

Improving Public Transport in Makers Valley

Group 24B

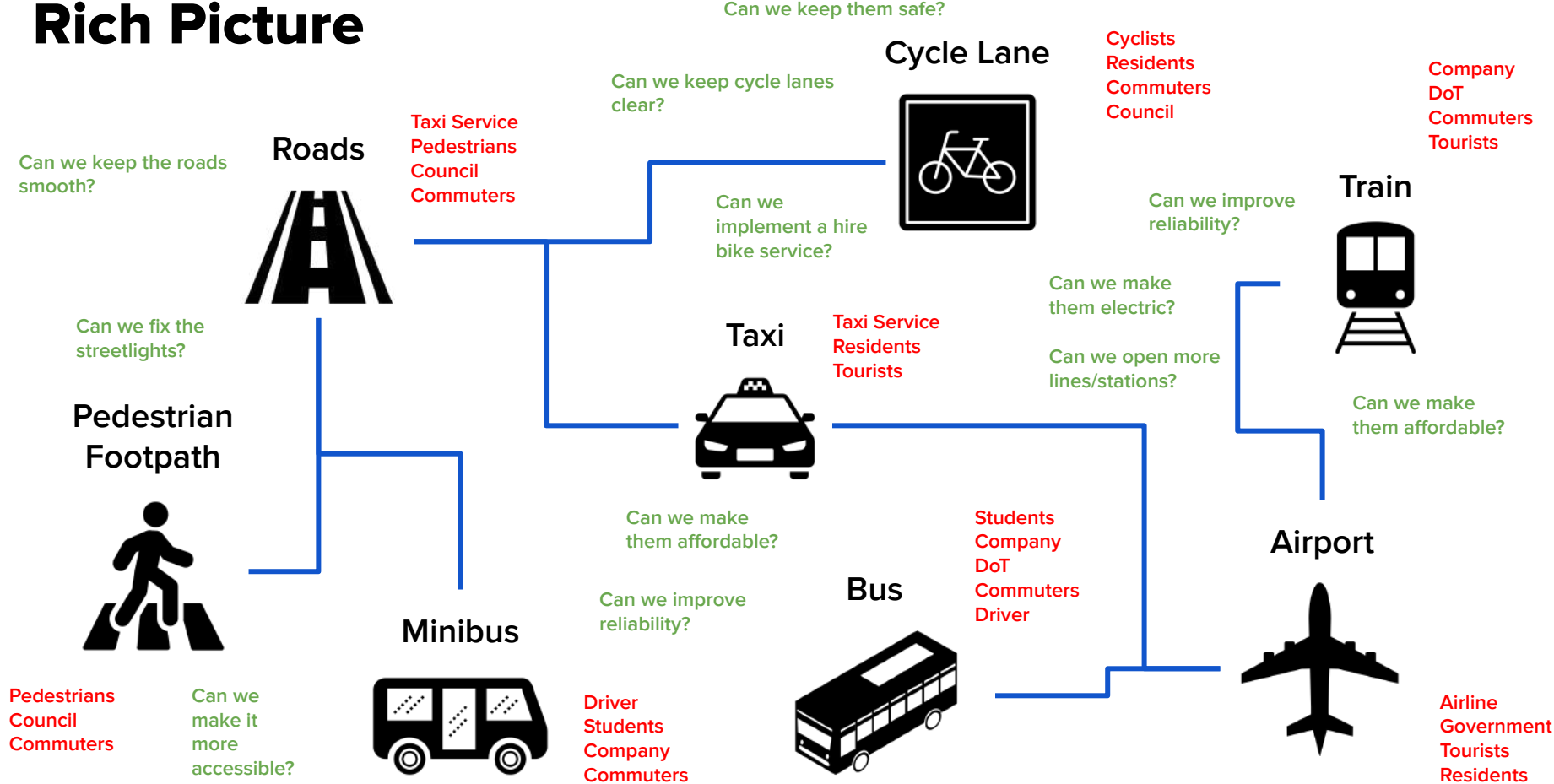
Introduction

What strategies can be implemented to enhance the reliability of existing modes of public transport and ensure that residents can depend on them for their daily commutes?

