 2 Test Track 1
- 3 Test Loop
- 4 Workshop
- 5 Rapid Charger
- 6 Siding
- 7 Shunter
- 8 Lifting Jacks

RAIL DEVELOPMENT & TEST SITE

ZONE 2

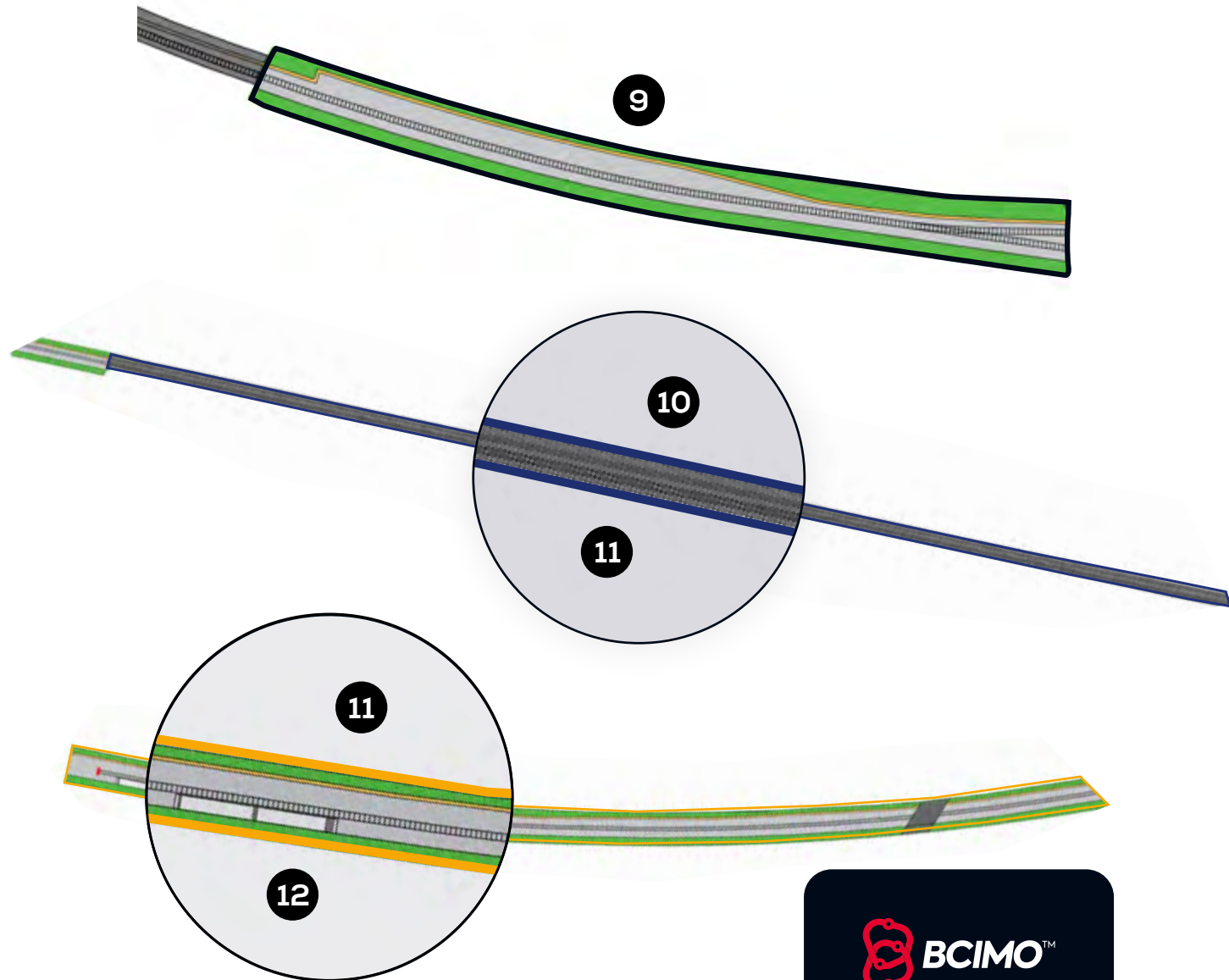
- 9 Test Track 1

ZONE 3

- 10 Test Track 1
- 11 Tunnel Infrastructure

ZONE 4

- 11 Test Track 1
- 12 Split-level Platform



RAIL DEVELOPMENT & TEST SITE / FACILITIES

ENGINEERING HALL



KEY FEATURES

- Triple-height landmark building
- 60m long x 20m wide
- 60m through track with buffer stop, for rail vehicle delivery / dispatch and access to test track
- 26m maintenance track and pit
- 3 x roller shutter doors, each measuring 7.55m high and 4.96m wide
- 10 tonne double girder overhead crane
- 4 x 16 tonne portable jacks
- 3-phase and single-phase electric supplies
- Compressed air supply
- High speed WI-FI

WHAT IT CAN BE USED FOR

- Maintenance, repair, and operation of test vehicles
- Assembling prototype vehicles
- Assembling novel infrastructure
- Stabling / storage of test vehicles and equipment



RAIL TEST TRACK

KEY FEATURES

- 2.2km in length with platform and buffer stop at the end of Zone 4
- Newly laid continuous welded rail track laid to Network Rail's 100mph standard
- Maximum speed dependant on vehicle capabilities - provisionally an 80 km/h speed limit has been set
- 870m section through a '5 brick arch' Victorian tunnel
- Standard gauge single track with sidings
- Compliant with W12 gauge, including through tunnel
- Power operated points
