



**Title: Durban Climate Change Strategy  
Transport Theme Report: Draft for Public Comment**

**Date: 7 November 2013**

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## **Acknowledgements**

The Durban Climate Change Strategy (DCCS) project is funded and lead by the Environmental Planning and Climate Protection Department (EPCPD) and the Energy Office (EO) of eThekweni Municipality.

The EPCPD and EO have commissioned Urban Earth in association with FutureWorks! to assist in the implementation of the project.

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# Introduction

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The Environmental Planning and Climate Protection Department (EPCPD) and the Energy Office (EO) of eThekweni Municipality have commissioned Urban Earth, in association with FutureWorks!, to develop a city-wide climate change adaptation and mitigation strategy for Durban<sup>1</sup> through an inclusive and participatory process entitled the Durban Climate Change Strategy (DCCS).

During the initial consultation phases of the project seven key themes were identified for the strategy:

1. Biodiversity
2. Health
3. Food Security
4. Water
5. Sustainable Energy
6. Transport
7. Waste and Pollution

Separate public workshops were hosted for each theme to secure stakeholder input on the aims and strategies for each of the themes which will form the basis for the final content of the Durban Climate Change Strategy. In addition seven technical experts were procured by EPCPD and EO to provide expert technical advice on each of themes.

Section one and two of this report provides a summary of the transport and climate change context for Durban based on an introductory technical report from technical expert Brett Cohen of The Green House. The introductory technical report is available for download on the [DCCS website](#). Sections three and four, which outline a vision, aim and strategies for the transport theme, are based on both the input provided by stakeholders at the transport theme working group meeting held on 10 October 2013 and recommendations by technical expert Brett Cohen. The minutes of the working group meeting can be found in Appendix One of this document.

Interested stakeholders are invited to submit [online comments](#) on the report. Comments will be presented at a follow up transport theme meeting for stakeholders that will be held in 2014. Following that meeting amendments will be made to the theme report. The transport theme report will then be combined with the reports from other themes to form a draft climate change strategy document that will also be distributed for comment.

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<sup>1</sup>Including the eThekweni Municipal Area.

## Section One: Current Status of Transport

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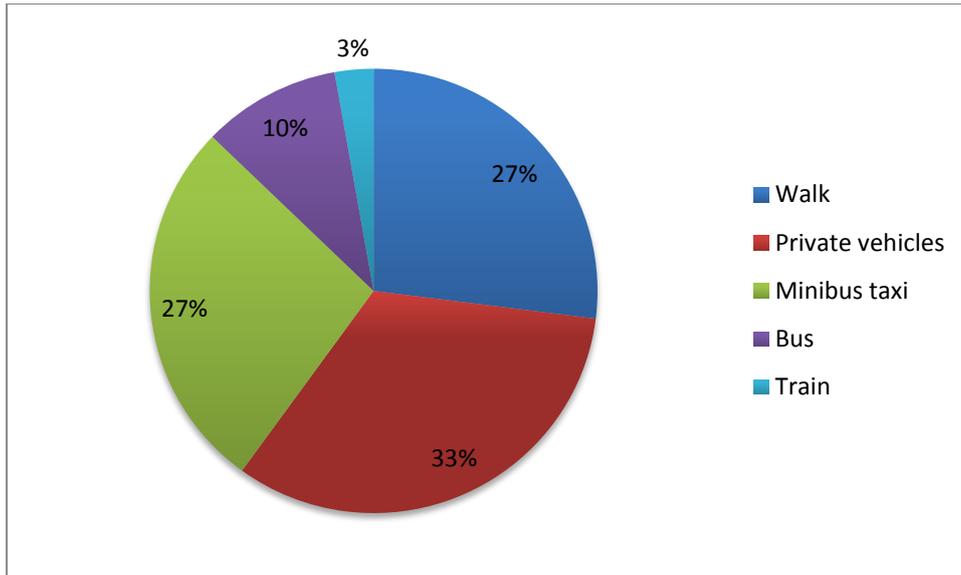
Road and rail transport infrastructure in Durban is primarily aligned along two main corridors, the coastal corridor, which includes the N2 national road and coastal rail lines, and the western corridor that links the CBD with the inland areas and includes the N3 national road.

The Durban port, which is adjacent to the CBD, is the largest port in South Africa and the main port for freight moving to and from Gauteng. The port falls under Transnet's authority, but has major economic and transport influences on the rest of the city. Transnet is undertaking considerable investment to increase the capacity within the existing port area and planning is underway to develop a new port by excavation of the old airport site south of the CBD (Transnet, 2012a; Transnet, 2012b; Steyn, 2013). Durban's airport, King Shaka International Airport, is located 40 km north of the CBD. Adjacent to the airport is the recently established Dube Tradeport, a mixed-use zone that is intended to contribute to increased economic activity and global trade.

