A large, multi-masted sailing ship is silhouetted against a dramatic sunset sky. The sky transitions from a deep blue at the top to a bright orange and yellow near the horizon. The ship's complex rigging and masts are clearly visible against the colorful background.

THE DUNDEE WATER FRONT CIRCULATOR TRAM

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DUNDEE WATER FRONT CIRCULATOR

A short presentation by

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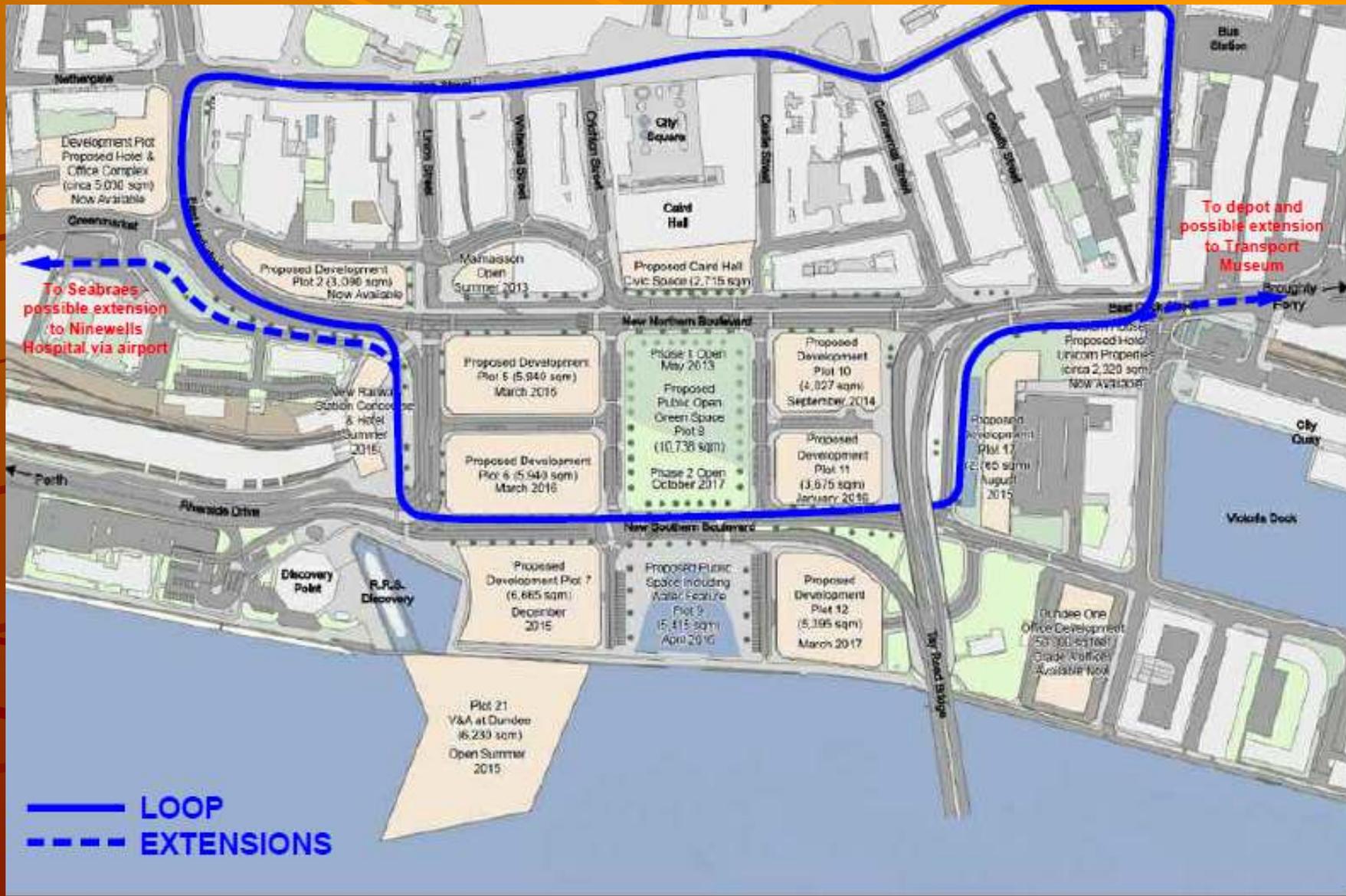
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Following further consultation exercise the Dundee Partnership approved:-

