BARBADOS TOWN PLANNING SOCIETY

"Pathways to Green Transport: polices, successes and challenges"

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BARBADOS' TRANSPORT SECTOR & SUSTAINABLE DEVELOPMENT

- The CARICOM Energy Policy
- The CARICOM Energy Programme
- The CARICOM Task Force on Sustainable Development; and
- The Caribbean Centre for Renewable Energy and Energy Efficiency
- IDB The Public Sector Smart Energy Programme for Barbados
- **The Barbados Green Economy Initiative**
- The Sustainable Energy Framework for Barbados
- the National Sustainable Energy Policy:
- Barbados' Climate Change Mitigation Adaptation and Measures
- Emerging and Sustainable Cities Initiative
- Roof to Reefs Programme - how to integrate water, land, agriculture, energy in a conservative approach (GEF – Gold standard)

- (AOSIS) - Barbados Declaration on Achieving Sustainable Energy for All in Small Island Developing States.
- SAMOA Pathway, which promotes sustainable transportation
- **2030 Agenda for Sustainable Development, transportation, mobility and accessibility are critical**
- **the Paris COP 21 Agreement to reduce greenhouse gas emissions and limit the global temperature increase to below 2 degrees Celsius by the year 2100**
- Road to El Sharm 2022 COP
- **Decade(s) of Action for Road Safety**
- Emerging and Sustainable Cities Initiative (ESCI)

BARBADOS TRANSPORT SECTOR OVERVIEW

- Number of valid drivers licenses 149,000 (2022)
- Number of Vehicles -156,00 (2022)
- Number of Electric Vehicle- 911 (2021)
- 6-8% new registrations 10 years or older
- 9,420 PSVs (875 PSV Buses)(taxis 2873)(1 private electric bus)

Quality of Roads (iRAP, 2017)

	5-star	4-star	3-star	2-star and 1 star
Vehicle Occupants	1%	9%	43%	47%
Motorcyclists	1%	5%	38%	56%
Pedestrians	2%	4%	18%	73%
Cyclists		7%	42%	49%

HGVs	5130
LGVs	7021
Buses and coaches	1838
Private cars	106729
motorcycles	244

However 70% of vehicles are 20 years or older including HGVs and LGVs.
95% public transport carbonized.
Potential to save $20 million metric tons of carbon dioxide emission (CO2) by increasing (EVs) to around 20 per cent (Moore,2021)
BLA must inspect cars 10 years or older.

REGULATORY AND POLICY APPROACHES FOR DECARBONISATION

Recommendations for Greening Transport

1. Develop/adapt and adopt policies for transport and energy;

2. **Reduce duties on electric vehicles**

3. Public education campaigns

4. **Tax scheme on the CO2 emissions to replace road taxes**

5. Work with the national utility to develop a policy for the integration of PVs and electric vehicles into the national grid

(Moore & Howard, 2015)

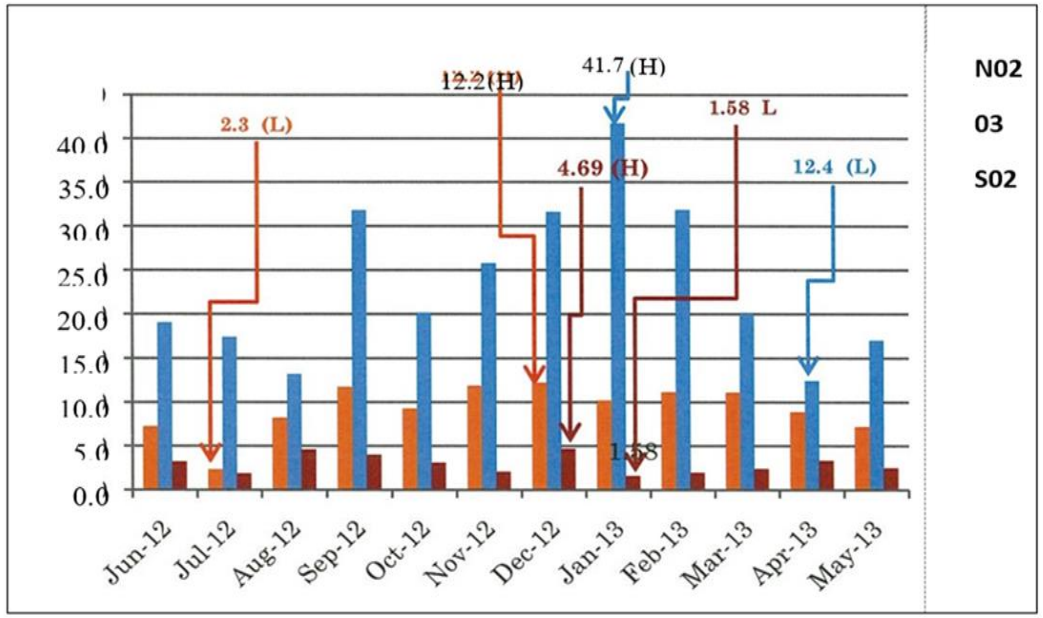
Key Policy Responses and Actions

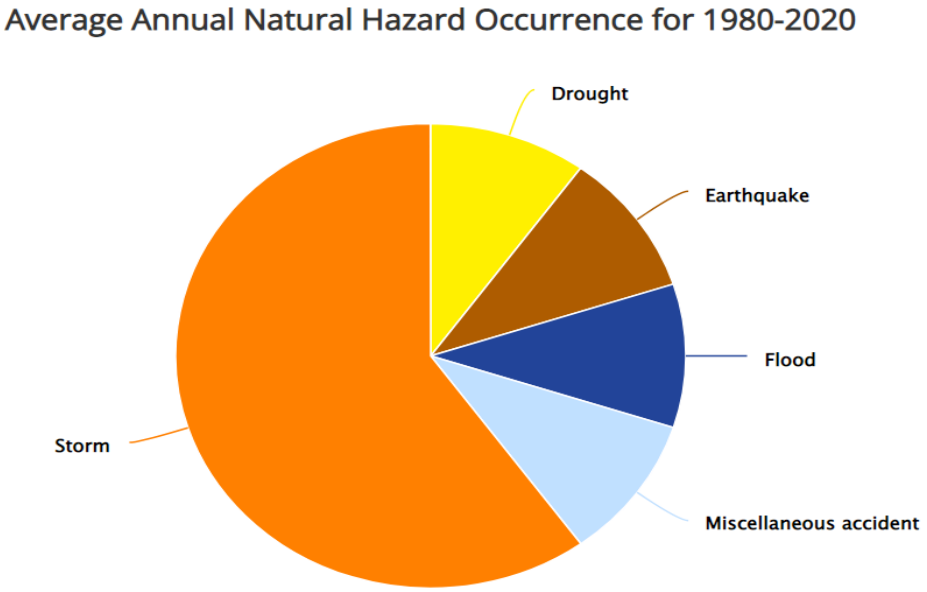
- Barbados National Energy Policy
- Revision of duties on electric vehicles (2015) (2022)
- **Fuel tax (2018)**
- **Revised agreement with national utility to embrace supply from renewable energy sources (Electric Light and Power Act) (ELPA) Amendments (2015 & 2019) (online)**
- Integrated Resource and Resiliency Plan for Barbados (2020)
- Public Sector Smart Energy Programme
- An Electric Vehicle Study (2021/2)
- The loan limit for public servants will be increased to $100,000 to facilitate the purchase of electric or alternate fueled
- Favourable Alternative fuel tax