- Ducting along the entire length of the test track, to allow for easy installation of power, data, etc., services
- Safe walkway path along the entire length of the test track
- Personal Mobile Radio (PMR) system covering entire site, including test track and tunnel
- Space to construct a parallel second test track in the future, including through the tunnel



RAIL TEST TRACK



WHAT IT CAN BE USED FOR

- Vehicle testing, for example:
 - Low adhesion testing and training
 - Brake performance testing
 - Wheel slide protection (WSP) testing
 - Pass-by noise testing
 - Rescue and recovery training
 - Autonomous systems
- Track testing, for example:
 - Track equipment and systems testing
 - Novel approaches to track and infrastructure
 - Track monitoring, repair, and maintenance
- Lineside testing, for example:
 - Equipment testing
 - Vegetation and environmental monitoring and control
- Other uses:
 - Emergency 'blue light' training
 - Operational training
 - Filming location

RAIL TEST LOOP



KEY FEATURES

- 200m long
- 15m radius loop
- Maximum speed dependant on vehicle capabilities - provisionally a 10 km/h speed limit has been set
- Split into 2 sections:
 - **Section 1** - standard tram profile track laid on a concrete base
 - **Section 2** - wooden rail sleeper on ballast. This will be replaced by a novel low-cost slab track in early 2023

WHAT IT CAN BE USED FOR

- Vehicle testing
- Testing of novel track structures
- Test and development of novel vehicle chassis/ bogie systems to operate on "tight" radius curves

