





# An Introduction to Route Optimisation

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# Route Optimisation

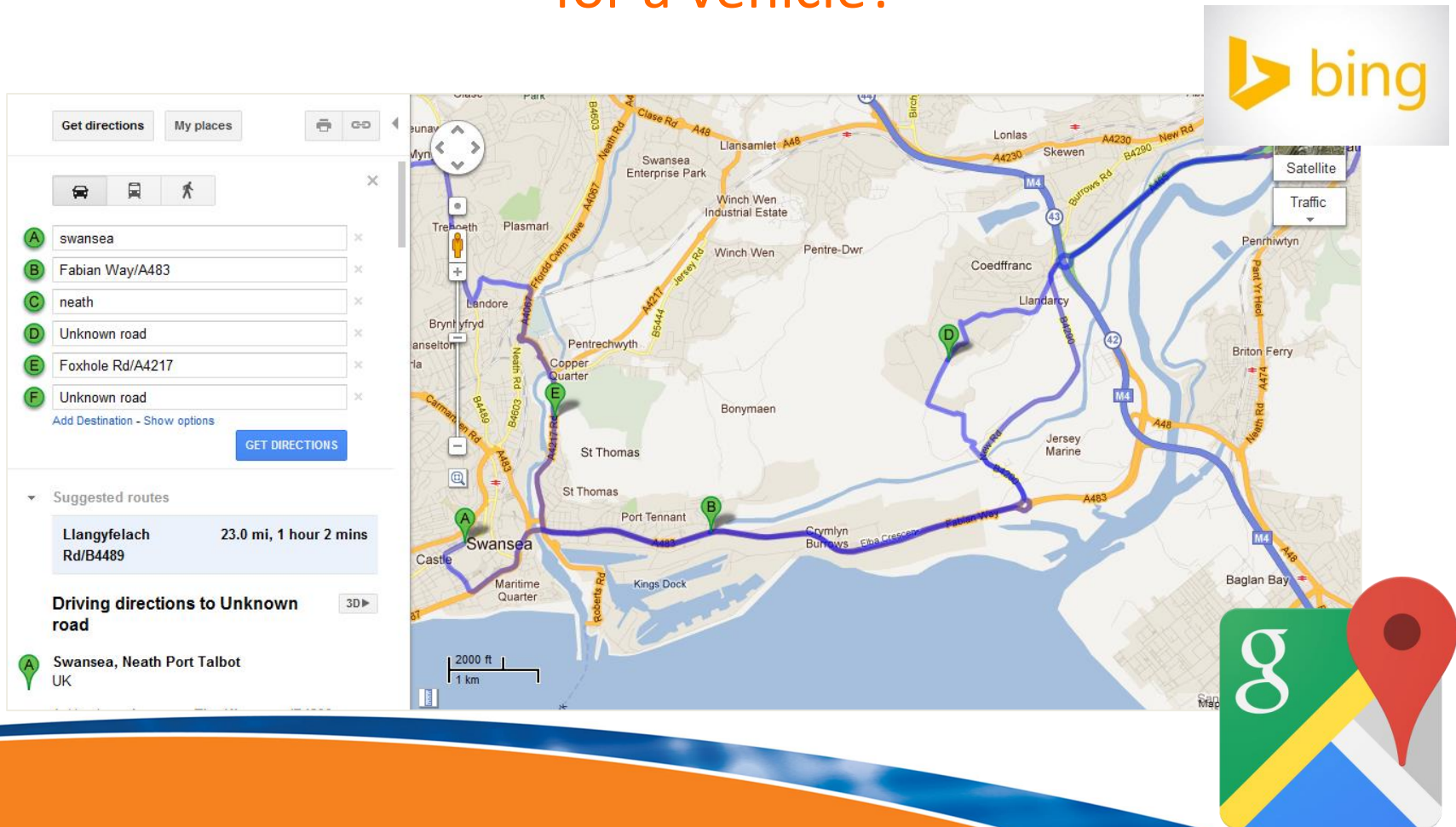
-  **What is Route Optimisation?**
-  **Why Bother Optimising?**
-  **How is Route Optimisation being Undertaken?**
-  **Five Misconceptions About Route Optimisation**

# What is Route Optimisation?




# What is Route Optimisation?

A mapping application to simply find the best route for a vehicle?



