INTERMEDIATE MODE PASSENGER TRANSIT

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QUESTION:

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What if there were an 'intermediate transport mode' able to

1 **Connect 'first mile/last mile' journeys…**
…station to bus, people to homes, people to office with
- Low and Zero Carbon and light weight
- Lower capital cost than traditional rail methods
- High levels of reliability

2 **Deliver big savings in operational costs** compared with Heavy Rail and Metro, with the attraction of a *rail service*

ANSWER:

There is!
It's a West Midlands' first – an Intermediate Mode of Public Transport

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Parry People Movers designed and built *Ultra Low Carbon Rail Vehicles* in service with **Pre Metro Operations** for West Midlands trains within the National Rail Network

INTERMEDIATE MODE PASSENGER TRANSIT

FACTSHEET – Stourbridge Shuttle

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Passenger Services Operated:

2 Railcars available – 1 used at a time.

Monday to Saturday = 214 one-way journeys of 1 KM – 3 minutes
Sunday = 82 journeys of 1 KM – 3 minutes.

Total of 70,000 railcar journeys per year

A total of 54,000 miles per year

A total of 7,250 operational hours

FACTSHEET – Stourbridge Shuttle

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Passengers carried – 7 years – increasing…

Over 5M carried since the start

2011/12 473,160
2012/13 522,409
2013/14 548,870
2014/15 582,959
2015/16 601,014
2016/17 602,654
2017/18 618,019 (F)

West Midlands travel trends show bus patronage declining at a time when public use of rail services is rising rapidly

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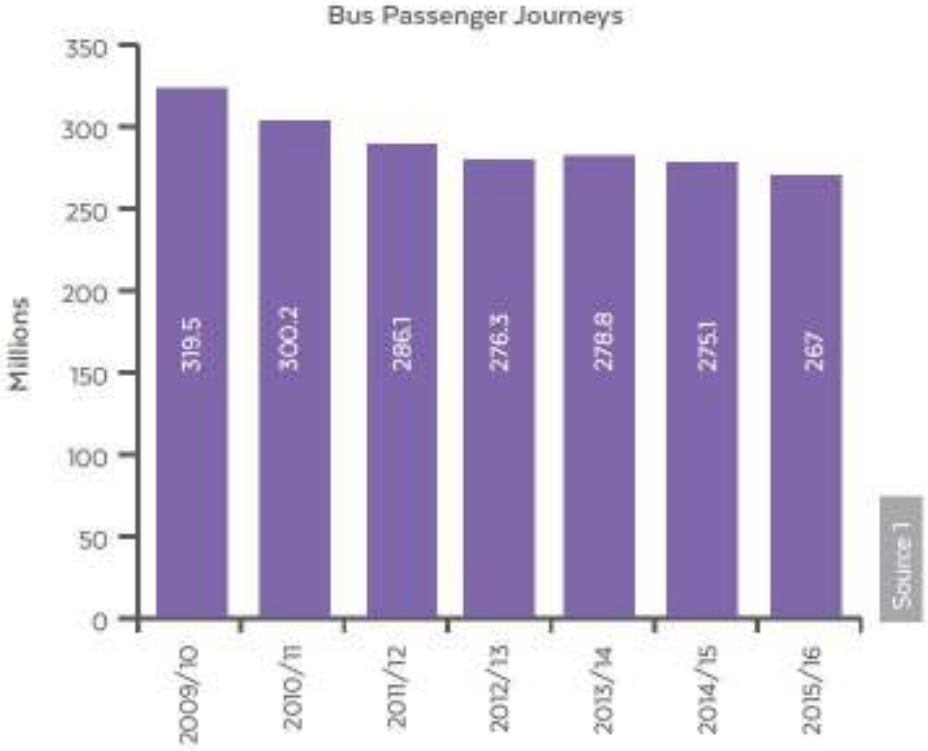

