A large, multi-masted sailing ship is silhouetted against a dramatic sky at sunset or sunrise. The sky is filled with wispy clouds, with the lower portion glowing in shades of orange and yellow from the low sun, while the upper portion transitions into a deep blue. The ship's complex rigging and masts are clearly visible against the bright sky. The ship appears to be on a body of water, with a dark shoreline visible in the distance.

The Dundee Waterfront Circulator Tram

V.36 Mar 2014

DUNDEE WATER FRONT CIRCULATOR

A

short presentation by

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Chairman, ERG TramForward

Light Rail Transit Association

to the

LRTA Officer's Conference

Croydon

5th April 2014



Light Rail(UK)

**An association
of :-**

**Light Rail Consultants
Transport Engineers
Politicians
Academics
Environmentalists**

Commercial Specialists in Affordable & Sustainable Tramways

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Transport 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

- Scotland can be a new 'Saudi Arabia of Renewables', green electricity will provide power for the trams
- 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 or station
- There are now over 40 such systems in the US with others in cities as far apart as Stockholm, Vancouver, Auckland and Christchurch (NZ)
- The first British 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.

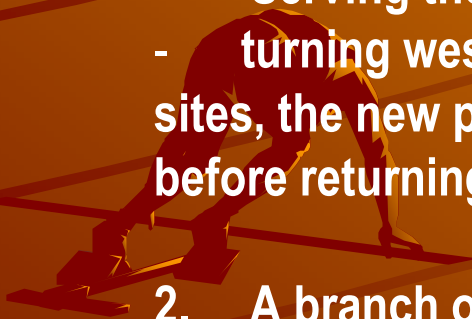
What can it do for regeneration?

- ✦ Small tram systems do not necessarily increase the amount of development in a downtown area, but they do make that development much more effective.
- ✦ Areas along the line are more likely to be of a high density, offering a mix of commercial and residential uses and give developers the chance to build efficiently - with fewer parking spaces needed giving more build room
- ✦ The system can mix 'heritage' modern trams and TramTrain
- ✦ The system will be an iconic attraction – and simply FUN

Where could they run?

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

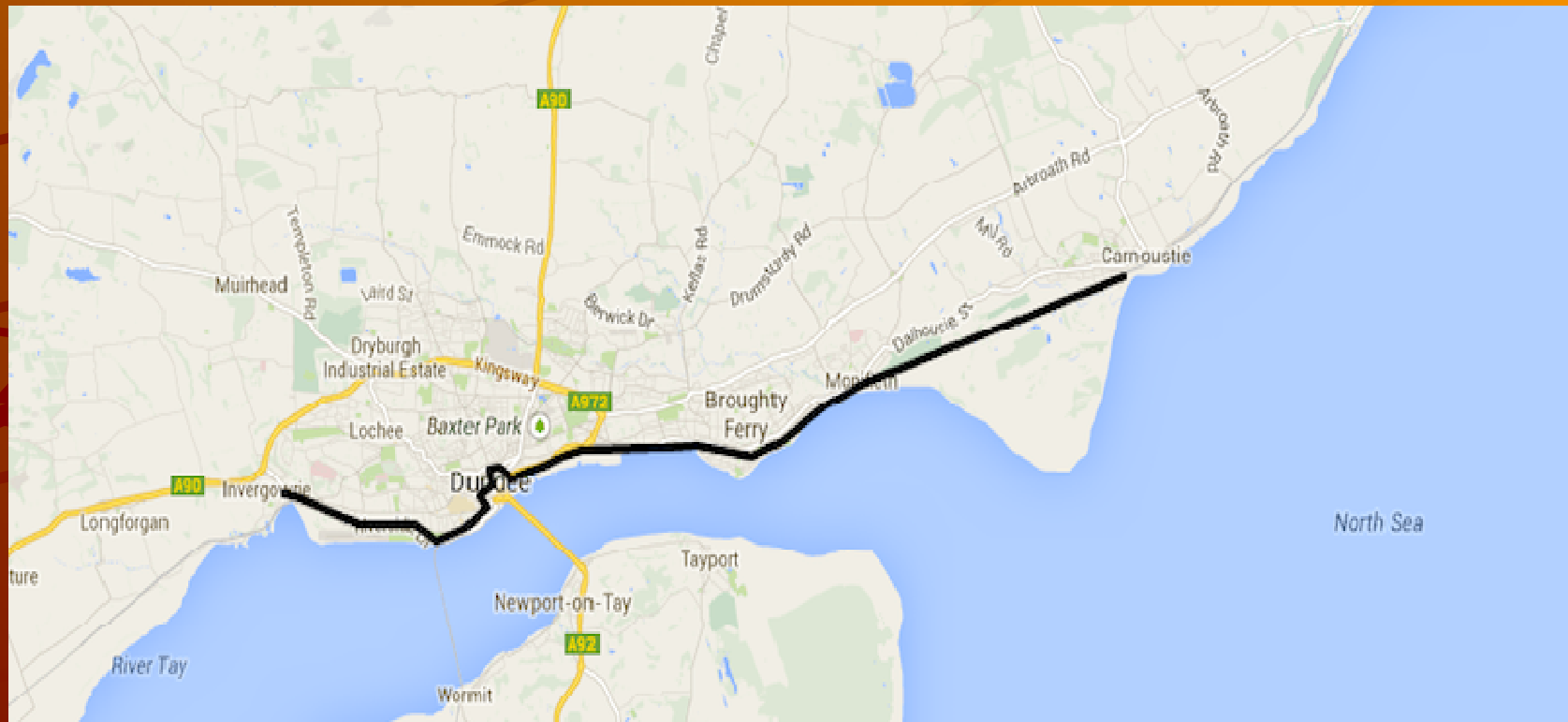
1. A loop starting at the new Railway station
 - going north past the new developments and along Nethergait
 - turning east along the High Street, past the City Square and Caird Hall
 - passing the Bus Station to reach the west end of Victoria Dock
 - Serving the developments at the Custom House and
 - 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



