

# EWR Initial Fleet

[Oxford to Milton Keynes only]

- Modern two-carriage diesel trains;
- Operate the initial Oxford to Bletchley with potential to extend to Milton Keynes Central service temporarily;
- Engines meet EU Stage IIIB emissions standards and use Ad Blue in the exhaust system to reduce nitrogen oxide (NOx) emissions;
- Each train has an accessible toilet, passenger information throughout, and dedicated spaces for three bikes.












# Use of different types of traction

- Initial use of diesel only trains is a temporary solution;
- This allows EWR to commence services quicker, unlocking the benefits of the new railway earlier;
- Electrification remains under consideration with EWR Co awaiting a decision from government on this;
- This allows flexibility in future power options in line with the government commitment to removing all diesel only trains by 2040;
- EWR are also investigating alternative traction power including battery power and hydrogen fuel cells.



# Long-Term Rolling Stock Options

Traction Type		Carbon	Cost	Complexity
EMU Electric Only		●	●	●
DMU Diesel Only		● ● ●	●	●
BMU Battery Only		●	● ●	● ●
HMU Hydrogen Fuel Cell Only		●	● ● ●	● ● ●
DEMU Diesel-Electric Bi-Mode		● ●	● ●	●
DBMU Diesel-Battery Hybrid		● ●	● ● ●	● ● ●
BEMU Battery-Electric Hybrid		●	● ●	● ●
HEMU Hydrogen-Electric Hybrid		●	● ● ●	● ● ●
BDEMU Battery-Diesel-Electric Tri-Mode		● ●	● ●	● ●

# Case study: Tri-Mode – Class 756

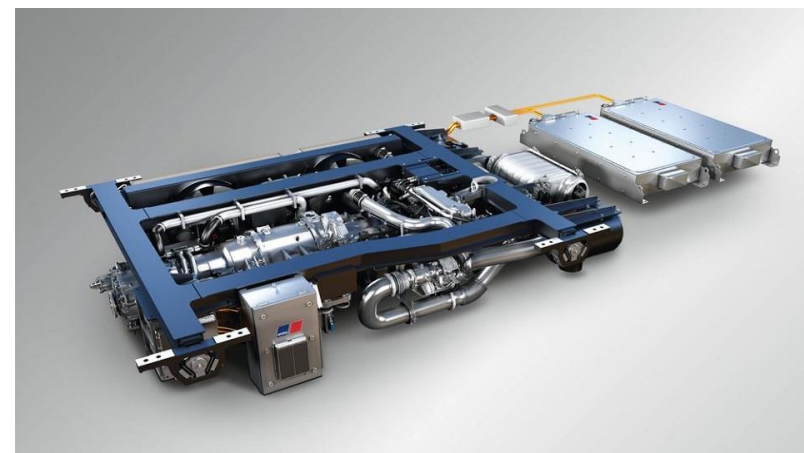
- New Transport for Wales trains which are electric (25kV OLE), Battery and Diesel;
- This allows the units to operate over larger areas of non-electrified sections of the railway;
- Based on the Flirt platform for Stadler similar to Greater Anglia and Merseyrail;
- Currently undergoing initial testing prior to full service operation.





# Case study: B-DEMU Hybrid – Class 168 HybridFLEX

- Partnership between Chiltern, Porterbrook and Rolls-Royce to develop the Hybrid concept;
- One hybrid battery-diesel train currently in service;
- Fitted with brand new engines combined with on-board batteries;
- Batteries are used at stations with diesel used at other times and capture energy lost through braking;
- Fuel consumption and CO2 emissions are reduced by up to 25%, Nitrous Oxide (NOx) emissions by over 70% and particulate emissions by over 90%, compared to the original 25-year-old engine.



# Case study: Battery EMU Hybrid – Class 379 IPEMU

- Partnership between Network Rail, Bombardier, Abellio, Future Railway and Department for Transport (DfT) to demonstrate the viability of a battery-powered train;
- Tested in passenger service for five weeks in 2015;
- Electric train fitted with traction batteries on one vehicle;
- Batteries were used for a 30km section and charged from overhead line electrification on the remainder of the journey.



# Ongoing Work



## Active engagement with Rolling Stock Manufactures, Owners and Train Operators...

to understand existing challenges with novel rolling stock traction types. Potential for EWR Co to lead innovation of future rolling stock to meet customer needs.



## Electrification is being taken into account...

with passive provision included in designs where appropriate.



## Continued engagement with the Department for Transport (DfT)...

to ensure EWR Co align with the decarbonisation agenda and 'The Williams-Shapps Plan for Rail'.