- ◆ Extension of the city centre down to the waterfront
- ◆ Creation of a new grid iron street pattern
- ◆ Formation of a major new civic spaces
- ◆ Provision of a new rail station and arrival square
- ◆ Provision for walking, cycling and buses
- ◆ Reduction of the effect of cars and parking
- ◆ Removal of some of the Tay Road Bridge ramps
- ◆ Creation of a pair of east/west tree lined boulevards
- ◆ Provision of sites for a variety of mixed use developments

**A Massive addition of over
55,000m² of new space**



Tourist Tram Connectivity to the Waterfront

The new Waterfront developments will add to the group of urban elements in 'downtown' Dundee

- ◆ A revitalised City Centre
- ◆ The new Waterfront
- ◆ Victoria Dock
- ◆ The University Quarter
- ◆ Sea braes

- ◆ These are anchored by the 3 major points of entry
- ◆ The revitalised Railway Station
- ◆ The city centre Car Parks
- ◆ The bus station

Making the city work as one



All of this will create a demand for a local urban circulator that will support the range of walking trips in the area

Something frequent, convenient and attractive that will tie the area together and allow visitors to go 'just that bit further' than they would if walking –

A Pedestrian Accelerator

Trams and Urban Life



Trams - a catalyst for urban development in the 19th 20th century.

- ◆ Workers could live further than walking distance from their employment.
- ◆ Bringing people to city centres in large numbers - supporting development of department stores, sports arenas, theatres, cinemas and tourist attractions.
- ◆ Sadly trams and urban living fell out of fashion in the middle of the 20th century, but now a renewed interest in urban living, spurred in part by ever-longer commutes on traffic choked arteries and by the soullessness some found in suburban life, is reversing that trend

Transit + Development



Today the electric tram has re-emerged as a catalyst to redevelopment of struggling downtown areas, encouraging denser development that makes the areas they serve efficient in land use and attractive places to live.

A growing business

Since the US pioneered new “downtown streetcars” in the 1980s there is a growing appreciation of the role they play in helping focus redevelopment.

- The electricity that powers trams can be generated from renewable sources.
- The permanence denoted by the track in street encourages developers to concentrate their investments near the lines.
- The close spacing of stops means that development can be spread along a corridor, revitalising a whole area – not just one plot
- The systems can mix modern trams with ‘heritage/tourist’ operations, making the system an attraction in its own right and
-simply **FUN**

There are now over 40 such systems in the US with others in cities as far apart as Stockholm, Vancouver, Auckland and Christchurch (NZ).

A system is being promoted as part of the huge Wirral Waters regeneration in Birkenhead. Dundee is the ideal place to initiate the first system in Scotland.

What can it do for regeneration?

- ✦ Small tram systems do not necessarily increase the amount of development in a downtown area, but they do make the development much more effective.
- ✦ Neighbourhoods along the line are more likely to be high density, to offer a mix of commercial and residential uses and give developers the chance to build efficiently -with fewer parking spaces needed.



What would they look like?



They would not be like the big light rail cars used in Manchester, Croydon, Edinburgh or Sheffield

✦ They would be smaller units suitable for their role of circulating passengers among downtown locations without dominating the city