Key Results

- **Introduction of hybrid and alternative powered vehicles on the market**
- Enhanced physical and technological infrastructure (GPS, online payments)
- **Electric Bus Committee comprising a variety of local expertise who built the project from bolt to delivery. 49 electric fully accessible buses, 33 charging stations and 3 transformers with standby generators**
- Increased energy efficiency, air quality (14%-43% CO2 emissions reduction) operational efficiency.. and lower maintenance costs
- Reduced foreign exchange expenditure (US100 million saved in fossil fuel imports in 2020). US30 million foregone in diesel purchase 1/3 of which is replaced by electricity charging costs.
- Full government fleet electrification programme (workshop and staff modernisation)

PROBLEM: CLIMATE RISK, AIR QUALITY & CNCDS





In Barbados, non-communicable diseases (NCDs) hav become the major cause of morbidity and mortality, whil malnutrition and infectious diseases have declined i response to improved public health and social condition Fortunately, sickness and premature death from NCDs ar preventable, using simple lifestyle interventions includin abstinence from tobacco, limitation of alcohol consumptio daily physical activity and exercise, and adoption of health dietary practices. Having timely and accurate understandin of what puts the average Barbadian at risk for NCDs wi assist policy-makers to create appropriate population-based interventions to revers the current upward trend of NCDs. The global target set by the United Nations fo a 25% reduction in premature mortality from NCDs by 2025 is achievable; therefor we need to have credible and timely information through surveillance and researc Good surveillance and research practice was also identified in the Port-of-Spai Declaration on NCDs as a necessary requirement for evidence-based decision making to protect the health of a population.

AGE-GROUP (YEARS)	WOMEN		MEN		ALL	
	%	95% CI	%	95% CI	%	95% CI
25-44	63.6	(56.5, 70.2)	17.5	(10.1, 28.6)	41.5	(35.9, 47.3)
45-64	62.6	(55.2, 69.4)	35.4	(26.6, 45.2)	49.6	(42.8, 56.5)
65+	83.0	(76.0, 88.2)	53.7	(40.3, 66.5)	71.1	(63.3, 77.8)
All	67.2	(63.1, 71.1)	30.0	(24.6 ,36.1)	49.9	(46.1, 53.7)

TABLE 13:
Prevalence of physical inactivity in the Barbadian population aged 25 years and over

PROBLEM COST OF GREEN TRANSITION

Supply side

- Cost of BNEP results in an annual shortfall fall of BDS105.0 million (gasoline diesel and fuel oil)
- Repositioning the power industry status quo
- Infrastructure requirements
- Available maintenance and other required skill sets

Demand Side

- Cost of EV ownership to individuals
- Buyer brand loyalty vs availability
- Infrastructural requirements
- Positive/negative network effects
- Faces potential tax increases to offset impact on road infrastructure

Potential Finance @ COP27

- Climate Mitigation Trust – USD5 Trillion
- For Barbados 500B SDR for private sector capital
- (Green Climate Fund)

GREEN TRANSPORT PATHWAYS: LAND USE CHANGES

- Density, Diversity, Design, Destination accessibility, and Distance to transit.
- Increase active travel/reduce car dependency
- Greening the City
- Visioning
- Democratic Participation
- Investment

1. Multi-modal Network (using a smarter combination of network solutions)
2. Mobility Nodes (using a smarter combination of nodes)
3. Active Transportation (walking and cycling) (cycle lanes, footfalls) telecommuting
4. Public Transport (reliability and efficiency encouraging mode shift) (BRT, scheduling). Commercial – last mile logistics
5. International Gateways
6. Parking Management
7. Water Transport

Fig. 1. The relationship between urban and transport planning, environment and health.