WORKSHOP



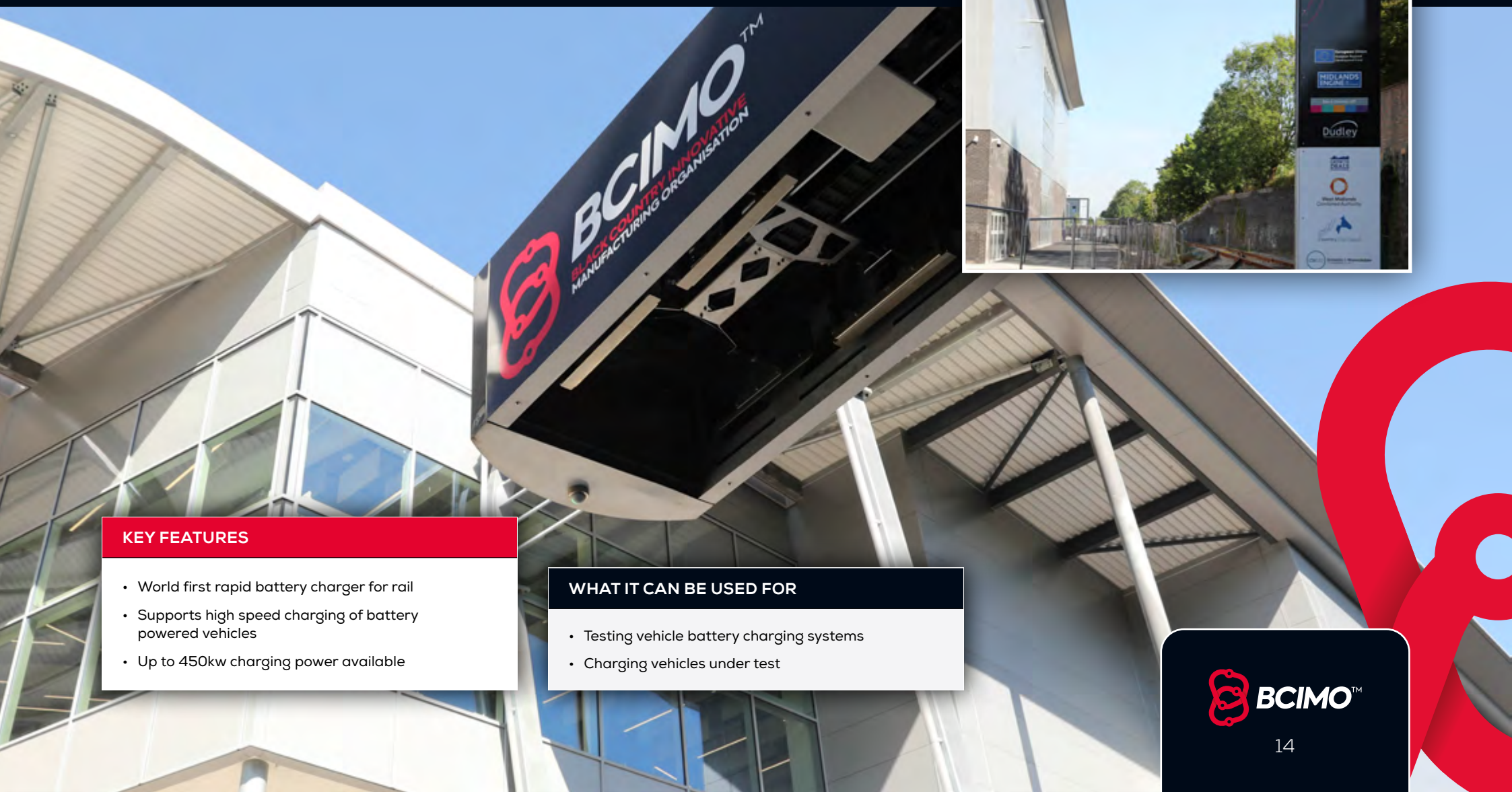
KEY FEATURES

- 36m x 10m secure building
- Roller shutter door, measuring 4.2m high and 3.6m wide
- Lighting
- 33m track with buffer stop
- 9m maintenance pit
- 2 tonne single girder overhead crane
- 3-phase and single-phase electric supplies
- High speed WI-FI
- Wall mounted electrical heaters
- Range of equipment and hand power tools, including:
 - Re-railing kit
 - 2 x hand propelled rail carts
 - Compressed air supply

WHAT IT CAN BE USED FOR

- Private and confidential R&D activity
- Stabling of test vehicles, prototypes, and equipment
- Assembly, maintenance and repair of test vehicles and prototypes

RAPID CHARGER



KEY FEATURES

- World first rapid battery charger for rail
- Supports high speed charging of battery powered vehicles
- Up to 450kw charging power available