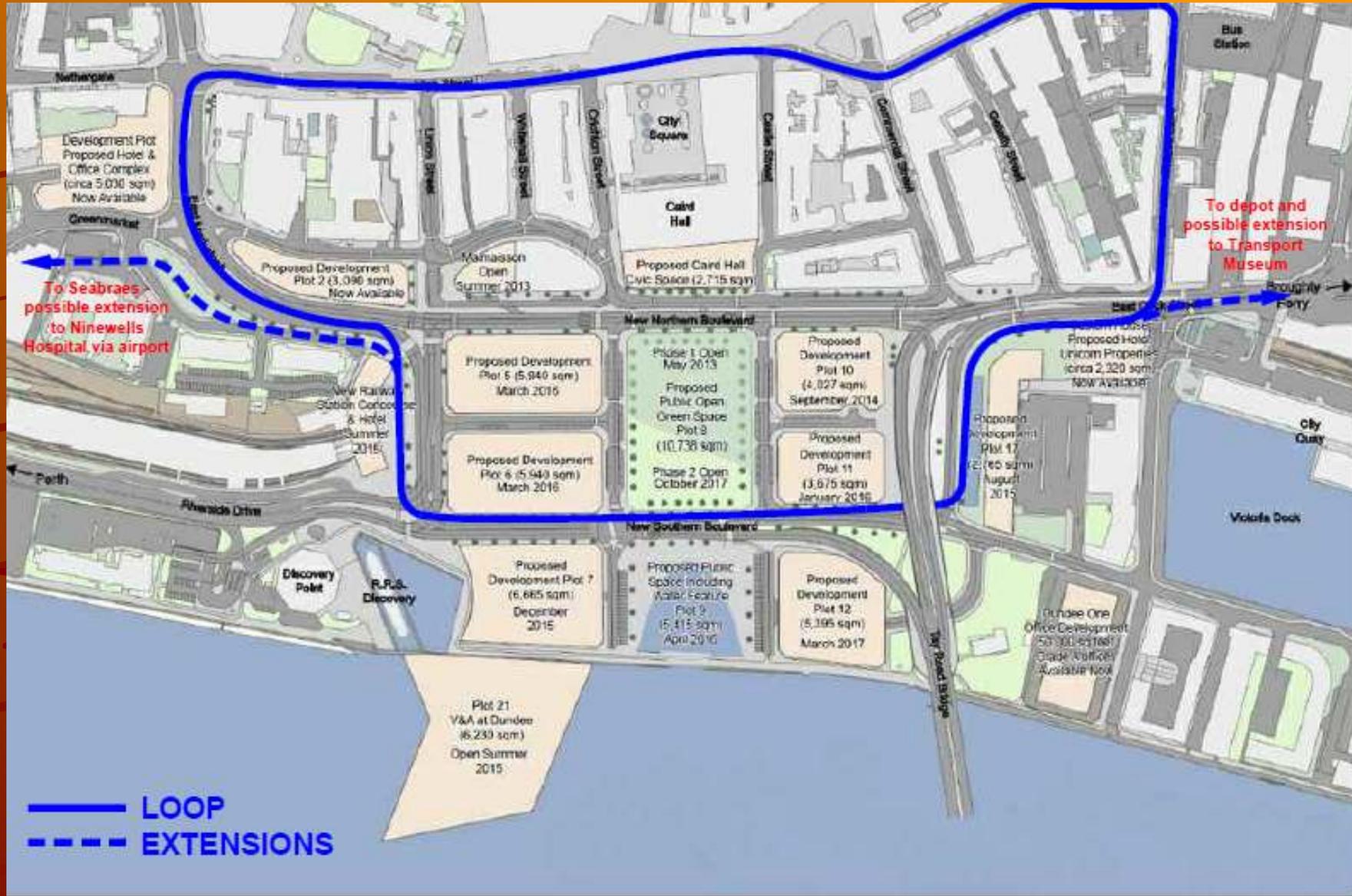
They would stop every few city blocks to give short walking distances and they operate safely in pedestrian areas and in mixed traffic.

Where would they run?

It is proposed that there would be two overlapping starter routes;

1. A loop starting at the new Railway station
 - going north past the new developments and along Nethergait
 - turning east along the High Street, past the City Square and Caird Hall
 - passing the Bus Station to reach the west end of Victoria Dock
 - Serving the developments at the Custom House and
 - turning west alongside the new Southern Boulevard, serving regeneration sites, the new public Park the V+A, HMS Discovery and Discovery Point before returning to the Railway Station
2. A branch off the loop at the High Street
 - Either running along the Nethergate past the new Hotel & Conference complex to serve the University Quarter
 - Or running along Greenmarket to serve the new office district