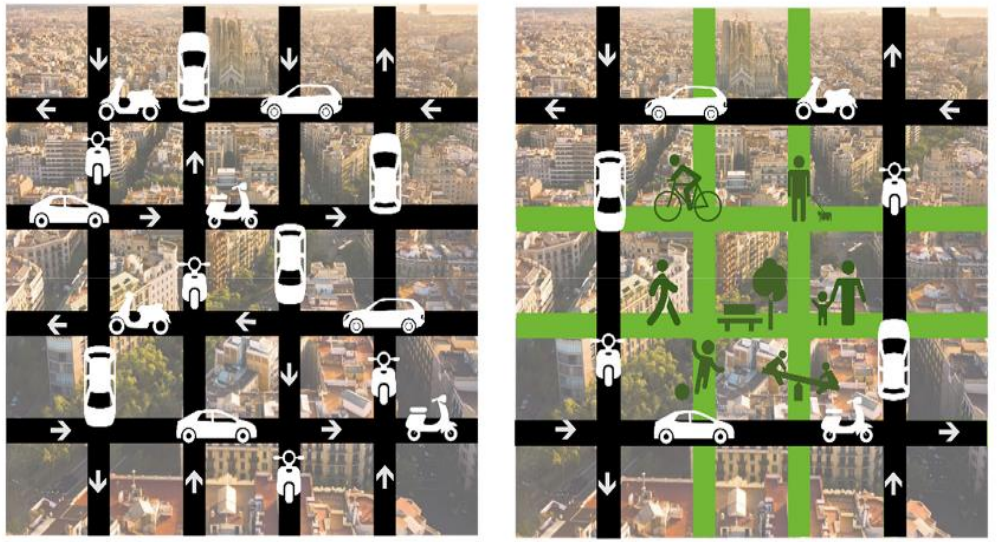
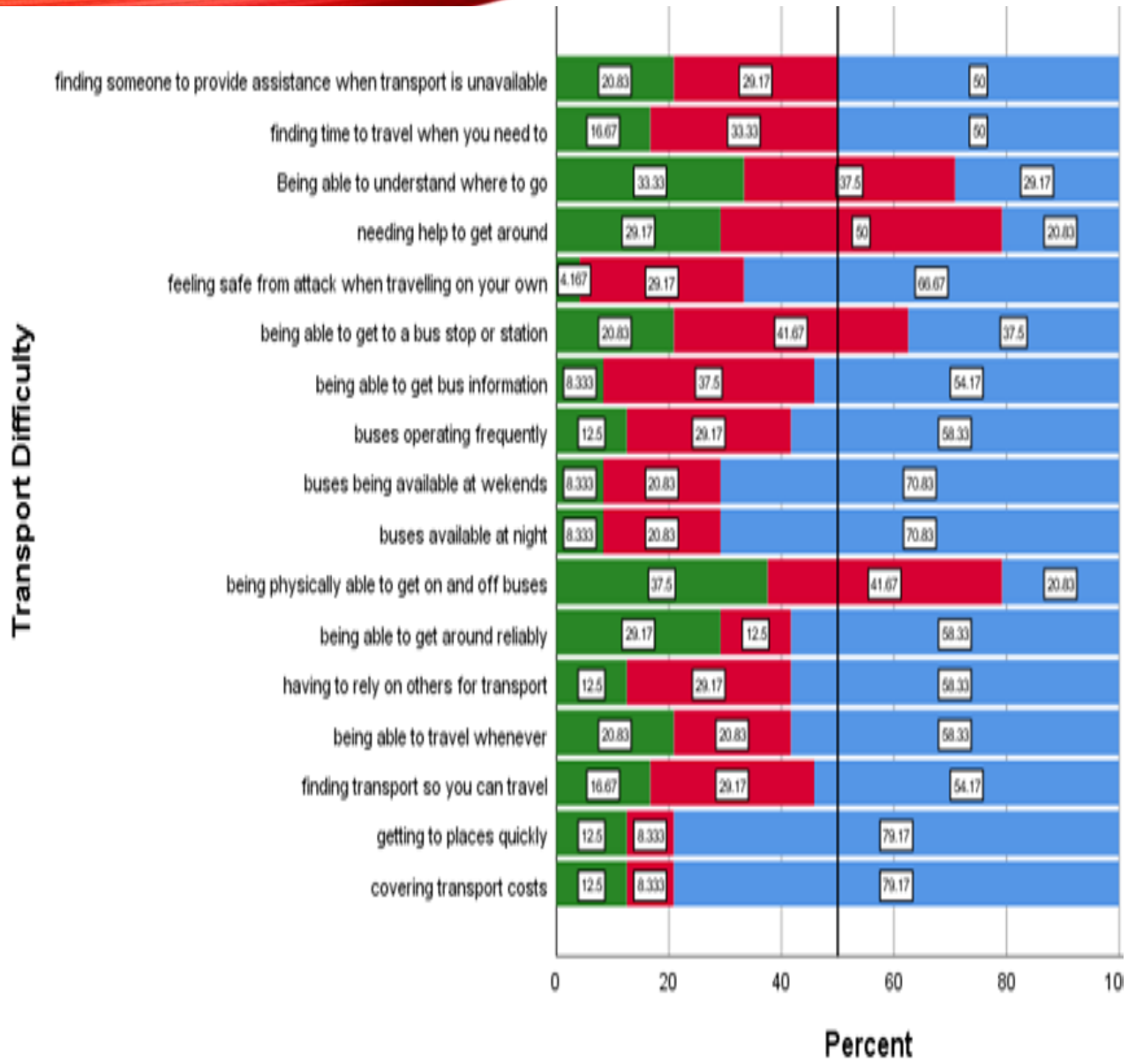


Fig. 2. Traffic flows before and after the Superblock implementation in Barcelona.

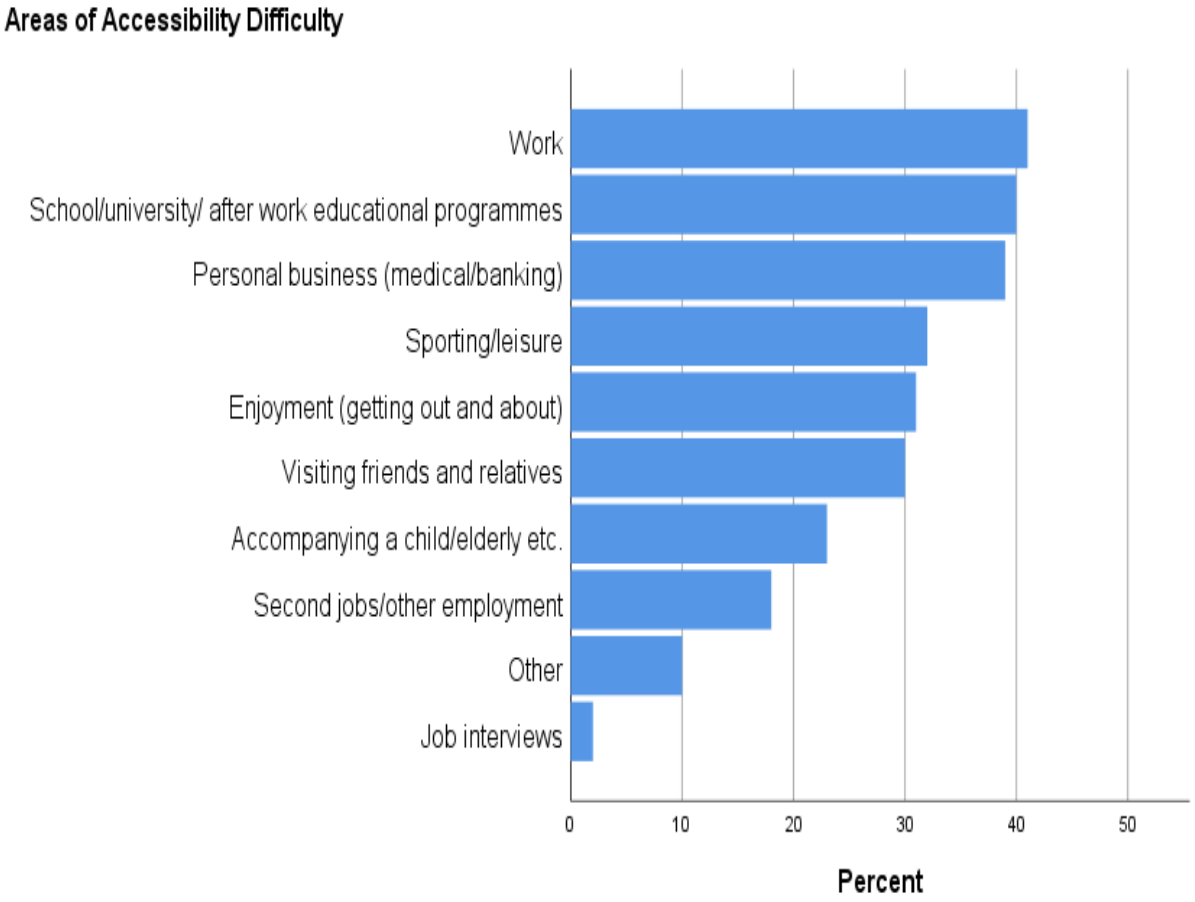
- "Mobility and Accessibility planning is fundamental to the promotion of inclusive, healthy communities and sustainable development within Barbados. Access to employment opportunities and education, health and other services, and obtaining benefits from those services, hinges on the availability of safe, affordable, comfortable, reliable and efficient transport systems." (PDP, 2017)