The image displays a Bing Maps interface for route optimization. On the left, a sidebar contains a 'Get directions' button, 'My places', and a list of six destinations: A (swansea), B (Fabian Way/A483), C (neath), D (Unknown road), E (Foxhole Rd/A4217), and F (Unknown road). A 'GET DIRECTIONS' button is located below the list. Underneath, 'Suggested routes' are shown, with the top route being 'Llangyfelach Rd/B4489' (23.0 mi, 1 hour 2 mins). Below this, 'Driving directions to Unknown road' is displayed with a '3D' button. At the bottom left of the sidebar, a location pin for 'Swansea, Neath Port Talbot UK' is shown. The main map area shows a blue route connecting the six points across Swansea. A scale bar indicates 2000 ft and 1 km. In the top right corner, there is a Bing logo and a 'Satellite' map style selector. In the bottom right corner, there is a Google Maps logo and a red location pin icon.

# What is Route Optimisation?

-  **A Digital Model of the Service which includes:**
- Collection locations (properties/bins/communals)
  - Service constraints e.g. narrow access, time windows etc.
  - Collection vehicle features/constraints
  - Road network information
  - Infrastructure locations and constraints
  - Volume of waste collected and participation

# Route Optimisation

 What is Route Optimisation?

 **Why Bother Optimising?**

 How is Route Optimisation being Undertaken?

 Five Misconceptions About Route Optimisation

# Why Bother Optimising?

## Waste is the most difficult service change!

- **Disruption** – impacts all residents
- **Value** – service usually rated most important by public
- **Politics** – strong focus & members realise the importance
- **Financial** – possible excessive costs if you get it wrong
- **Environmental** – complying with key targets

So why do it!?

# Why Bother Optimising?

**Statement 1:** “Maintenance activities, especially those that require the vessel to be out of service, reduce operating efficiency, increase maintenance costs, crew and fuel consumption.”

**Evidence:** The study only considered maintenance projects that were planned and scheduled well in advance of the voyage. It did not include unplanned maintenance or optimisation projects.

**Statement 2:** “The study did not include potential savings from improvements in fuel management and driving style.”

**Evidence:** It doesn't include potential savings from improvements in fuel management and driving style.





# Why Bother Optimising?

**Question:** “How efficient are you?”

**Answer:** “We’re pretty efficient”

**Question:** “How do you know?”

**Statement 3:** “The amount of inefficiency in most waste operations is not normally known by those operating the service”

# Why Bother Optimising?

**Question:** “Does this matter?”

**Answer:** Not if you can't do anything about the efficiency gap?

**But we can!**

**So yes, it matters!**



# Why Bother Optimising?

## Define and benchmark existing services

- How do we deliver the service? What are the costs? How efficient are we?

## Identify service options and potential changes

- How could we deliver the service differently? How can we save £X?

## Identify how to deliver strategic options

- How do we implement this decision?

## Identify fleet requirements prior to purchase

– How many vehicles do we need for this service format?

Scenario Description	Number of Vehicles			Est Mileage	Est CO2	Est Service Cost	% saving vs
	32te	26te	7.5te	miles/yr	te/yr	£M/yr	current
0 Current	0	20	6	401100	1925	<b>3.80</b>	<b>0%</b>
1 Current Optimised	0	19	5	367300	1763	<b>3.54</b>	<b>7%</b>
2 Base Case - Optimised	2	15	5	343200	1647	<b>3.25</b>	<b>15%</b>
3 Transfer Station Removed	3	17	7	421200	2021	<b>3.94</b>	<b>-4%</b>
4 Additional Transfer Station	2	13	5	321000	1540	<b>2.93</b>	<b>23%</b>
5 Residual Waste Fortnightly	2	12	3	274600	1318	<b>2.57</b>	<b>32%</b>
6 Collect Plastic	2	18	6	393800	1890	<b>3.83</b>	<b>-1%</b>
7 4 Day Week over 5 days	2	14	4	343600	1649	<b>3.05</b>	<b>20%</b>



# Route Optimisation

 What is Route Optimisation?