Starter Loop



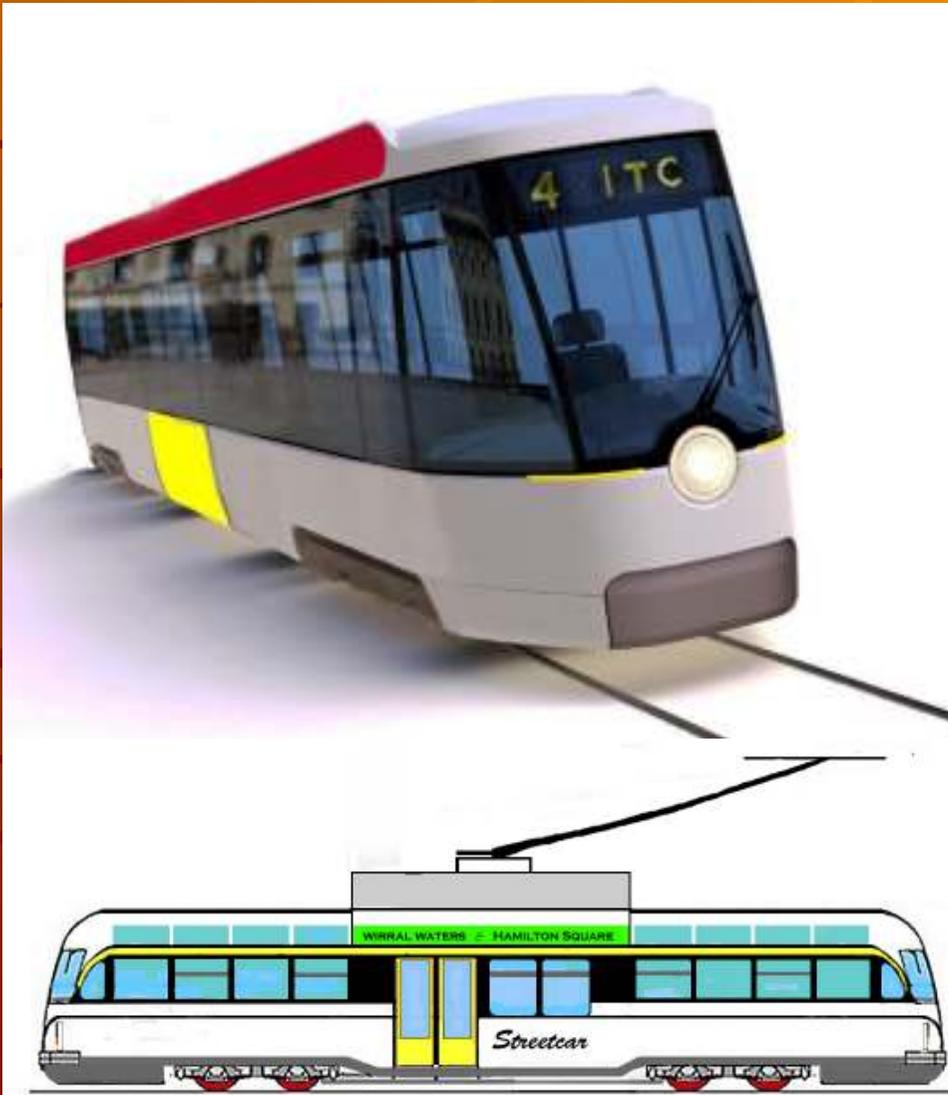
Expansions



Small modern trams are available today



..and new ideas are being developed in the UK



..as are 'historic style' vehicles



Track - keep it simple and quick

Portland Experience

- ⑩ Low profile rail
- ⑩ Rubber boot
- ⑩ Prefabricated Reinforcing
- ⑩ 300mm thick slab
- ⑩ 150mm substrata
- ⑩ Brushed concrete finish
- ⑩ Utilities left in situ



Costs - Portland initial line 2000

Route length 8.4 miles 13.5km

Rail, electrical and street work	\$35.1m
Maintenance facility	\$4.0m
Streetcars (5 cars + spare parts)	\$11.3m
Utility works (Only in the swept path)	\$3.8m
Miscellaneous	\$0.4m
TOTAL	\$54.6m

= £77m in 2013 prices

= £5.8m/km



Costs – Aruba Streetcar 2012

Route length 2.1km

Track installation:	\$5M
Maintenance Facility:	\$2M
4 Streetcars:	\$5.6M
Hydrogen Fuel Plant:	\$0.5M
Total	\$13.1M

= £ 5.12m per route km



Costs - Dundee initial line 201?

Route length –

Single track loop 2.4 km, double track link
to Depot 1km TOTAL 4.4 track km

Track installation:

Maintenance Facility:

4 Streetcars:

Power supply:

Allowance for extra street works 15%
of sub total = £2.2M

Total

£13.6M

Includes UK Govt Optimism bias allowance of
60% total



A range of vehicle type deployments



We want to build a Tramway



**Others are Regenerating a City
(we're just helping)**

Experience from other cities

Learning from success...