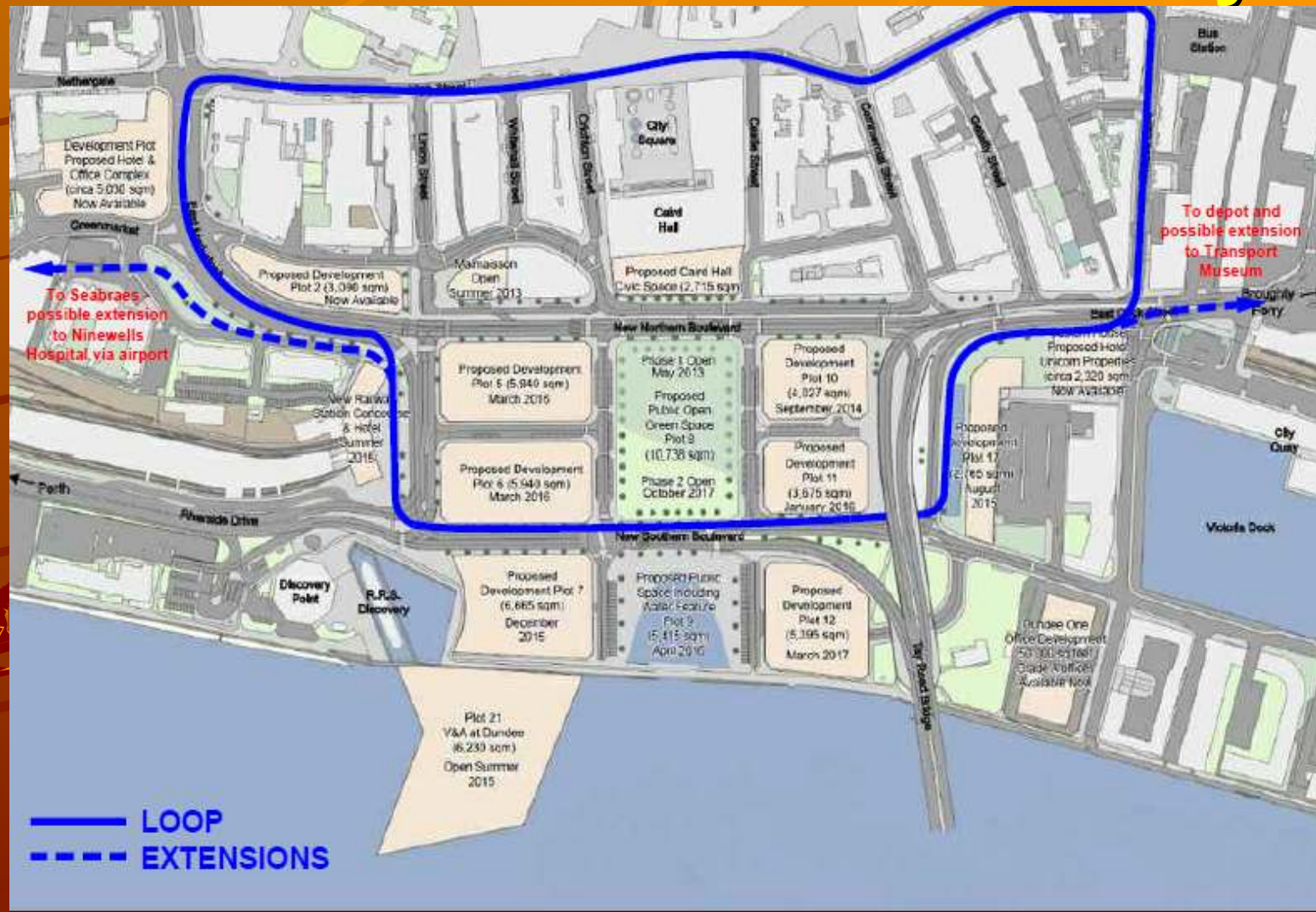
Dundee TrainTram

Carnoustie to Invergowrie

via Bus Station, University, Central Shopping and Railway Station



Dundee loop plus options for westward branch to University



A detailed map of Dundee city center, Scotland, illustrating parking areas and routes. The map features a grid of streets including North Market Street, West Bell Street, and South Market Street. Various landmarks are labeled, such as the University, Dundee Station, and the Tay Road Bridge. Parking areas are marked with blue 'P' icons and numbers (e.g., P1, P3, P4, P5, P6, P7, P8, P9, P10, P12, P16, P19, P20, P21, P22, P23, P24, P25, P26, P27, P28, P29). A blue line traces a route through the city, starting from the Tay Road Bridge, passing through the city center, and ending near the Dundee Waterfront Project. The map also shows the Dundee Waterfront Project (road by your side to change) and the Craig Harbour area.

TramForward



An alternative route would be to run up the Murraygate to the university and loop back to the bus station. The Murraygate contains fossilised tram rail and trailing crossover. At the seagate is a Horse tram being used as a coffee shop

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



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TramForward



From the High St/ Murraygate junction the tramway goes down Seagate

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



At the junction of Seagate and Trades Lane the tramway turns right and goes down Trades Lane

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



At the junction of the North Boulevard and Trades Lane the tramway crosses and goes down Victoria Dock Road towards the not constructed South Boulevard and then along it to the V&A and Station

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



The Proposed Tram train from Carnoustie to Invergowrie via the circulator centre tramway would leave the railway at the east at the Camperdown sidings which still exist but overgrown. They are sited behind an Arnold Clark garage but come up to street level

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



The Proposed Tram train from Carnoustie to Invergowrie via the circulator centre tramway would leave the railway at the east at the Camperdown sidings which still exist but overgrown. They are sited behind an Arnold Clark garage but come up to street level on a ramp that meets the railway cutting at a level crossing at Camperdown st next to Camperdown Dock

TramForward – The campaign arm of the Light Rail Transit Association.

TramForward



Ro
Du



Railway in cutting and Camperdown sidings ramp behind in right hand picture. On the left picture the overgrown track singles to meet the mainline just before railway crossing

TramForward – The campaign arm of the Light Rail Transit Association.