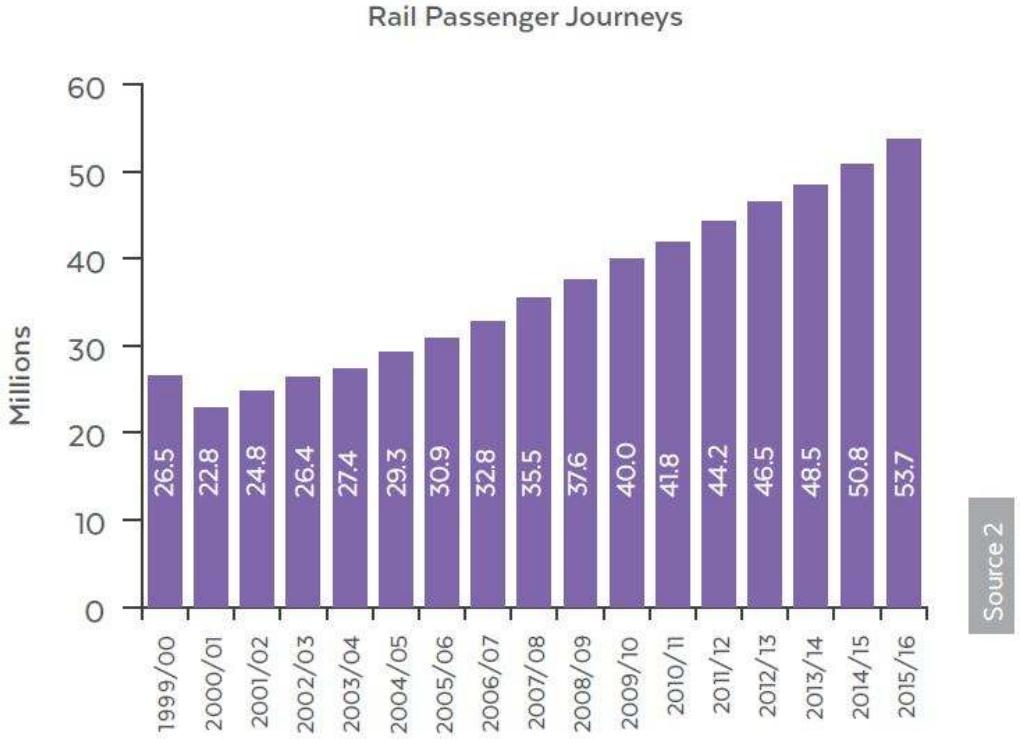

Source Travel Trends, TfWM, 2016

Are lightweight railcars now in service?

Lightweight railcars are able to **operate on ordinary rail track** integrating comfortably into a railway environment under agreed derogations

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- **Much lighter** than traditional rolling stock
- Much **less expensive** to build, operate and maintain (in adjacent depot)
- Much **less wear and tear** on the running rails
- Has been operating for **9 years as a Pathfinder** at one location in UK at **Stourbridge**, Black Country
- Cost saving use of high quality **automotive mechanical engineering** and coachwork

Are lightweight railcars now in service?

Innovative technologies deliver **best passenger service and reliability** records through

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- **Flywheel energy with LPG 2.3l engine** providing a breakthrough in hybrid technology
- 184 miles without refuelling at 20mph (excluding reserves)
- Railcar does 2.53 miles per litre of LPG - a cost of £0.59 per mile.
- Railcar designed for 40 mph but limited to the line speed of 20 mph.
- Delivering major cost savings for operators leading to viability and **business sustainability**
- Delivering **congenial and reliable journeys** for passengers
- Easy to maintain and operate

Who are behind the Stourbridge Branch Line train service and future engineering developments?

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It is –

- Part of the **West Midlands Railway** within the Dept for Transport's Franchised Network
- Operated by **Pre Metro Operations** under subcontract to West Midlands Trains
- Designed, and built by **Parry People Movers Ltd** of Cradley Heath and Stourbridge
- £3m cost funded by private shareholders to cover railcar production and depot build costs

Loco on test by PPM's manufacturing partners, Clayton Equipment Ltd of Burton, a World-leading small locomotive builder.

PMOL's Operating Record at Stourbridge

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*First half annualised

99% +
RELIABILITY

What innovations are planned for the rail version of the Intermediate Mode?

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- **Carriage length extension** from 60 passenger capacity enabling 90 people to travel in a single car with further 'stretch' to 120 possible
- **Bogie running gear** development extending railcar and tram length and operating speed
- Compact tram/trains and **Double Decker trams**
- **Range extension** to all day ultra-low and nil-emission through 'Tribrid technology' – linking compressed air/biomethane gas-to-battery/flywheel to minimise air pollution
- Development of **relocatable track** in order to obviate diversion of the services in the subsoil
- **Bicycle and pushchair-friendly track** new flangeway filler innovation enabling on-street tracks which do not cause hazards to cyclists or small-wheeled devices