Urban passenger transport in Durban is strongly reliant on public transport, with only 36% of the population having access to a car (eThekweni Municipality, 2010a). Private vehicles, however, make up the largest segment of passenger transport, and car ownership has been growing steadily since 1985, to the detriment of public transport ridership (eThekweni Municipality, 2005). It is also noteworthy that a significant proportion of trips (greater than 1 km) are made on foot (Figure 1).

Minibus taxis have by far the largest share of the public transport market, followed by buses. Despite the existence of a sizable rail network, rail carries only a small share of passenger trips in the city.

A number of activities are already occurring across Durban which will have knock-on benefits for sustainable transport, greenhouse gas emissions reductions and climate adaptation. These include the roll-out of the Integrated Rapid Public Transport Network (IRPTN), the establishment of the urban development line, the construction of bicycle lanes and the establishment of the Bridge City integrated transport and economic planning development project.



**Figure 1: Proportion of number of trips undertaken in Durban using different modes for trips greater than 1km (eThekweni Municipality, 2010a)**

Little data is available for urban freight movements, but it can be safely assumed that the vast majority of urban freight transport within Durban is by road. Rail is used primarily as a carrier of goods to and from areas beyond the municipal boundaries, in line with its inherent suitability for bulk long-distance haulage. In recent decades rail has lost much of its market share to trucking and has retained only a small share of traffic to and from the port, and negligible traffic on branch lines serving other areas of the city.

## **Section Two: Key Climate Change Challenges for Transport Theme in Durban**

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Durban faces multiple developmental challenges, including high unemployment, housing backlogs and entrenched inequality. There is a pressing need for expansion and enhancement of the transport system to create greater access to economic opportunities, reduce the burdens associated with travel, and facilitate freight and passenger movements in support of economic growth. The overall challenge is therefore to improve and extend provision of transport services without an increase in GHG emissions intensity.

It is estimated that 37% of Durban’s total greenhouse gas emissions for the 2011 calendar year (27,649,400 tCO<sub>2</sub>e) were from ground, air and water transportation sources (eThekweni Municipality, 2013b).

Durban’s transport greenhouse gas emissions can to a large extent be attributed to high levels of private car use for passenger transport and the large proportion of freight carried by road instead of rail.

Shifting passengers away from private vehicles to public transport is a major challenge that Durban faces. There are a number of barriers to this shift which include:

- Apartheid policies resulting in high-density, low-income settlements situated far from the centres of economic activity and opportunity (Mtantato, 2011)
- Planning priority having historically been given to private cars (Mostert, 2012);
- Long-term underinvestment in public transport modes, resulting in low levels of service and reliability;
- Proliferation of private transport operators (minibus taxis and buses) leading to parallel services, intense competition, and low levels of profit that are unable to sustain service quality and safety (eThekweni Municipality, 2013a);
- Low-density suburban development and urban sprawl, reducing the viability of public transport and increasing reliance on private vehicles; and
- The prospect of increasing levels of car ownership as household incomes rise.

In looking at solutions to a number of these issues, it needs to be recognised that there is limited space for expansion of the transport infrastructure, meaning that expansion of the system could result in other unintended environmental impacts unless there is careful, integrated planning.

Related to this challenge, it is noted that the planned port expansion will place increased demand on land based transport systems to accommodate freight movements to and from the port, with particular pressures on road infrastructure due to the small proportion of freight carried on rail (eThekweni Municipality, 2010b). Shifting road freight to rail is often recommended to reduce the emissions associated with freight transport, however a significant proportion of the urban freight movement through Durban is influenced by rail and port systems that are managed at a national level, posing particular institutional challenges for the eThekweni Municipality.

Reducing GHG emissions is an important priority for transport and climate change planning, but this also needs to be integrated with adaptation to the projected impacts of climate change. Durban faces significant challenges in this respect (eThekweni Municipality, 2010c), particularly due to its extensive coastal transport infrastructure and high rainfall patterns, with attendant risks from sea level rise, storm surges and flood damage. These risks carry implications for transport systems directly, and their interplay with broader land-use patterns.

In seeking solutions to both adaptation and mitigation of climate change, it needs to be highlighted that data availability remains a big challenge to decision-makers. Reliable, consistent and complete data sets would be of significant value in planning.