What would the trams 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

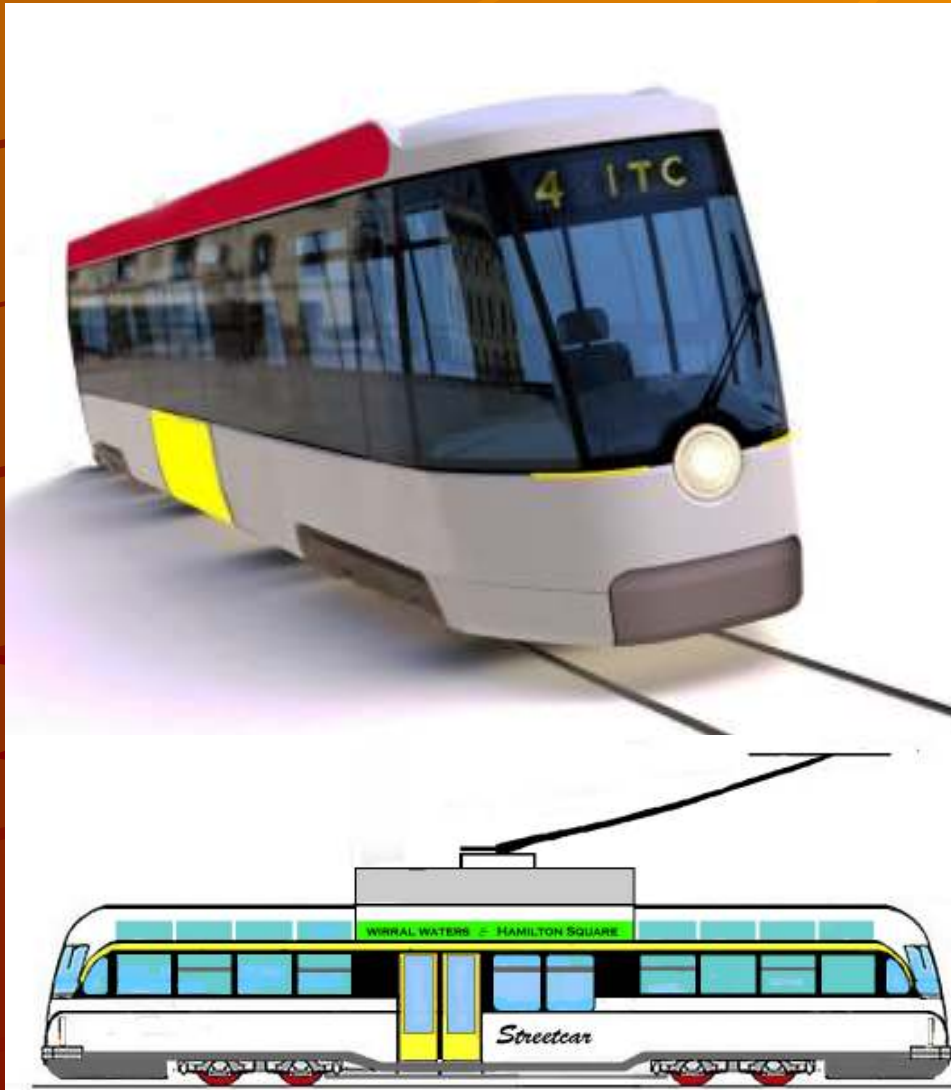


They would stop frequently to give short walking distances and they operate safely in pedestrian areas and in mixed traffic.

Small modern trams are available today



..and new ideas are being developed
in the UK



New build 'historic style' vehicles



Track - keep it simple and quick

Portland Experience

Rubber boot

Prefabricated Reinforcing

300mm thick slab

150mm substrata

Brushed concrete finish