Relocatable 'Waybeam' Track Development

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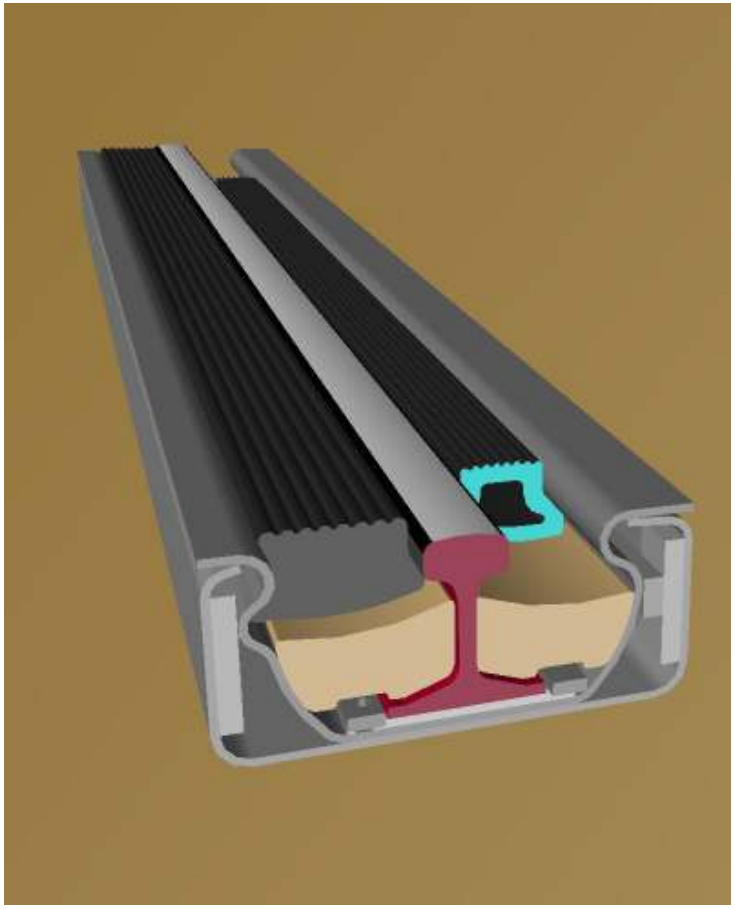
- **Prior Art - Patent Pending**
- **Standard 80lb flat bottom rail** used in light rail systems with sleeper track
- **Beam casing** - a welded metal fabrication as rectangular cross section inserted into a 300 mm wide slot in upper road formation to 150 mm depth (Tricorn or Metsec, WMids)
- **Resilient rubber in-fill** - reycyled from worn aircraft tyres designed not to 'pop out' (Rosehill, Sowerby, Yorks)
- hard blocks of **nylon bracing** between the web of the rail and casing sides (Glendenning Plastic Mouldings, WMids)
- **Compressable flangeway** as specially-shaped component with hollow core depresses and springs back to fill the slot after the wheel has passed (Tyre makers, Continental, etc)



patent pending ©

Who's Delivering 'Next Generation Technology' ?

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Negotiating to involve in due course –

- British steel (track products)
- Black Country metal section specialists
- Rosehill Rail (level crossing specialists)
- Alucast
- Wilkinson Dynamic Balancing
- Spencer signs

Can new Routes be created?

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Best technology solutions for West Midlands leadership to resolve

- Congestion
- Air Quality – delivering Clean Air Zones
- 14,100 premature deaths in UK from NOx pollution; 37,800 premature deaths from Particulate Matter (PMs) emissions from road, tyre and break wear
- First and last mile connectivity challenges

Why the **Intermediate Mode** can help

- Much less expensive than heavy rail/Metro technologies but able to integrate with both of the mainline systems
- Much quicker and more flexible approach to planning and construction
- Predominantly utilising the skills, abilities and physical assets of Black Country firms and people supported by others in the West Midlands region.

Can new Routes be created?

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Why the **Intermediate Mode** can help

- **Energy Efficiency** – steel wheels on steel rails use one third energy of those running on rubber tyres
- **Safety** - buses on rails are safer – especially when operating in pedestrianised areas
- **Durability** – rail-based buses last many more years than rubber tyred buses
- **Property Uplift** – opportunity for rates uplift as property values increase
- **Relocatable** - waybeam tracks offer much lower capital cost installation costs along with lower operating costs
- **Popularity** – Public have shown their preference for travelling on rail-based alternatives

Funding scenarios built on PMOL Track record

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- PMOL trams installed and operating for around 20% cost of Metro
- BCU **School of Built Environment** research demonstrating £16,500 property value uplift in Wednesbury for each km property is nearer to tram stop
- More opportunity Land Value Capture taxation within English regions?

TERMS USED

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1. ESTABLISHED SURBURBAN PASSENGER TRANSIT MODES

- '**Heavy Rail**' traditional standard gauge lines and rolling stock mainly within the Franchised Rail Network
- '**LRT/Metro**' also mainly standard gauge, include partially underground systems (London, Glasgow and Merseyside) and newly built 'supertram' operations Manchester, Sheffield, Midland Metro, Nottingham, Croydon, Edinburgh and modernised Blackpool system
- **Suburban buses** the most widely used form of passenger transit in every town and city in the UK

2. INTERMEDIATE MODE SYSTEMS

- **Lightweight Railcars** Pathfinder operation at Stourbridge (Class 139 units)
- **Bus Rapid Transit** part-segregated systems using modified standard buses which whilst on 'guideways' are mainly steered by mechanical contact with specially designed Kerbs – examples in Cambridgeshire, Leigh-Salford, Luton-Dunstable and Ipswich
- Preparing for introduction:

  '**Sprint**'. Articulated buses with LRT-style features supported by Bus Priority measures – TfWM

  '**Tramtrains**' European-style, supertram sized, electrified able to run on tramways and modified rail lines

  '**Light trams**' – Returning to the dimensions of the traditional British street tram but in 'no wires' form