PUTTING PEOPLE IN THE DESIGN PROCESS

Mobility challenges

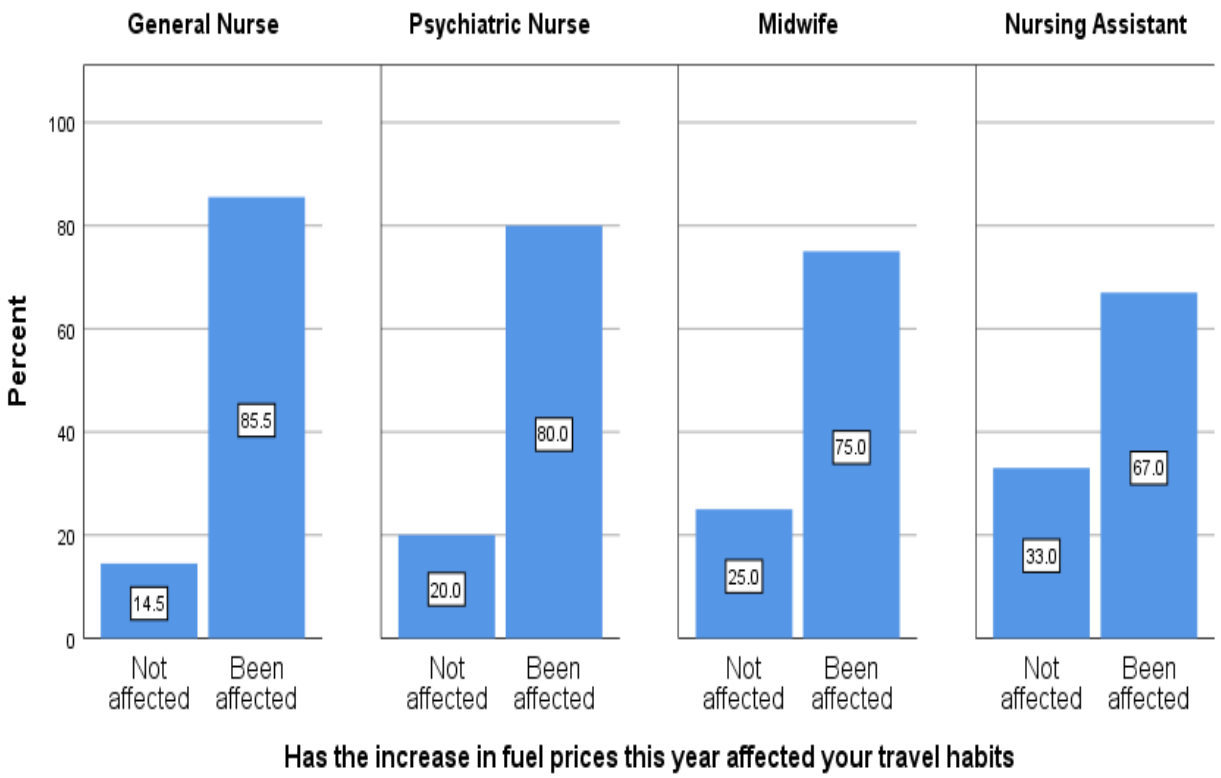


Accessibility Challenges

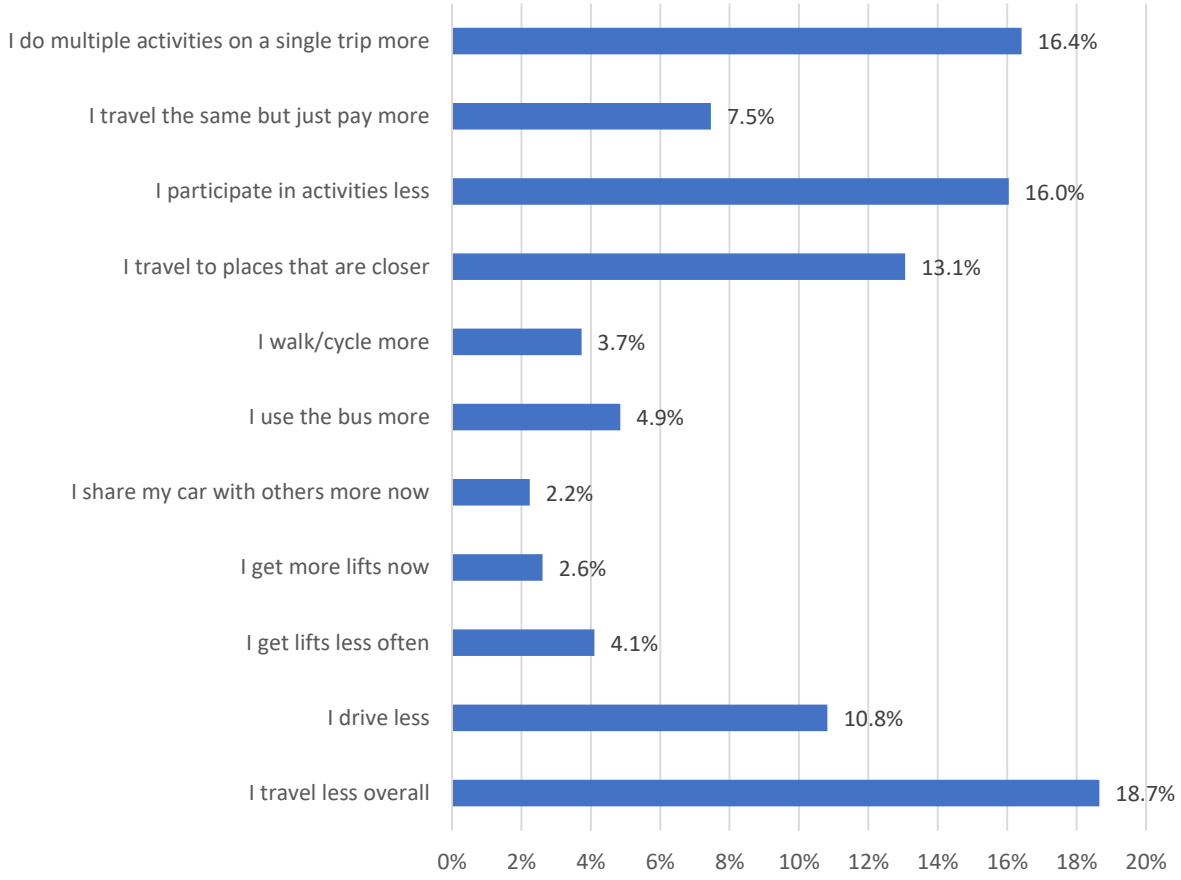