<https://gec.sites.sheffield.ac.uk/projects/transport>

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3. SMART Question
4. Concept Generation
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Rich Picture



STEEPLE Analysis

Social: diverse culture, open to change

Technological: poor road surfaces, traffic and street lights unreliable

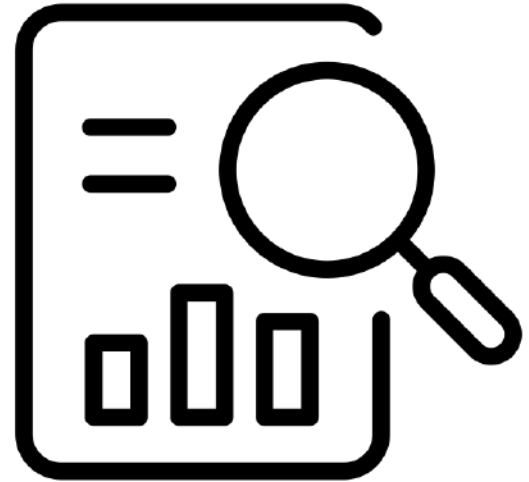
Environmental: heavy reliance on coal; most power plants are built in surrounding area

Economical: 34.2% unemployment rate, GDP per capita \$1654.47

Political: DoT had large budget in 23/24, 2.41% of government spending

Legal: National Road Traffic Amendment Bill (12/24) - stricter regulations on drivers

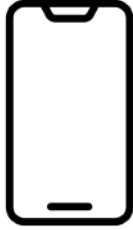
Ethical: 6% of South Africans have disabilities – the solution must be accessible



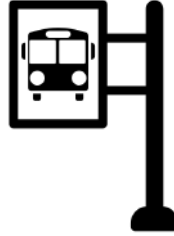
SMART Question

Currently, buses account for 44% of commutes in Makers Valley. Can we increase this to 60% in 5 years?

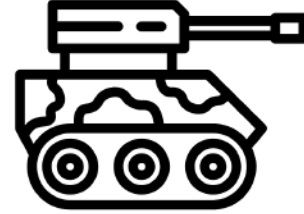
Concept Generation



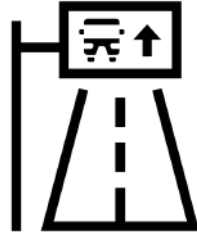
Live Bus
Tracker



Greggs Bus
Station™



Tank Bus™



Bus Lanes



Travel Pass

Decision Matrix

Criteria	Weighting	Tank Bus	Tracking App	Bus Hub and Stations	Travel Pass	Bus Lanes	Bus Network Development
Low Cost	6	0	4	2	3	2	2
Effectiveness	9	4	2	4	3	5	5
Ease of Use	7	3	5	5	3	5	4
Sustainability	5	2	4	3	3	3	4
Inclusivity	6	3	1	3	3	3	3
Maintenance	6	1	5	3	5	2	2
Reliability	9	4	2	3	4	4	4
Appearance	4	4	3	5	3	3	4
Job Creation	6	1	1	4	0	1	4
Scalability	3	3	5	1	4	4	3
Longevity	7	5	4	3	5	4	4
		193	212	229	224	231	248

Chosen Concept

Bus Network Development

An **improved network** of buses with established bus stations and new routes using pre-existing buses and bus providers

WHY?

Discontinued bus routes in local area, e.g. 32E, due to road conditions

- BUS ROUTE
- BUS STATION
- BUS STOP
- SCHOOL
- DIRECTION



Chosen Concept

Bus Network Development

Advantages

- Opens up employment opportunities
- Increase visibility of buses and user confidence
- Leverage state funds make project realistic
- Reduces traffic congestion and travel time
- Reduces cars and minibus/taxi services on the road
- Inclusive of cyclists
- 44% of commuters will benefit, a figure expected to rise

Disadvantages

- High upfront costs
- Reliance on public cooperation
- May not be sufficient space in all areas



Risk Analysis

Risk	Impact	Existing Mitigation	L	S	RR	Additional Mitigation	L	S	RR
Slips, Trips and Falls	Injuries from falling	Employee training	3	2	6	Anti Slip flooring and caution signs	2	2	4
Construction Casualty	Severe injury from construction debris; Death	PPE	2	5	10	Have more barriers and restrict access to trained personnel only	1	5	5
Crime	Robbery, vandalism, assaults, harassment	Existing police force	4	3	12	Installing security cameras and extra lighting on the bus stations	3	3	9
Collisions with other vehicles	Injuries Fatalities	Driver training	2	4	8	Work with government to have stricter speed limits and road laws	1	4	4
Getting trapped in bus doors	minor injuries	-Lining the door with rubber	1	2	2	Reliable sensors on the doors	1	2	2
Potholes cause buses to malfunction	Bus no longer operational and requires money to fix	- Gently change course of direction to avoid potholes - Keep tyres inflated	4	2	8	Work with the government to maintain roads better and fill potholes	2	2	4