## **Section Three: Vision and Aims for transport and climate change**

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The following preliminary vision and aims are proposed for the transport and climate change component of the DCCS:

*Durban has a low carbon transport system which is sustainable, efficient, safe, and affordable for all residents.*

1. Durban's spatial planning is integrated with transport planning to avoid the need for travelling long distances
2. All Durban's residents have access to efficient and affordable transportation
3. Durban's environmental impacts and greenhouse gas emissions from transport are minimised and the energy efficiency of transport is improved
4. Durban's transport system is resilient to the projected impacts of climate change

## **Section Four: Transport Strategies to achieve the aims**

Participants in the stakeholder workshop identified a number of strategies that could contribute to achieving the transport vision and aims as they relate to reducing greenhouse gas emissions from the sector. These strategies were combined with recommendations from the transport technical expert and have been synthesised to provide the list in the table below. For further background reading on transport and climate change in Durban see the technical introductory report available on the [DCCS website](#).

<b>Aim</b>	<b>Proposed Strategies</b>
Durban's spatial planning is integrated with transport planning to avoid the need for travelling long distances	<ul style="list-style-type: none"> <li>• Regulate the residential transformation of the CBD and encourage businesses back into the CBD.</li> <li>• Develop economic nodes and mixed use zones in existing and planned neighbourhoods and communities where residents have access to shops, services and entertainment, thus reducing the need for extensive travel.</li> <li>• Improve transport linkages between neighbourhoods, communities and economic nodes.</li> <li>• Upgrade existing residential areas and informal settlements close to the city centre to attract and retain residents close to the city core.</li> </ul>
All Durban's residents have access to efficient and affordable transportation	<ul style="list-style-type: none"> <li>• Maintain and extend high quality road and rail infrastructure towards facilitating the implementation of low carbon public transport options, rather than increased private car use.</li> <li>• Maintain and extend high quality infrastructure that allows for safe movement by non-motorised transport (pedestrians and cycling).</li> <li>• Continue with implementation of the integrated rapid public transport network (IRPTN) in Durban to provide an affordable, high quality, clean and safe form of public transport to large numbers of commuters in Durban. Movement between modes should be seamless and facilitated by a centralised card ticketing system.</li> <li>• Provide incentives to bus and taxi drivers that observe good practices to encourage both greater uptake of public transport and increased fuel efficiency.</li> <li>• Implement an effective school bus system.</li> <li>• Educate all Durban's residents on the benefits of using public transport.</li> </ul>
Durban's greenhouse gases from transport are minimised and the energy efficiency of transport is improved	<ul style="list-style-type: none"> <li>• Discourage private car use through measures such as the implementation of congestion tariffs, a reduction in the availability of parking in the city centre, and incentives for car pooling.</li> <li>• Run education campaigns on topics such as the value of living close to place of work, vehicle purchase choice and the use of alternative means of transport towards reducing greenhouse gas emissions.</li> <li>• Explore the adoption of alternative fuels that are locally available and</li> </ul>

	<p>less carbon intensive, such as biofuels, compressed natural gas, electricity, algae, ethanol and renewable energies.</p> <ul style="list-style-type: none"> <li>• Explore the adoption of fuel efficiency technologies</li> <li>• Promote purchase of low carbon and efficient vehicles by both the public and private sector through subsidises and other incentives , and providing local infrastructure such as electric vehicle charging points and parking places, as well as alternative fuel filling stations.</li> <li>• Re-engineer rail transportation to improve accessibility and efficiency in order to shift freight from road to rail.</li> </ul>
<p>Durban’s transport system is resilient to the projected impacts of climate change</p>	<ul style="list-style-type: none"> <li>• Transport infrastructure planning to take into account projected future climate change impacts including sea level rise, more intense and frequent rainfall events and higher temperatures. Considerations here include location of new infrastructure, and infrastructure design and choice of materials to be resilient to such impacts.</li> <li>• Transport system operation needs to be planned around extreme weather events, to minimise risk to infrastructure and commuters from, for example, heat waves and intense rainfall events.</li> <li>• Risk management and responses need to be prepared for increased fire risks, extreme rainfall events etc.</li> </ul>

In taking these strategies forward, two critical considerations need to be taken into account. The first is that these strategies cut across the mandates of a number of government departments, including transport, urban and spatial development, social development and environment. As such, any strategies that are adopted need to be aligned and integrated with the activities of those departments. Secondly, there is an overlap between the municipal mandates and those of national government and state owned enterprises. Co-ordination with these entities is thus also important.

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# Appendix One: Transport Theme Working Group Meeting Minutes

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Minutes of meeting held on 10<sup>th</sup> October 2013.