 Why Bother Optimising?





 **How is Route Optimisation being Undertaken?**

 Five Misconceptions About Route Optimisation

# How is Optimisation being Undertaken?



# Route Optimisation

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# Five Misconceptions

## #1 – There's a Magic Button!





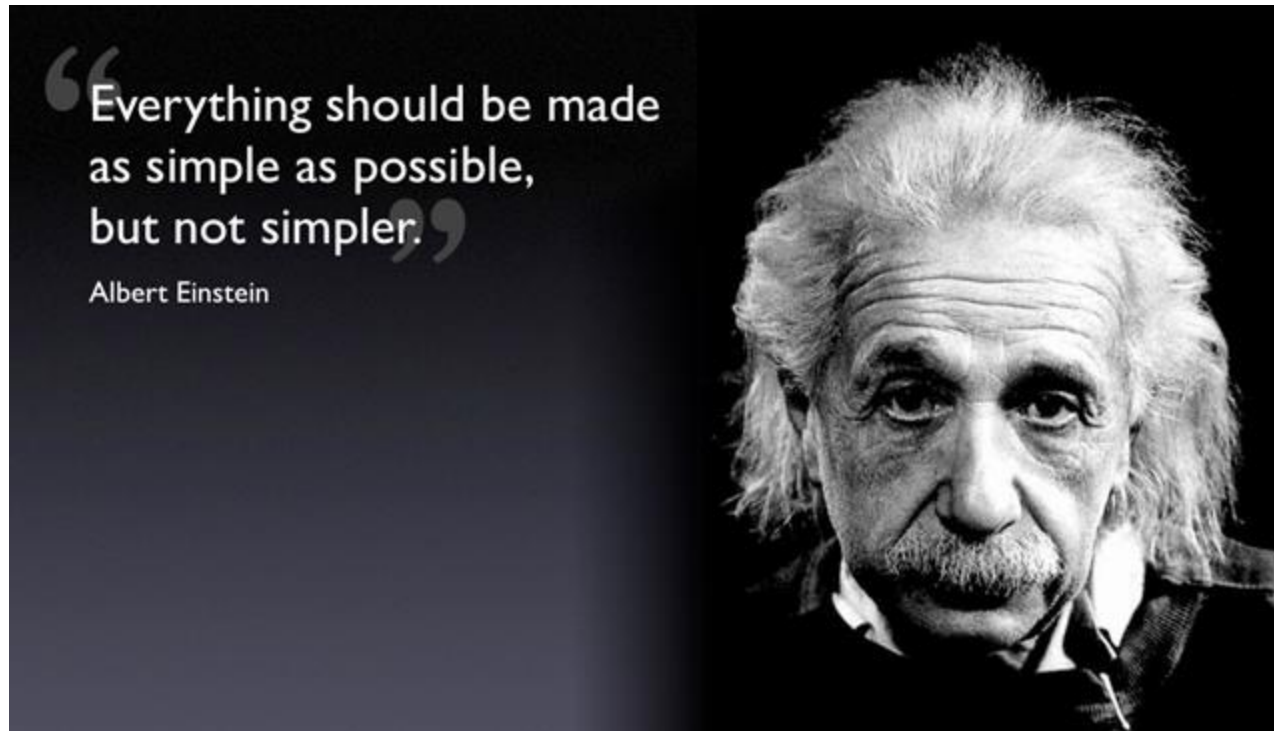
# Five Misconceptions

## #2 – It's Too Complicated



# Five Misconceptions

## #3 – It's Not Complicated



# Five Misconceptions

## #4 – Computers Take the Place of People



# Five Misconceptions

## #5 – There's No Need to Do It Again



# In Conclusion

