Metronet Rollingstock Procurement

Industry Engagement Briefing

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Thursday, 26th October, 2017

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Bombardier Transportation in Australia

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KEY REFERENCE PROJECTS

Reference projects in Western Australia

A-series & B-series EMUs for Perth

- Bombardier & Downer JV awarded supply contracts for:
  - A-series (1987) – 48 two-car EMU
  - B-series (2002, extensions in 2006, 2011 & 2016) – 78 three-car EMU

  Total fleets: 330 railcars

- A separate Bombardier & Downer JV also maintain the fleets:
  - B-series in Nowergup since 2004
  - A-series in Claisebrook since 2011

- The Maintenance JV is a major employer in rail in WA

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KEY REFERENCE PROJECTS

Reference projects in Australia

Queensland New Generation Rollingstock

- 75 six-car EMUs currently under manufacture in India. Total fleet: 450 railcars
- Maintenance services for 30 years
- Construction of Wulkuraka Maintenance Centre under 32-year PPP

VLocity DMUs for Victoria Regional Rail Link

- 177 cars with additional orders of 48 cars in 2015; 27 cars in 2016 and 12 in 2017; conversion of 2-car fleet to 3-car. Total fleet: 237 railcars
- OEM maintenance contract integrated into current fleet

Melbourne E-Class trams

- 50 *BOMBARDIER FLEXITY* Swift trams designed and built in Melbourne;
- Additional order of 20 trams in 2015 and 10 in 2017. Total fleet: 80 trams
- 100% low-floor trams with conventional wheelset bogies
- OEM maintenance till 2019

Gold Coast Light Rail Transit

- Design, build, finance, operate and maintain 1st & 2nd stages in 8 year PPP
- 14 BOMBARDIER FLEXITY2 trams with additional order of 4 trams in 2015.
- Total fleet: 18 trams

Adelaide A-city EMUs

- Supply of 22x three-car 25kV electric trains in Mar 2011 (operation in Feb 2014)
- Stainless steel construction, includes 10 year OEM maintenance agreement.

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Bombardier in Australia Sites

Perth
B Series EMU,
A & B Fleet
Maintenance,
BHP Rail Automation
Project

Wulkuraka – Brisbane
QNGR
Maintenance

Milton – Brisbane
Engineering,
Service, Spares
QNGR Project Mgt,
Product Introduction

Gold Coast
LRT Project + Extension
Maintenance & Services

Sydney (HQ Sales & Bid Office)

Adelaide
PTS Fleet Maintenance (DMU & EMU)
Adelaide LRVs (Supply)

Dandenong – RCS
(Rail Control Solutions)
Office

Dandenong - Melbourne, Head Office
Manufacturing Facility / Refurb & Repairs
West Melbourne, Dynon, Geelong, Ballarat , V/Line Maintenance

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Manufacturing in Australia

Dandenong (VIC) Manufacturing Plant

- 41 acres, 28,000 square metres under roof, direct access to rail network
- 1 km standard gauge LRV test track

Maryborough (QLD)

- Electrical Assembly
- Harness assembly
- Electrical propulsion and control

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Bombardier Australia
Dandenong Manufacturing Work Streams

Multiple Unit Production	Light Rail Production	Overhaul Facility
V/Line VLocity DMU	*FLEXITY* Swift Melbourne	V/Line VLocity DMU

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Metronet New Rollingstock Overview

Metronet New Rollingstock

- 102 railcars
- EMUs and DEMU
- Maintenance for 15 years
- 50% local content for design and manufacture

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BT Supply Chain
Our Partners

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Bombardier Supply Chain Vision

- High-performing partners delivering quality products to build world class trains
- Consolidated supply chain, with our trusted partners delivering an increased volume of product
- Supply base that can diversify to provide a completed product, delivered to the production line

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Bombardier Supply Chain Levers

- Working in partnership with government to coordinate business improvement schemes
- BT resources working together with our suppliers to help them develop and improve
- Opportunity for suppliers to utilise BT's welding school

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Bombardier Supply Chain Standards

- Zero BT rework of supplier delivered products
- On time delivery over 97%
- Non conforming goods under 1%
- All welding qualified to industry standards
- All painted parts to BT visual inspection specifications

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Bombardier Supply Chain Expectations

- Proactive management of 3rd party suppliers
- Project management capability, in particular manufacturing scheduling
- Effective final inspection
- Accurate documentation that allows a 3 way match
- Documented, robust and consistent welding processes
- Technical understanding of specifications and having the right resources available to achieve the required result

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Metronet –
New Rollingstock
Procurement Process

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Metronet - New Rollingstock
Supplier Commodities

	Commodity	Description
Supply Chain	A Class Systems	Mechanical or electrical systems designed by the supplier from BT & Customer specifications, e.g. HVAC, brakes, pantograph, CCTV, passenger Information, doors etc…
	Interior/Passenger Comfort	Seats, windows, interior & exterior panels, extrusions, GRP, lighting, flooring, handrails, decals etc…
	Metal Fabrication	Structural metal sub assemblies, cabinets, junction boxes, locker frames, mounting brackets, cast parts etc…
	Electrical	Cables, Harnesses, Batteries etc…
	C Parts	Fasteners, electrical connectors & relays, sealants, paint, adhesives, rubber components, hydraulic fittings, locks etc…