Dedicated team with long-term vision

Good integration with other modes of transport

A clear understanding of what local transport can achieve

Building on success, Line 2 +



Tourism

Tourism sector was of "vital importance to the Scottish economy, worth over £4bn in direct **expenditure** from overnight visitors in 2012

Tourism was worth more than £380m in 2011.

Almost 20,000 people work in tourism in the area, which covers three council areas – Angus, Dundee and Perth & Kinross – and the parliamentary constituency of North East Fife

Tourism-related businesses contributed £316m or six per cent of the total Gross Value Added (GVA) to the area's economy in 2010. A figure which has grown steadily over the past five years.

Consultants SQW suggests that around 700 local tourism jobs could be created in the city and Tayside

1.9 million visitors to Dundee in 2011

Next



Getting started

Getting started in Dundee

- **Get good advisors – challenge them, stick with them**
- **Start public consultation early**
- **Get a well-kent local Public Face for the project**
- **Be willing to revise the route to support developments**
- **Get the bus, rail and highway authorities on side**
- **Think of it as a 'Starter Line'**
- **Inexpensive does not have to mean cheap-and-nasty**
- **Think of the added "X" factor for subsequent "UK City of Culture" type bids**

Getting started in Dundee

- Challenges

- Achieving a sensible cost – benefit ratio – Study required
- Gaining public support
- Dealing with the existing built environment
- Achieving design quality
- Balancing the wants of the motoring lobby with the needs of the city

Getting started, Feasibility & Business Case Studies

You need:-

- Ridership estimate
- Estimates of potential redevelopment and revenue generation
- Retail Footfalls
- Assessment of impact on utilities
- Assessment on impact on parking
- Outline alignment with stop, depot facility locations etc.
- To capture “Soft Benefits”

Getting started, Feasibility & Business Case Studies

Requires;

- Identification of level of environmental assessment required
- Identification of benefits to development proposals and plans
- Review and evaluation of potential private sources of funding
- Identification of public sources of funding
- Recommendations and preferred implementation programme

Costs – Dundee 2013

➤ Cost Comparisons for Dundee Circulator

Item	Portland updated costs 2013 (£) 8.4 Miles/13.5 Km	Aruba updated 2013 (£) 1.5Miles/2.2 Km	Dundee 2013 (£) 2.1 Miles/4.4 Km
Rail, electricals, Street Works	£29.6M	£3.12M	£7.4M
Maintenance Facility	£03.3M	£1.24M	£3.3M
5 Trams + Spares	£09.5M	4 trams £3.48M	6 trams £10.9M
Utility works (Swept Path only)	£03.2M	nil	£03.2M
Miscellaneous	£00.3M	Hydrogen plant £0.31	Power supply £1.5M Contingencies £2.2M
Totals	£45.9M	£ 8.15M	£28.5M
Average Cost 2013	£5.5M per mile or £3.4M per km	£5.4 per mile or £3.7M per km	£13.6M per mile or £.6.5M per km

Applying Portland updated costs 3.2Miles x £5.5M = £17.6M plus contingencies £3.5M leading to a whole project cost total of £28.5M

Cost sheet based on the phase one Portland streetcar costs. The costs have been updated using an official inflation factor of US inflation to August 2013 from 2000. The cumulative inflation percentage is 35.8%. For the Aruba project the cumulative inflation is 1.7%

Dundee Streetcar – Potential funding sources

Community Infrastructure Levy, Tax Incremental Financing
Scottish Futures Trust's role

Grant from Scottish Government via Transport Scotland
Developer Contributions (Section 75)

Regional Growth Fund (England only, Scottish Equivalent)
Funding for Sustainable Transport (UK Govt)

Workplace Parking Levy, Green Investment Bank
Non-interest bearing Bonds, Carbon Trading

Funds from specialist Government funds, trusts and charities
Revenue Support, Farebox Revenue

Prudential Borrowing, Local Government Bonds
Public Private Partnership (PPP)

Non-profit distributing public private partnership model (NPD).
Scottish & Local Tourist Boards

On board WiFi

This not an exhaustive list and will change
as schemes are introduced, ended, replaced etc.,

Next Steps

- ◆ The Development of this modest circulator could form the basis of extensions to the rest of the waterfront development as it is developed

- ◆ As regeneration in Portland Oregon picked up the tramway is being extended

- ◆ It is suggested that between four and six attractive trams could be acquired and using simple form construction the tramway could be constructed and vehicles acquired.

Thank You for Listening

Any

Questions ?

Light Rail (UK)