#	Item
1.	<p><b>Welcome</b></p> <p>Derek Morgan from the eThekweni Municipality's Energy Office welcomed everyone to the meeting and introduced the project to the stakeholders. He explained that the purpose of the Durban Climate Change Strategy (DCCS) Project is to develop a climate change strategy document to respond and adapt to climate change in the future. The project is an initiative by eThekweni Municipality's Energy Office (EO) and Environmental Planning and Climate Protection Department (EPCPD) and has been contracted out to Urban Earth and FutureWorks! to facilitate the development of the Strategy. Derek Morgan added that the Working Group meeting on Transport would help to identify aims and strategies for the Transport theme in the overall Durban Climate Change Strategy.</p>
2.	<p><b>Introductions</b></p> <p>Amanda Botes from Urban Earth welcomed everyone to the event and invited all the stakeholders to introduce themselves.</p> <p>Margaret McKenzie provided a brief overview of the process that had been followed by the project up to this point. She explained that the project had been initiated through public consultation where stakeholders were asked to provide input on what should be the key focus areas of the strategy. The results of stakeholder feedback were then presented at a Reference Group meeting. The Reference Group was made up of a group of people who volunteered from different sectors to provide guidance to the strategy development process. Following advice from the Reference Group seven key themes were identified for the strategy:</p> <ol style="list-style-type: none"><li>1. Biodiversity</li><li>2. Health</li><li>3. Food Security</li><li>4. Water</li><li>5. Sustainable Energy</li><li>6. Transport</li><li>7. Waste and Pollution</li></ol> <p>Margaret explained that the DCCS project was now in the process of hosting public working group meetings on each of the seven themes to develop aims and strategies for each of the themes. Seven technical experts have been procured by EPCPD and EO and will provide expert technical advice on each of themes. Margaret added that a second round of working group meetings will be held in the new year where stakeholders will get an opportunity to comment on the written theme report and add additional content.</p>

#	Item
	<p>Margaret closed by explaining that this meeting is taking place to develop the key themes for the transport theme. She then introduced Brett Cohen, from The Green House, as the technical expert on Transport.</p>
<p><b>3.</b></p>	<p><b>Presentation</b></p> <p>Brett Cohen presented a summary of the Introductory Report for the Transport theme. This included the following:</p> <ul style="list-style-type: none"> <li>• Durban’s key transport challenges associated with climate change.</li> <li>• Strategies used internationally to deal with transport challenges associated with climate change.</li> <li>• Strategies that have already been implemented in Durban to adapt to these changes in climate.</li> </ul> <p>The <a href="#">transport presentation</a> and <a href="#">introductory technical report</a> can be downloaded from the DCCS Website.</p> <p><b>Comments and questions:</b></p> <p>The floor was then opened where stakeholders were invited to ask questions. The following issues were raised by stakeholders during discussion and responses made by the technical expert and eThekweni Municipality officials.</p> <ul style="list-style-type: none"> <li>• Can Durban compare with overseas cities in terms of spatial planning? Response: eThekweni Municipality is trying to limit urban sprawl using the concept of an Urban Development Line where development is contained.</li> <li>• The new Dig Out Port Project is assuming that there will be an increase in shipping, however due to the ice caps melting this may not be the case.</li> <li>• The government should make taxi’s use more efficient fuel.</li> <li>• There needs to be further investigation into alternative fuels including biofuels, gas, and hydrogen fuel.</li> <li>• Organisations and individuals that use alternative fuels should be given a reduction in their taxes, as this will encourage more people to switch to a more efficient fuel source. Response: There have been some investigations conducted into biofuels by eThekweni Municipality but there are sensitivities around using biofuels including issues of food security and biodiversity loss.</li> <li>• The car manufacturers, like BMW, should come on board by promoting alternative fuels.</li> <li>• Train infrastructure should be improved for both freight and passengers. Response: PRASA and Metrorail are trying to improve passenger rail and improve existing infrastructure, however it is cheaper to introduce a bus system than to build new infrastructure.</li> <li>• The existing rail infrastructure extends further North and South, but the primary focus is on the Bridge City Corridor as this is where there is high demand.</li> </ul>