COPING WITH FUEL PRICE INCREASES

Effects of Increasing Fuel Prices

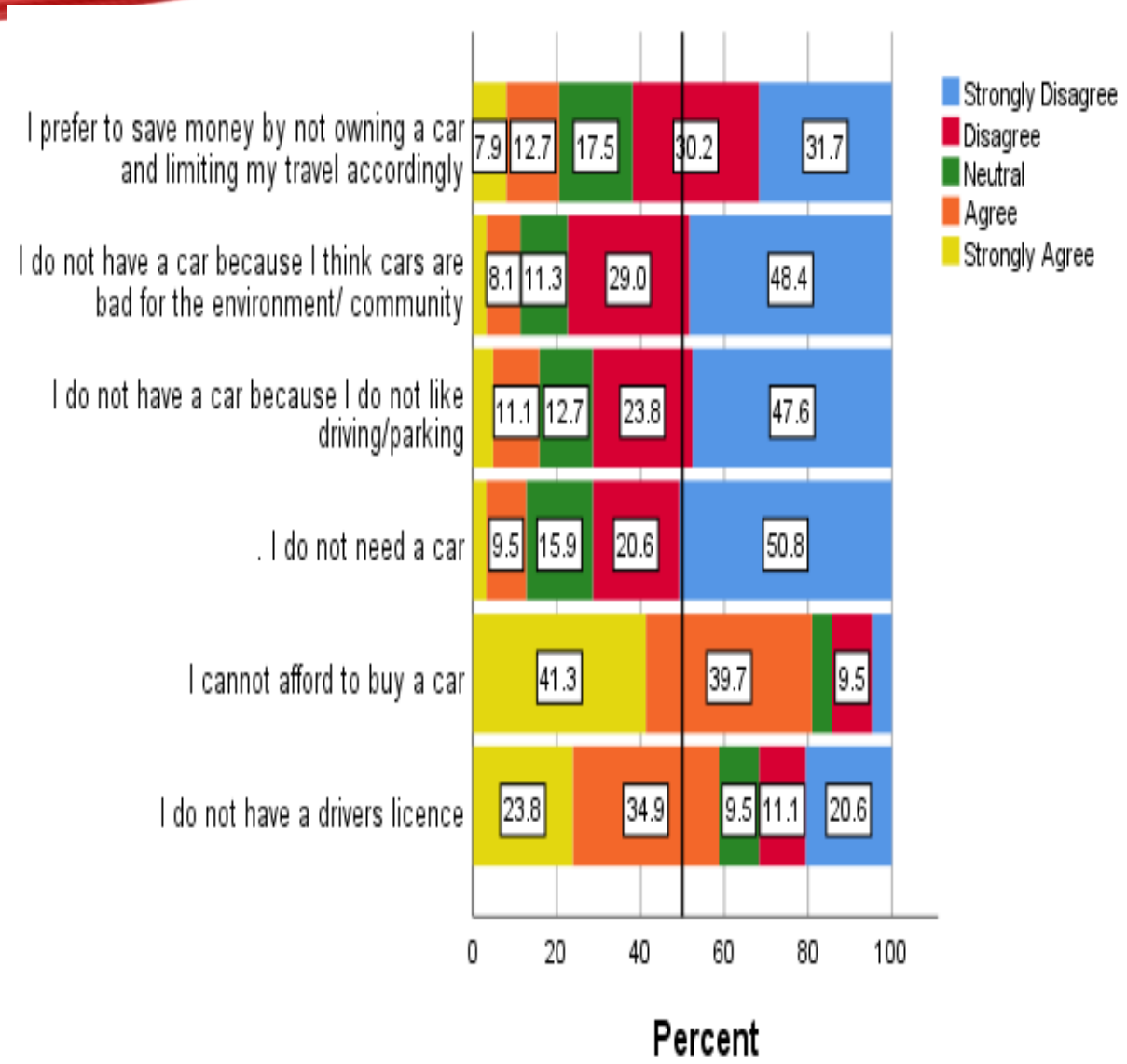


How do you cope?