Utilities left in situ

Low profile rail



Costs - Portland initial line 2000

Route length 8.4 miles 13.5km

| | |
|--|---------|
| Rail, electrical and street work | \$35.1m |
| Maintenance facility | \$4.0m |
| Tramcars (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 Tramcar: | \$5.6M |
| Hydrogen Fuel Plant: | \$0.5M |
| Total | \$13.1M |

= £ 5.12m per route km



Costs - Dundee initial line 201?

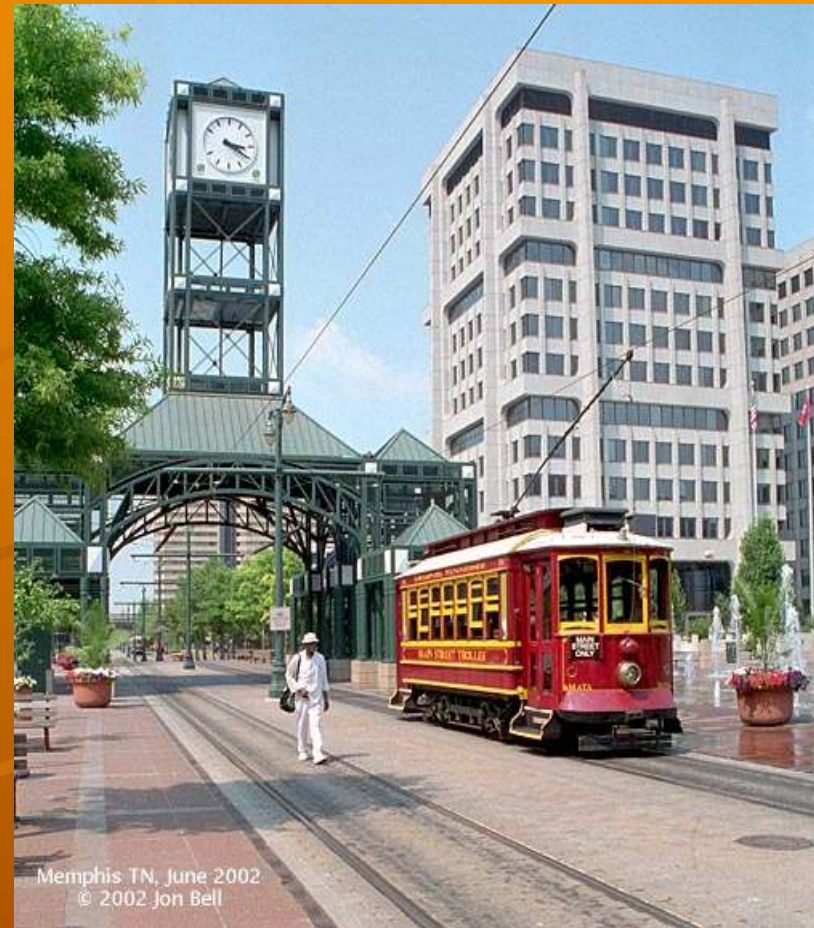
Route length, Loop 2.4 km, Depot link 1km = 3.4 km