Cost and Revenue



Start-up cost of **\$11.2 million**



Interest rate of **9.75%** on borrowed start up money

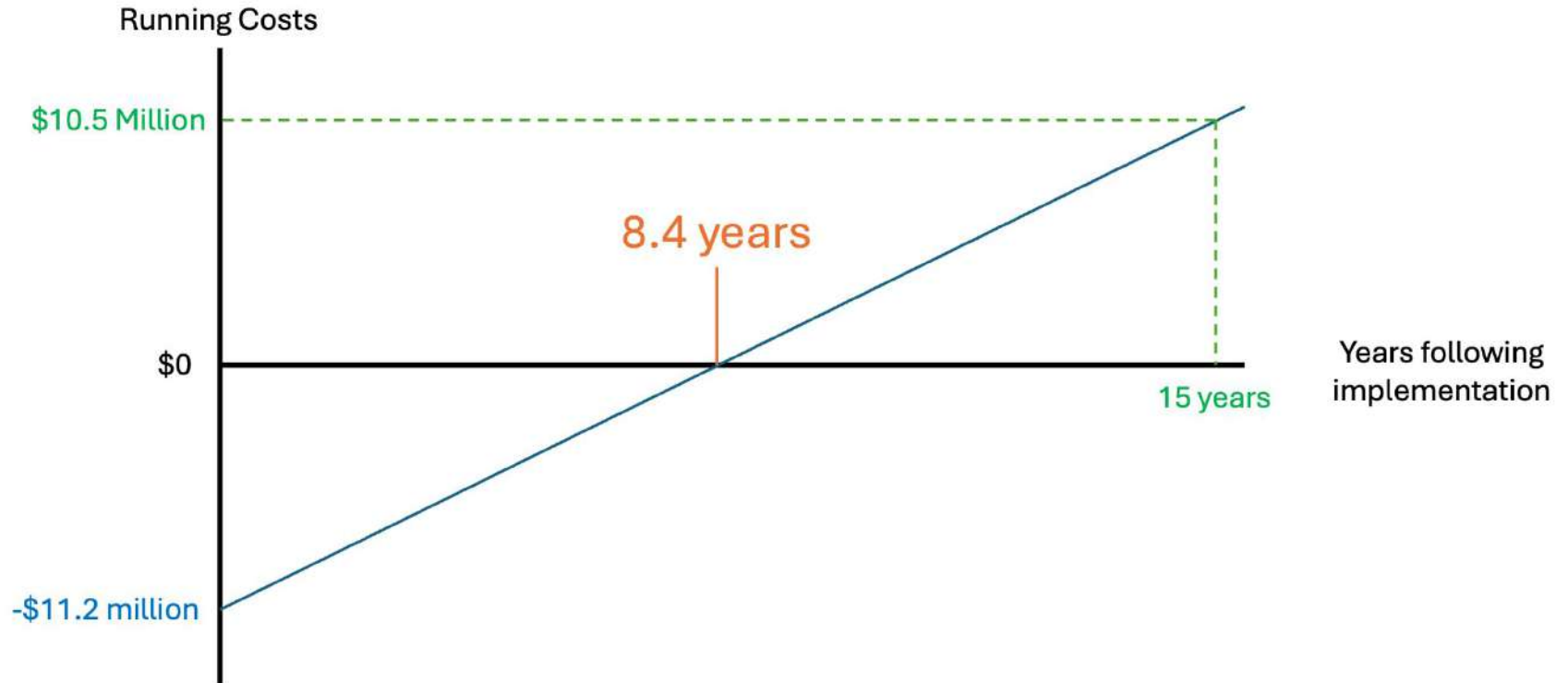


Estimated government subsidy **\$3 million** for start up, **\$1.5 million** a year following