WHAT IT CAN BE USED FOR

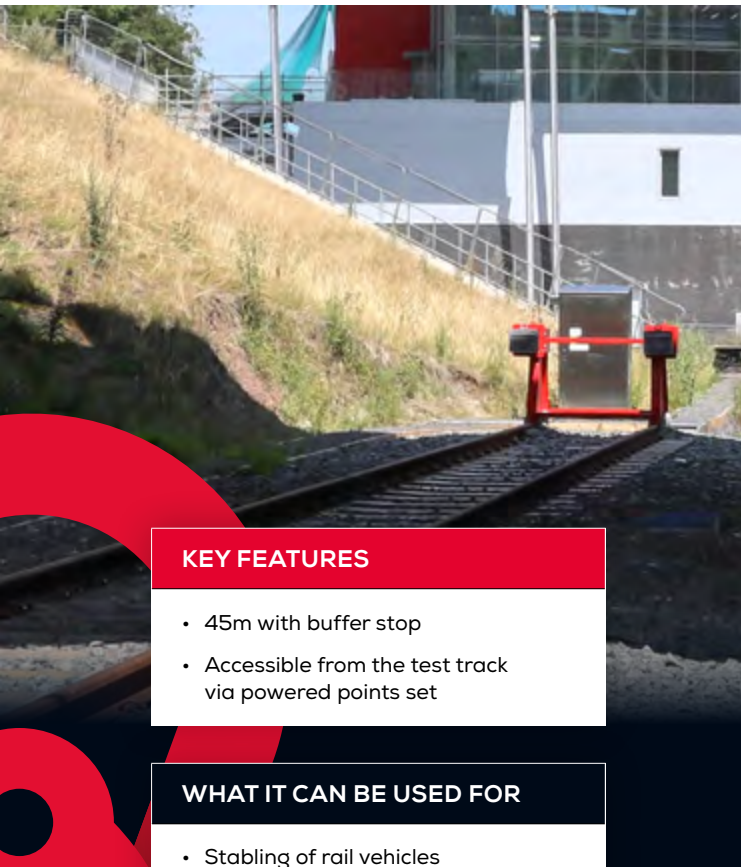
- Testing vehicle battery charging systems
- Charging vehicles under test



SIDING

SHUNTER

LIFTING JACKS

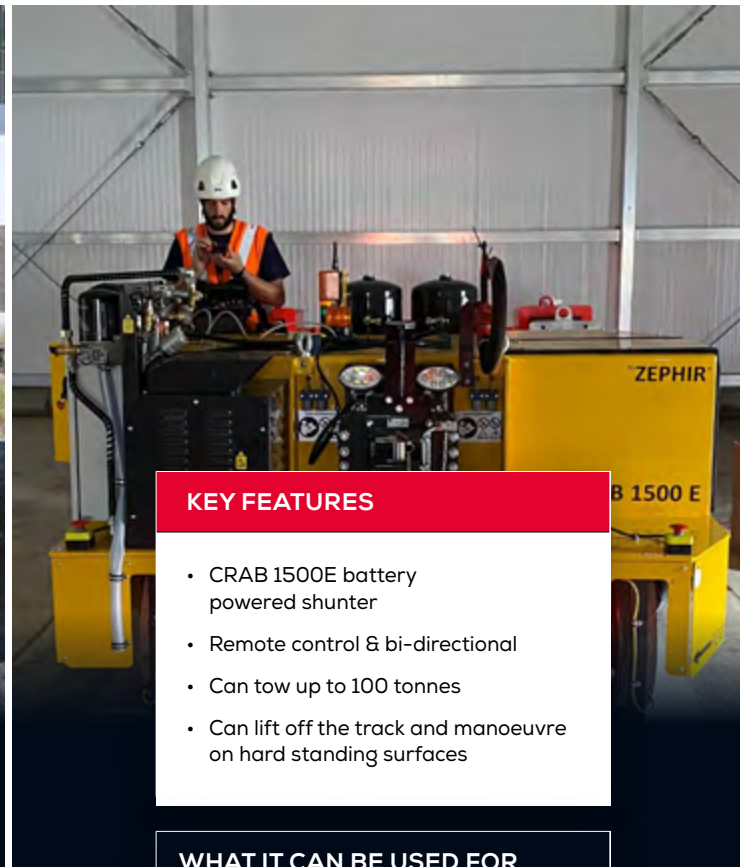


KEY FEATURES

- 45m with buffer stop
- Accessible from the test track via powered points set

WHAT IT CAN BE USED FOR

- Stabling of rail vehicles
- Emergency 'blue light' training
- Rail vehicle staff familiarisation / training
- Rail vehicle modifications