Estimated costs to nearest £1m @ 2013

| | |
|-----------------------|-------------|
| Track installation: | £7M |
| Maintenance Facility: | £3M |
| 4 Tramcars: | £4M |
| Power supply: | £2M |
| SUB TOTAL | £16M |

Allow 15% extra for cost of UK
street works of sub total = £2.4M
Total **£18.4M**

= £5.5M per route km



Even with UK Govt. Optimism bias allowance of 60% total is only £29.5m

A range of car types and 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 for Line 2 etc.



Tourism in the Dundee area - 1

- ✦ The tourism sector is “of vital importance to the Scottish economy” - worth over £4bn in direct expenditure from overnight visitors in 2012 rising from more than £380m in 2011
- ✦ Almost 20,000 people work in tourism in the three council areas Angus, Dundee and Perth & Kinross and the Parliamentary constituency of North East Fife

Tourism in the Dundee area - 2

- ✦ Tourism-related businesses contributed £316m or six per cent of the total Gross Value Added of the area's economy in 2010. A figure which has grown steadily over the past five years.
- ✦ Consultants SQW suggests that around 700 additional local tourism jobs can be created in the City and Tayside
- ✦ There were 1.9 million visitors to Dundee in 2011

Street Pollution in Dundee 2014

**Street pollution can
have a significant
effect on public health
and street ambience**

A silhouette of a person in a starting crouch on a track, overlaid on the text. The person is positioned on the left side of the slide, with their body low to the ground and arms extended forward. The background is a solid orange color with faint, curved lines.

Scottish Street Pollution 2014

Scotland's ten most polluted streets for Nitrous Oxide (NOx)

◆ Data from local council's roadside monitoring stations

◆ Micrograms per cubic metre

◆ EU LIMIT— 40

| | |
|----------------------------|----|
| ◆ Glasgow Hope St | 65 |
| ◆ Paisley, Central Rd | 61 |
| ◆ <u>DUNDEE</u> Seagate | 58 |
| ◆ Edinburgh St Johns Rd | 57 |
| ◆ Aberdeen Wgton. Rd | 52 |
| ◆ S Lanark Raith | 51 |
| ◆ <u>DUNDEE</u> Meadowside | 51 |
| ◆ <u>DUNDEE</u> Lochee Rd | 50 |
| ◆ Aberdeen Union St | 49 |
| ◆ Perth, Athol St | 49 |

Getting started in Dundee - 1

- 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 UK City of Culture Bid



Getting started in Dundee 2

Challenges

- ◆ Study required to establish a sensible cost – benefit ratio
- ◆ Gaining public support
- ◆ Dealing with the existing built environment
- ◆ Achieving design quality
- ◆ Balancing the wants off the motoring lobby with the needs off the chitty



Getting started in Dundee – 3

Feasibility and Business Case Requirements

You need;

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

Getting started in Dundee – 4

Feasibility Study

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**
- **Funding for Business Case (Stag)/Feasibility Study**

Potential funding sources - 1

- ✦ Community Infrastructure Levy, Tax Incremental Financing
- ✦ Scottish Futures Trust
- ✦ Scottish Government grant via Transport Scotland
- ✦ Developer Contributions (Section 75)
- ✦ Funding for Sustainable Transport (UK Govt)
- ✦ Workplace Parking Levy, Green Investment Bank

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

Potential funding sources - 2

- ✦ 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 advertising, WiFi fees etc

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 area as it is redeveloped**
- ✦ **As regeneration in Portland Oregon picked up the tramway is being extended**
- ✦ **It is suggested that four and six attractive trams could be acquired and the tramway could be constructed incrementally**

**A business case & feasibility studies
are now required**

Thank You for Listening

Any

Questions ?