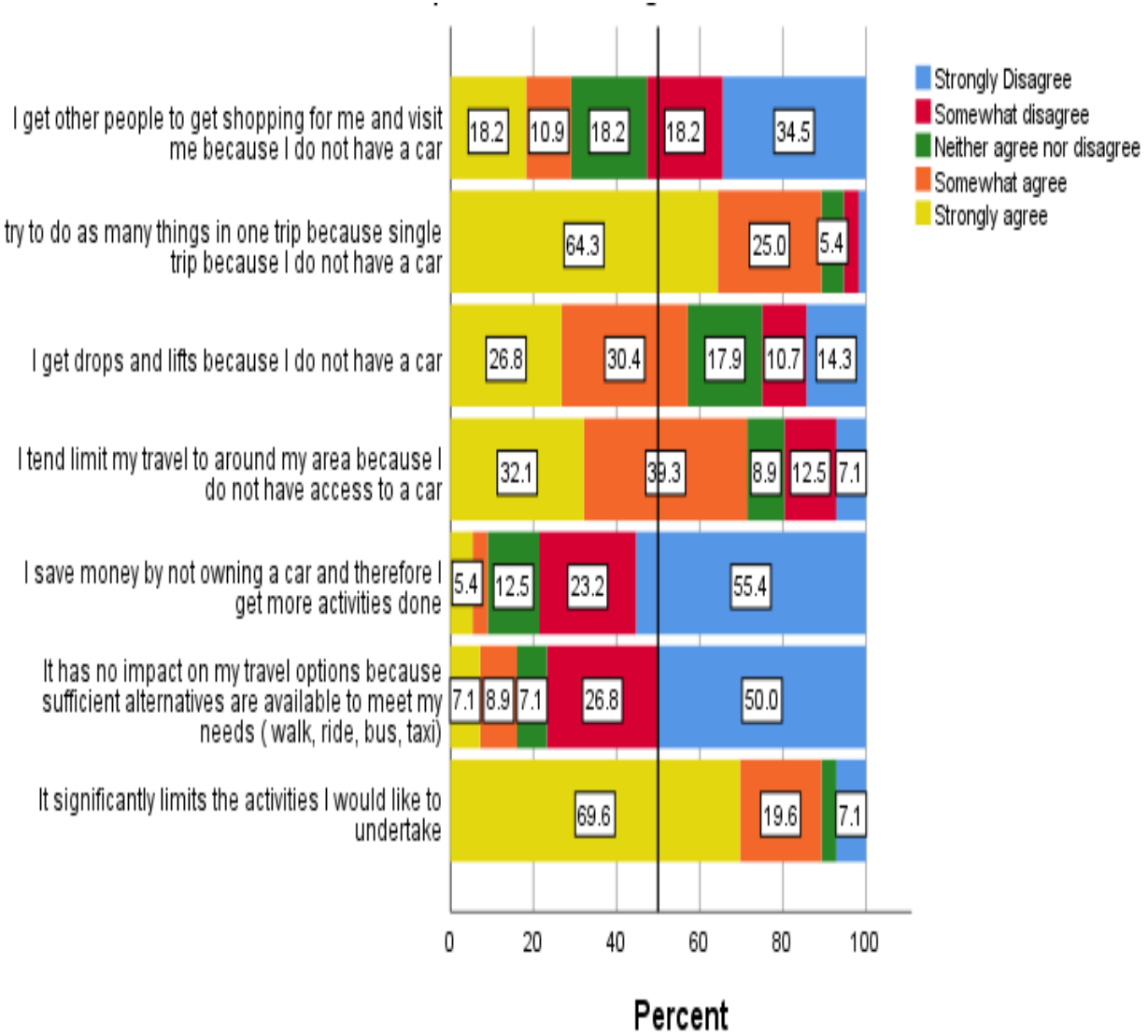


NON-CAR OWNERS

Reasons for nor owning a car

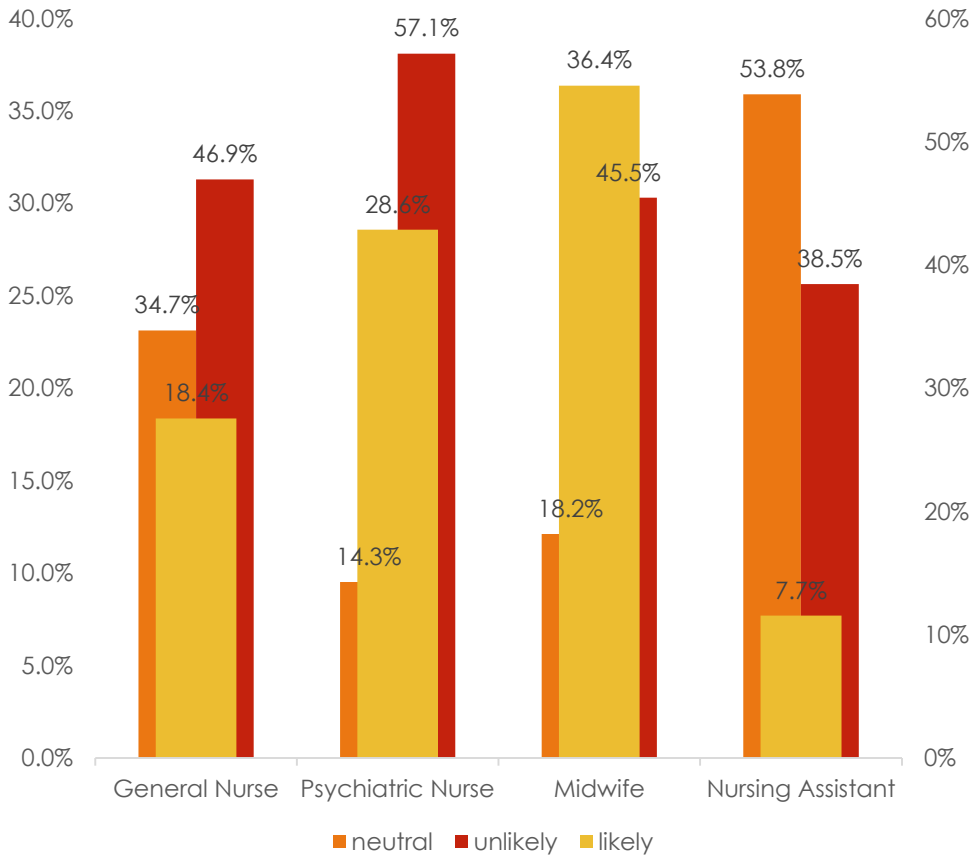


Impact of not having a car



PERCEPTIONS OF FUTURE MOBILITY CHOICES

Likelihood of Purchasing an Electric Vehicle



Focus Group Discussion Results Matrix

Transport Problem Statement Meaning as A Unit	Summated Interpretation Based on Starring (+)
Whether persons were covering the cost of transport	5/7 participants agree transport costs are more than 10% of monthly income
Getting to places quickly	6/7 participants indicated a high level of difficulty in getting to and from work
Finding transport	7/7 participants agree there is high level of difficulty in finding transport
Being able to travel when you want	5/7 participants indicated a high level of difficulty in being able to travel when needed.
Having to rely on others for transport	4/7 participants indicated there was a level of dependence on others for transport
Being able to get physically on or off the bus	6/7 participants indicated a high level of difficulty being able to board the bus
Getting buses at night	5/participants indicated a high level of difficulty with getting a bus at night
Bus availability at weekends	6/7 participants indicated a high level of difficulty being able to get the bus on weekends
Safety and security	7/7 participants indicated a high level of negative experiences with security issues 7/7 participants noted the impact on Covid19 on transport and mobility
Being able to get to bus stops/ stations	5/7 participants indicated a high level of difficulty for nurses getting to bus stops or stations
Feelings about purchasing an electric vehicle in the near future	7/7 participants expressed a negative intention to purchase an electric vehicle

UPGRADING THE MTWW- NATIONAL ENERGY POLICY

POLICY MEASURE	ACTIVITY		IMPLEMENTATION STATUS
Introduce more renewable energy and clean energy into the public transportation system.	Explore retrofitting options for existing fleet.		49 new Electric Buses added to fleet in FY 2021. 10 additional units to arrive August/September 2022. A new vehicle importation policy being reviewed (MTWW &DCCA)