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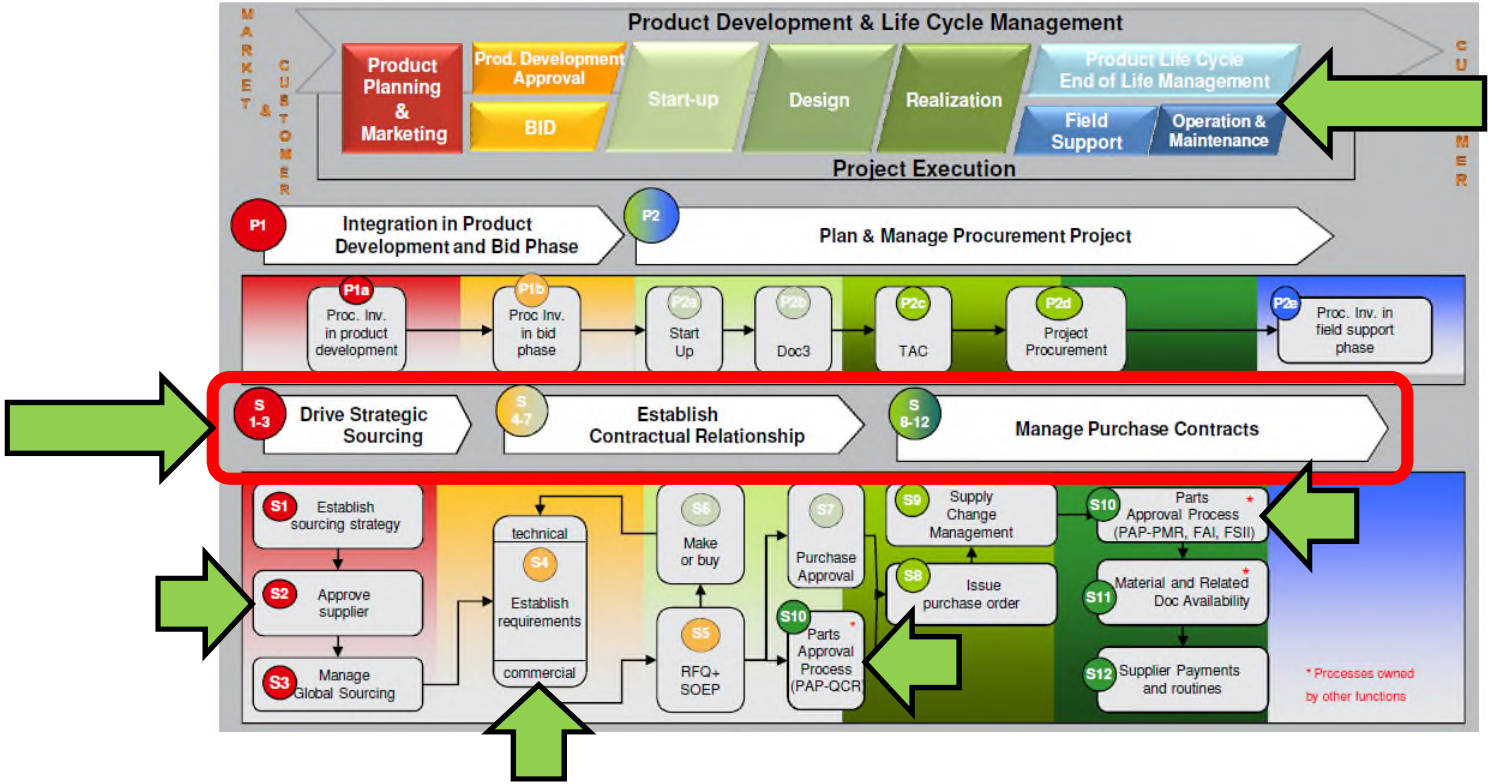
Metronet – New Rollingstock
Bombardier Procurement Process



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Metronet - New Rollingstock Supply Strategy

- Proven technology
- Price competitiveness against global markets
- Local through life support
- Support local industry opportunities
- Understand local investment for new technology
- Work closely with government departments to support localisation

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Metronet - New Rollingstock
Bombardier Key Commercial Requirements

- BT Terms and Conditions
- Conformity to technical specifications
- Optimal inventory (batch sizing) and logistics plan
- Flexible delivery window
- Local industry plan (commitment to local content for materials and labour)
- First system installation & commissioning
- Long term local support for after market
  - Routine maintenance, overhauls and spares
- Back to back warranty

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Melbourne LRV
Localisation – Case Study

Task

Bombardier and a local Foundry worked to improve the design and reduce costs of the main cross beam (sub assembly part within underframe structure).

Original Design

- 3 piece casting manufactured in Germany
- Castings welded together by 3rd party in AU
- Complex sub assembly including multiple webs and gussets welded together by BTA

Saving

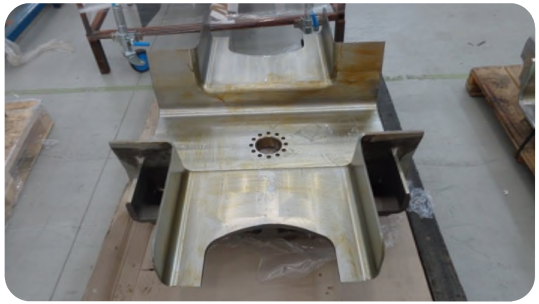
50% reduction in material cost and saving of 360 production hours per tram

New design

- 1 piece casting manufactured in AU
- Incorporates webs & gussets in casting

Main Benefits

- Reduction of material cost and number of parts
- Reduction of production hours
- Reduction of freight & duty costs
- Casting manufacture moved from O/S to local supplier
- Higher quality finished assembly



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