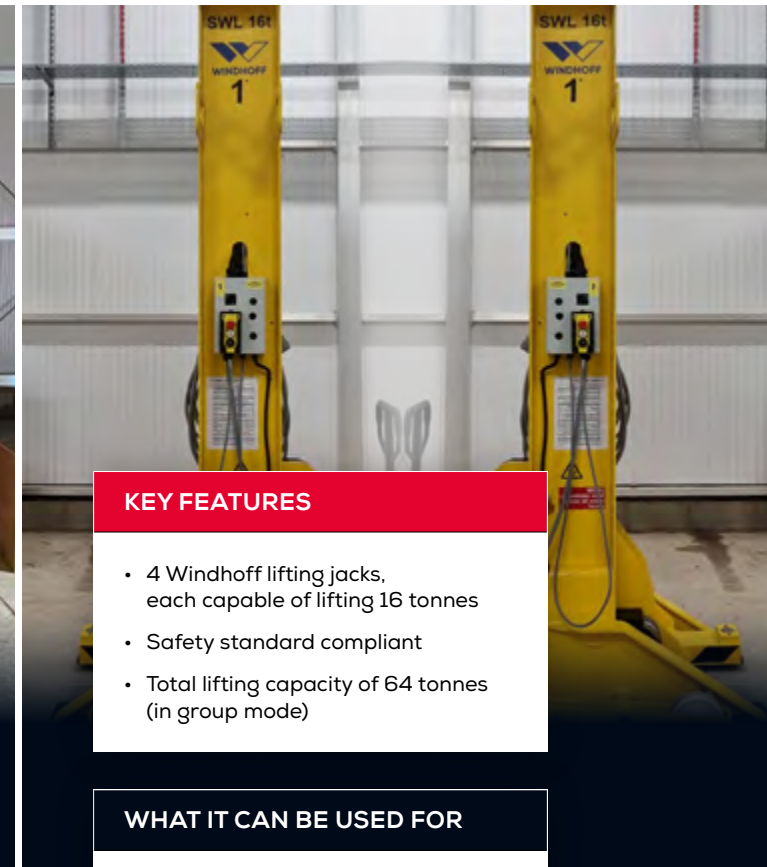


KEY FEATURES

- CRAB 1500E battery powered shunter
- Remote control & bi-directional
- Can tow up to 100 tonnes
- Can lift off the track and manoeuvre on hard standing surfaces

WHAT IT CAN BE USED FOR

- Shunting of vehicles and carriages
- Recovering broken down vehicles from test track