Encourage energy efficiency in the transportation sector.	Stricken penalties pertaining to offloading/onboarding points		New RTA in progress. The Government is also moving towards a Mass Transit Authority that seeks greater EE and RE in transport
Develop a road network that promotes energy efficiency.	Develop National Transportation Network Strategy		Draft Integrated Transport Plan prepared. A National Transport Advisor has been retained to prepare and finalise the appropriate policy
Implement more stringent regulations on vehicles' exhausts and emissions.	Conduct pilot project to test framework		An emissions standard is in place. Equipment has been purchased but associated training is to be delivered. A conceptual programme to be devised for the BLA
Integrate charging stations with traditional gas stations.	Review building codes to integrate charging stations into new developments (residential, commercial and open public spaces)		Completed. Specification for charging stations established in current regulations. NFPA 70 - Article 690 covering photovoltaic installation
Acquire more details on the number of vehicles using each fuel type.	Conduct study to establish benchmark and facilitate future comparisons		Completed. Information provided to Energy Division

UPGRADING THE MTWW

Institutional Strengthening of the MTWW – Cost Centres across the entity

Active Travel: Pedestrianization of Urban Spaces

Solid intelligent transport systems and cross network integration and harmonization

- Electronic Vehicle Registration (RFID)
- Vehicle Black Box technology
- Improved enforcement services (hand-held devices, detecting gantries, breathalyzers, real-time data access)
- The Electronic Load Management System (ELMS)
- Effective Road Maintenance Programmes
- Transport Augmentation and Digitisation of Partnerships (GPS, BeepBus)
- Power grid support systems (transformers, PVs, standby generators and enhanced technical expertise)

UPGRADING THE ROAD NETWORK STRATEGY: Visioning

Objectives

1. To improve the transport infrastructure that increases the city's international standing for liveability.
2. To guide urban growth that achieves sustainable spatial development.
3. To preserve historical and cultural heritage
4. To revive city life and feel by increased walking and cycling accessible activity
5. To reduce car dependency in the city