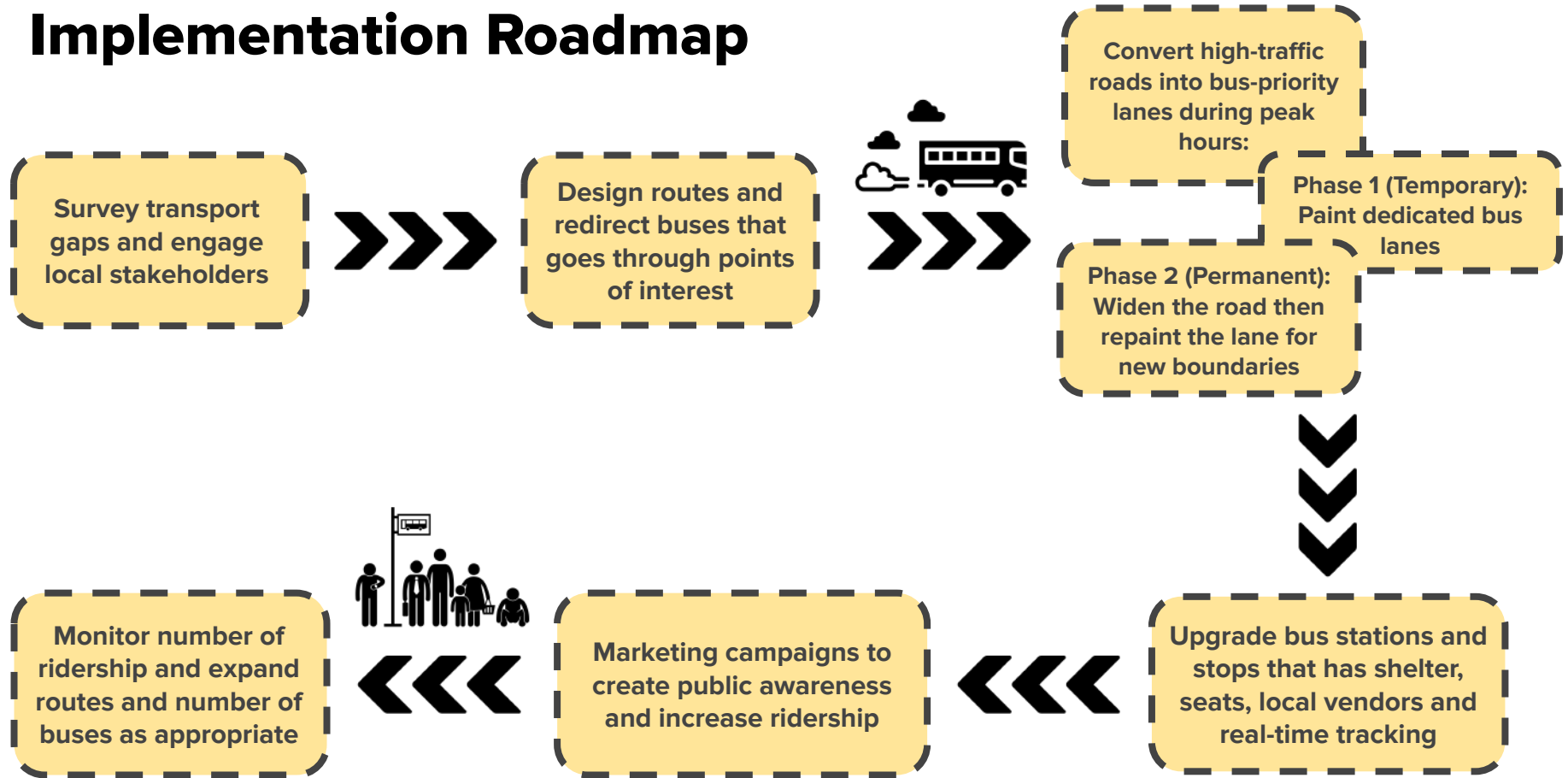


Annual net revenue of **\$1.5 million**

Financial Projection



Implementation Roadmap



Impact on Stakeholders



Employment
Opportunities



Boost Local
Business



Improve Public
Health



Cost-Savings for
Commuters



Bridge Mobility
and Accessibility
Gaps

Summary



Rich picture identifies structures, stakeholders and any possible questions



STEEPLE analysis and SMART question provide wider context and define the problem



Concept generation and decision matrix determines optimal solution



A chosen concept of an improved network of bus lanes and stations will proceed to project planning



A cost and impact analysis forecasts what we can expect during project development