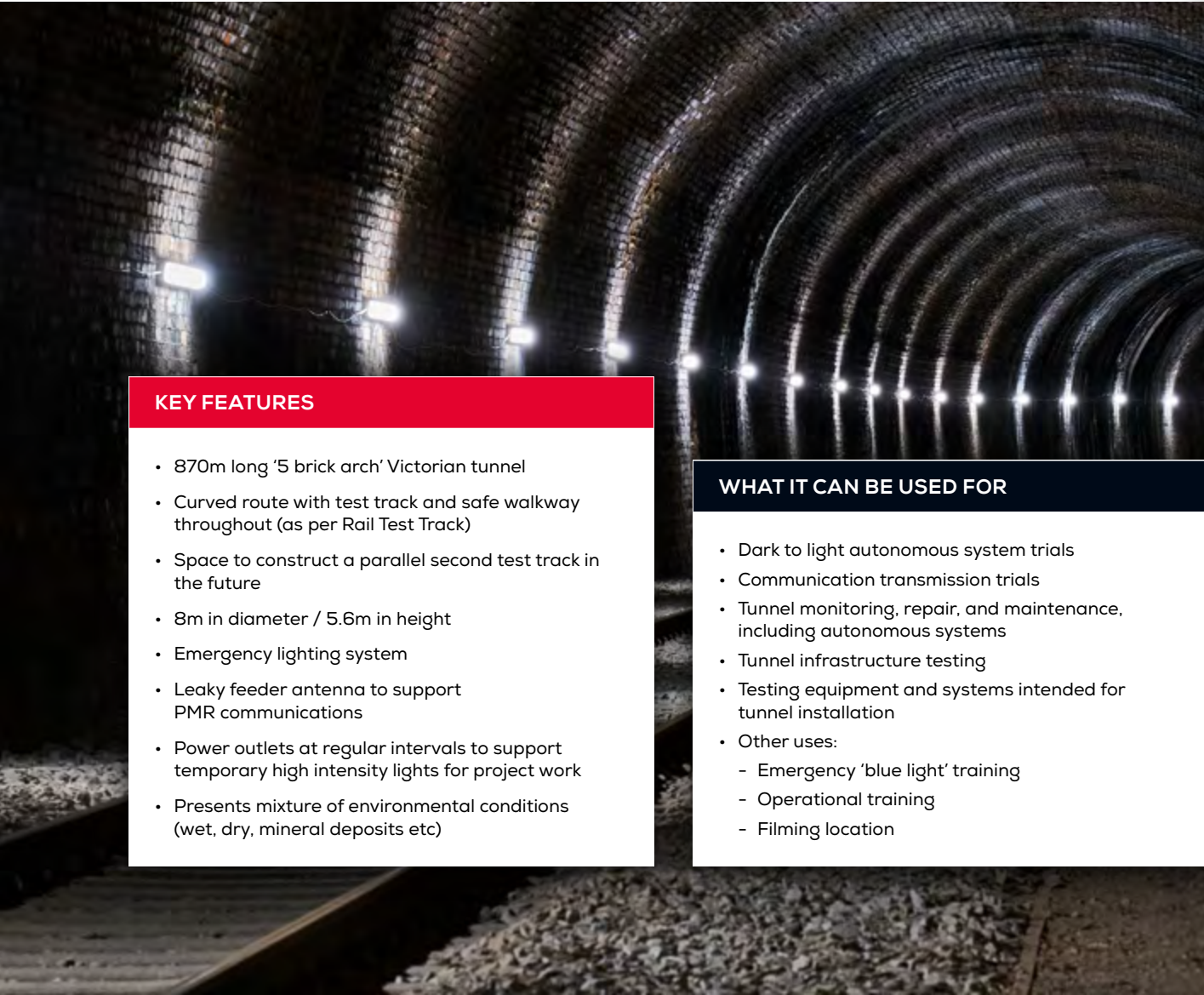
KEY FEATURES

- 4 Windhoff lifting jacks, each capable of lifting 16 tonnes
- Safety standard compliant
- Total lifting capacity of 64 tonnes (in group mode)