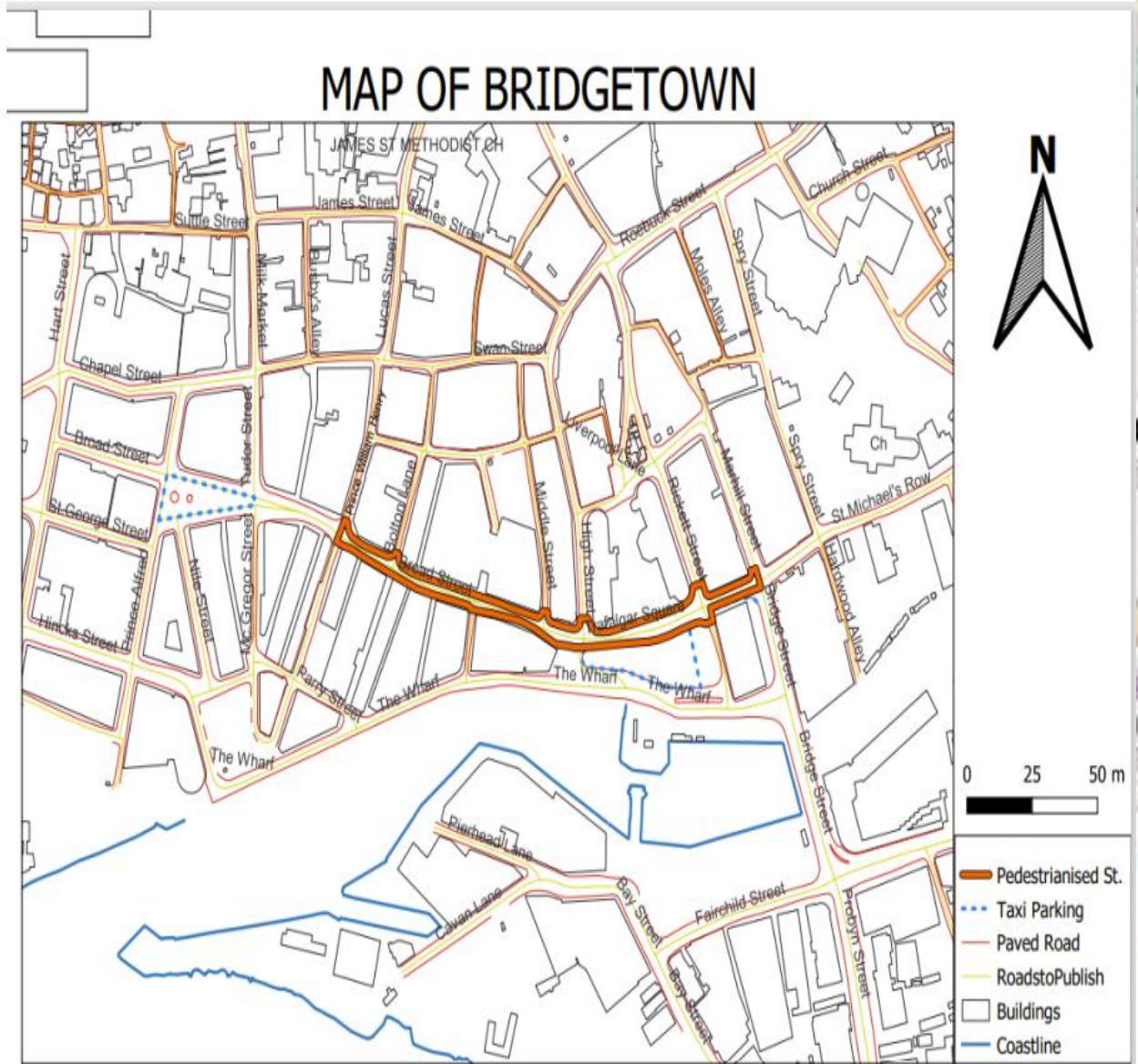
Strategies

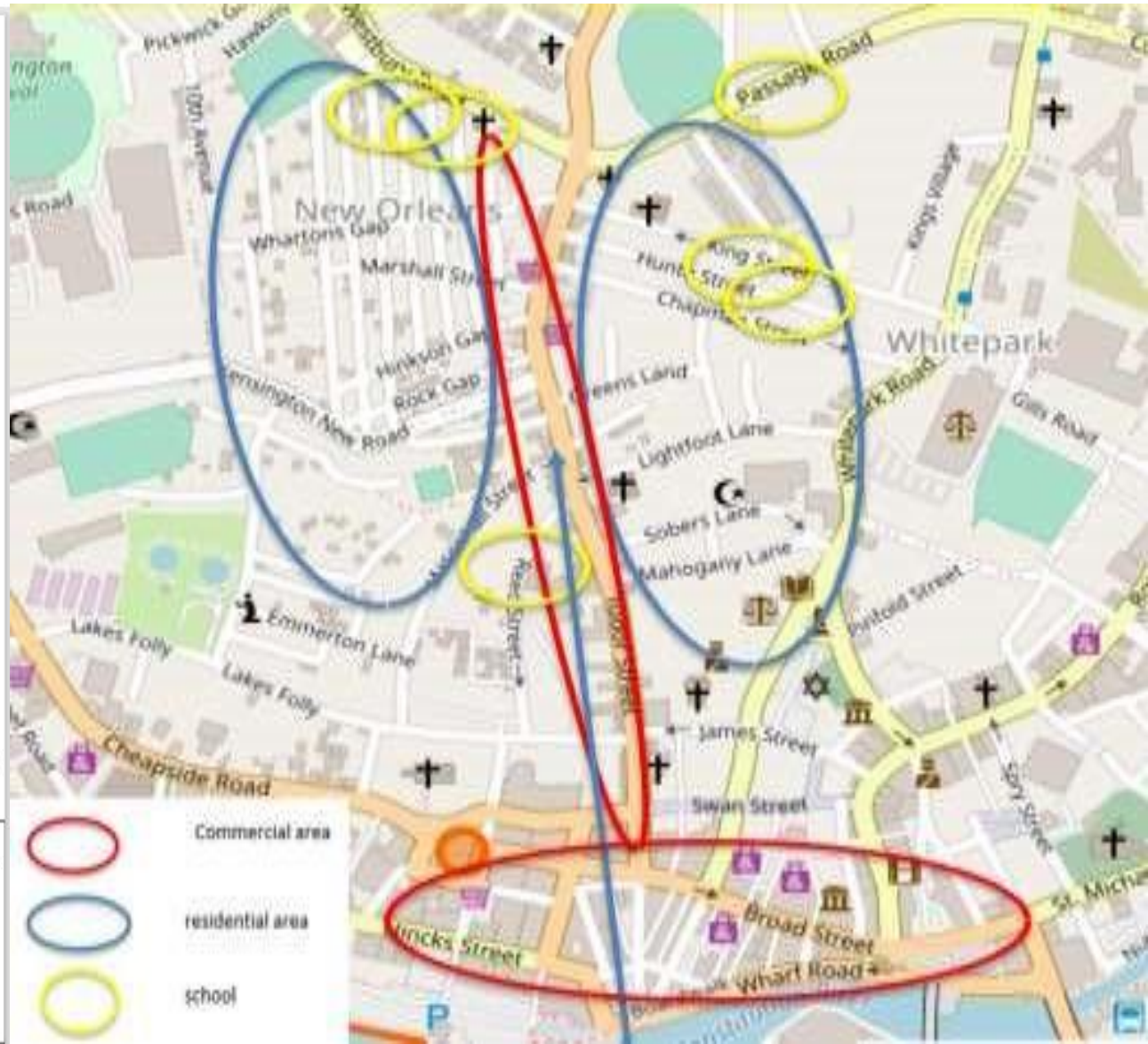
To introduce international standards to achieve harmony within the urban transport network.
To broaden the coverage of transport infrastructure in order to meet future requirements and commitments relative to urban economic growth, social sustainability and environmental management.
To implement accessible and efficient transport options between existing urban areas which expands in line with car-use reduction policies.
To provide street and road use reclassifications in line with strategic direction.

Proposed Road Network Pattern

Ring-and-Radial network pattern to guide the planned spatial urban development (between urban areas and transport infrastructure & to handle through traffic outside city center and to distribute traffic on radial roads)
To connect south and west ring roads to form a strategic ring while improving outer-urban roads to function as radials
To strengthen the network from highway 1 to highway 7 as a central function for moving cars in & out of the city

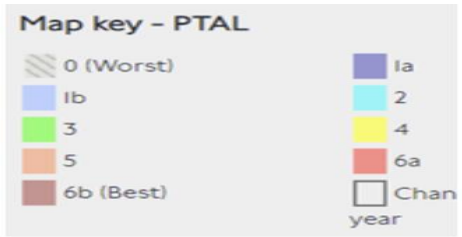
PEDESTRIANIZATION OF BRIDGETOWN - CONCEPT





TRANSPORT DECARBONISATION AND IMPLICATIONS FOR DEVELOPMENT APPLICATIONS

- Transport Assessment – New features
- Distributional impacts: severance,
- Health and economic assessment
- Proximity of renewable charging infrastructure
- Glint & glare
- Net-Zero Miles
- Active Travel Accessibility
- Green Space



THANK YOU!!

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