WHAT IT CAN BE USED FOR

- Lifting vehicles

TUNNEL



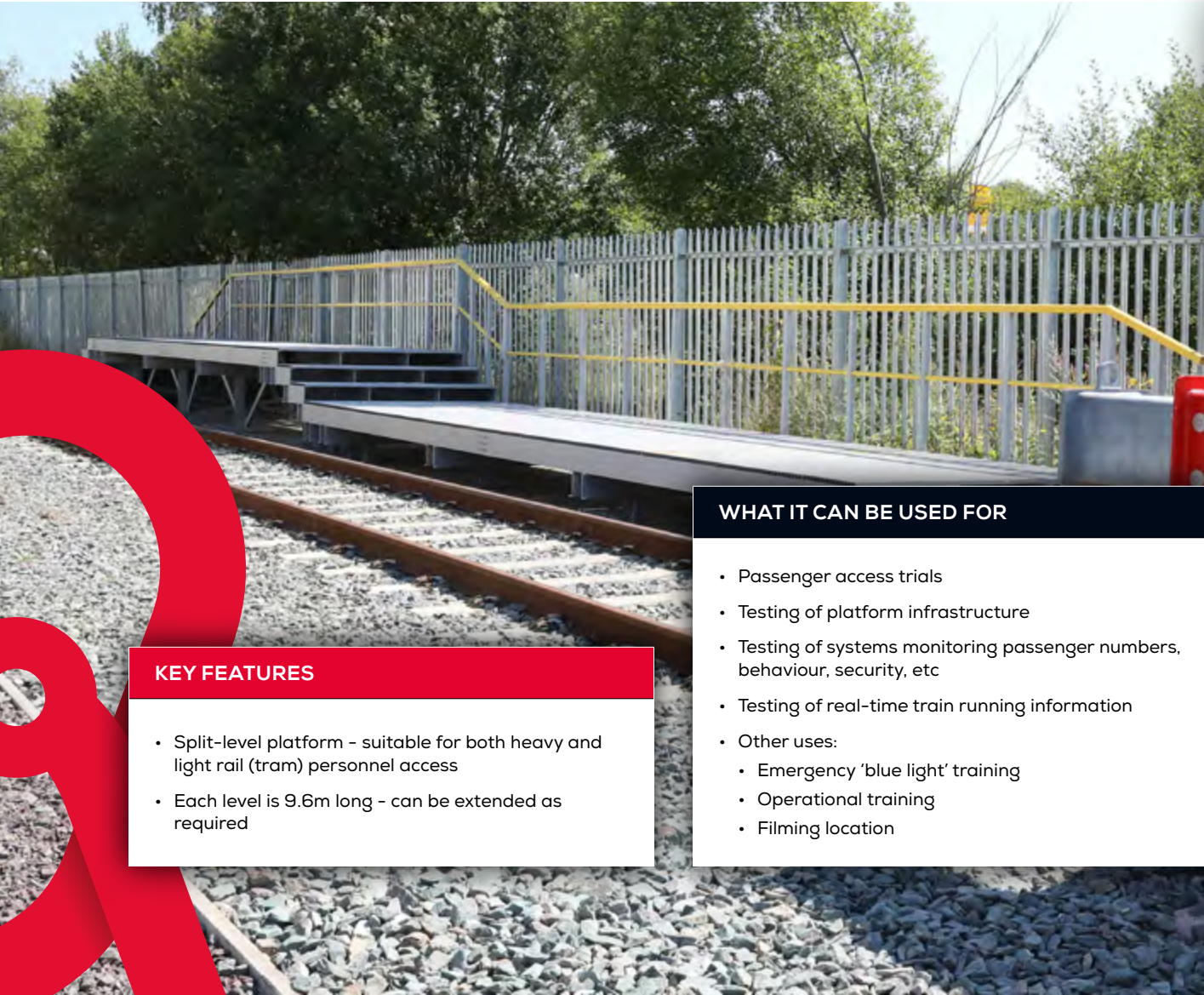
KEY FEATURES

- 870m long '5 brick arch' Victorian tunnel
- Curved route with test track and safe walkway throughout (as per Rail Test Track)
- Space to construct a parallel second test track in the future
- 8m in diameter / 5.6m in height
- Emergency lighting system
- Leaky feeder antenna to support PMR communications
- Power outlets at regular intervals to support temporary high intensity lights for project work
- Presents mixture of environmental conditions (wet, dry, mineral deposits etc)

WHAT IT CAN BE USED FOR

- Dark to light autonomous system trials
- Communication transmission trials
- Tunnel monitoring, repair, and maintenance, including autonomous systems
- Tunnel infrastructure testing
- Testing equipment and systems intended for tunnel installation
- Other uses:
 - Emergency 'blue light' training
 - Operational training
 - Filming location

SPLIT-LEVEL PLATFORM



KEY FEATURES

- Split-level platform - suitable for both heavy and light rail (tram) personnel access
- Each level is 9.6m long - can be extended as required

WHAT IT CAN BE USED FOR

- Passenger access trials
- Testing of platform infrastructure
- Testing of systems monitoring passenger numbers, behaviour, security, etc
- Testing of real-time train running information
- Other uses:
 - Emergency 'blue light' training
 - Operational training
 - Filming location

COMPLIMENTARY OFFERINGS

INNOVATION CENTRE



WHAT WE CAN OFFER

The innovation centre offers a broad range of facilities, including:

- A large Engineering Hall and a selection of test laboratories
- Serviced office spaces
- Events Suite, comprising meeting rooms, a large Auditorium and Exhibition Hall

PROJECT SUPPORT



WHAT WE CAN OFFER

BCIMO offers a broad range of project support options, including:

- Multi-disciplinary (engineering and project management) project teams
- As an RTO, can lead collaborative R&D projects
- Collaborative R&D bid writing / project application support
- Technical support staff
- Test track vehicle drivers





BCIMOTM



SUPPLY CHAINS OF THE FUTURE PROGRAMME

The Black Country Innovative Manufacturing Organisation (BCIMO) is looking for eligible* companies to take advantage of its **FREE support** on offer – funded by the European Regional Development Fund.

Offer areas include:

- Horizon Scanning
- Process Improvement
- Marketing Strategy
- Diversification into Rail
- Commercialisation, Growth and Business Change
- R&D and Patent Box Tax Relief.



To find out more please visit bcimo.co.uk/supply-chains-of-the-future

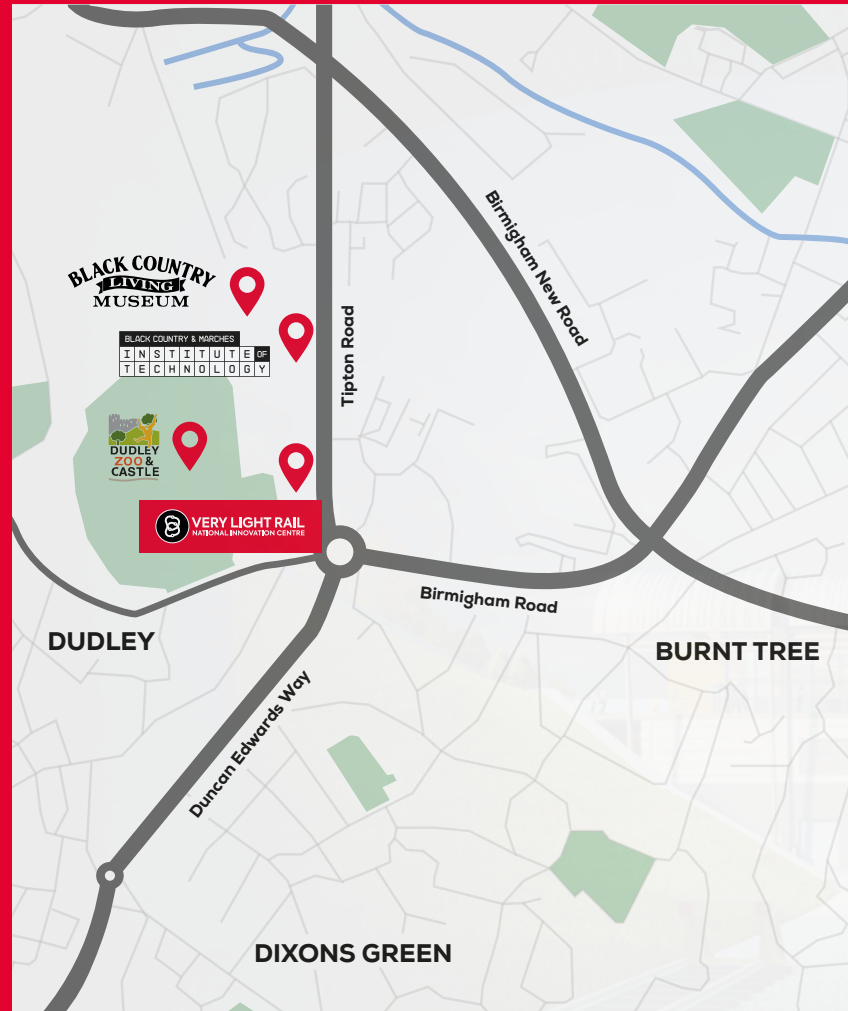
*Companies eligible for FREE support must:

- Be based in, or on the borders of, the metropolitan boroughs of Dudley, Sandwell, Walsall or in the City of Wolverhampton
- Have less than 250 employees and a turnover of less than £50m per annum
- Companies not meeting these criteria can still access the programme but will be charged at BCIMO's standard rate.

RAIL DEVELOPMENT & TEST SITE/

CONTACT US

For a bespoke quote relating to hire of the Rail Development and Test Site or for more information on any of BCIMO's complimentary offerings, please get in touch.



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in Black Country Innovative
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