#	Item
	<ul style="list-style-type: none"> <li>• Does ethanol fuel from sugar cane also emit GHG emissions and how does it compare with emissions from petrol? Response: Ethanol fuel does emit GHG emissions, but is often regarded as carbon neutral as sugar cane uses carbon dioxide for photosynthesis. However, this does not consider emissions released in the production process itself.</li> <li>• There are no subsidies for biofuel and biofuel cannot compete with petrol at the moment.</li> <li>• When petrol is produced in refineries the flames should be reduced so that GHG emissions are reduced. Response: There have been investigations into the use of gas by-products in other processes.</li> </ul>
4.	<p><b>Introduction to World Café Process</b></p> <p>Amanda thanked everyone for their questions and comments and then explained the world café method that would be used for the group discussions. She asked stakeholders to form groups of 6 people and allowed 20 minutes for discussion on the aims for transport and climate change theme, and 5 minutes to capture these aims on key cards. The stakeholders were given flip chart sheets to record their discussions (See Annex A) prior to noting their top three aims on three cards. Khulile then translated the World Café Method into isiZulu.</p>
5.	<p><b>World Café Discussion – Round One</b></p> <p>The various aims proposed by the groups are presented below. They have been grouped into common areas.</p> <ul style="list-style-type: none"> <li>• <b>Improve existing transport systems</b> <ul style="list-style-type: none"> <li>○ Public system sustainable and efficient. The system needs to be properly managed; it does not matter if it is private or public.</li> <li>○ Organised, cheap, reliable transport</li> <li>○ Intermodal system for safe, reliable and efficient public transport</li> <li>○ Shift tolls to separate vehicle classes</li> <li>○ Minimise greenhouse gas emissions</li> <li>○ Affordability, accessibility and reliability. Companies also need to comply with regulations</li> <li>○ Effective, reliable public transport. Training systems should be introduced and infrastructure and roads improved</li> <li>○ Infrastructure to support intermodal change (Bike to rail/ bus)</li> <li>○ Introduction of passenger rail</li> </ul> </li> <li>• <b>Use alternate fuel</b> <ul style="list-style-type: none"> <li>○ Fuel efficiencies: Hydro tune Ethanol.</li> <li>○ Change to less carbon intense fuels</li> </ul> </li> <li>• <b>Learn from other models of transport</b> <ul style="list-style-type: none"> <li>○ Learn from international best practice in similar economies of the world e.g. Brazil so that tangible strategies are implemented in Durban. We need to learn from what's happening in the world.</li> </ul> </li> <li>• <b>Change ways of travelling</b></li> </ul>

#	Item
	<ul style="list-style-type: none"> <li>○ Aim for new enterprise opportunity – job and wealth creation e.g. formation of car clubs – liaising with existing transport providers e.g. car hire companies. Private car owners should look into sharing.</li> <li>○ Rail as the main form of transport. Rail can assist in minimising traffic and lessening the impact of road accidents.</li> <li>○ Shift passengers and freight to rail</li> <li>○ Create other aspirations instead of car ownership e.g. sharing a vehicle (Car clubs)</li> <li>○ Reduce trips to the city</li> <li>○ Work and live closer/compact</li> </ul>
6.	<p><b>World Café Discussion – Round Two</b></p> <p>For the second round of world café discussions, Amanda asked participants to move to new groups. She then asked groups to identify strategies which can be used to achieve the aims identified in the first round. 20 minutes were allowed for discussion and for groups to capture their strategies on key cards. The stakeholders were given flip chart sheets to record their discussions (See Annex B) prior to noting their top three strategies on key cards.</p> <p>The various strategies proposed by the groups are presented below. They have been grouped into common areas:</p> <ul style="list-style-type: none"> <li>● <b>Alternative fuels</b> <ul style="list-style-type: none"> <li>○ Research into hydro-tuning technologies and regulations to only use these and other energy efficient technologies in vehicles</li> <li>○ Develop alternative fuel sector</li> <li>○ Conversion of public vehicles to alternative fuels e.g. CNG, LPG</li> </ul> </li> <li>● <b>Taxes, tariffs and incentives</b> <ul style="list-style-type: none"> <li>○ Subsidies for purchasing of fuel efficient vehicles - taxing those that are not</li> <li>○ Discouraging private car - reduction of parking, congestion tariffs</li> <li>○ Incentives for bus drivers that observe good practices</li> <li>○ Incentives introduction - carpool lanes and discounts</li> </ul> </li> <li>● <b>Education and awareness</b> <ul style="list-style-type: none"> <li>○ Massive campaign to change attitude towards public transport and to obey rules</li> </ul> </li> <li>● <b>Local investment</b> <ul style="list-style-type: none"> <li>○ Local is lekker - produce locally, add value to our resources here</li> </ul> </li> <li>● <b>Improve transport infrastructure</b> <ul style="list-style-type: none"> <li>○ Make the city safer for cycling and walking</li> <li>○ Re-engineering train transport</li> <li>○ Promote and expand transport systems - private taxis made to be cheaper safer, organised; introduce monetary incentives to transport companies.</li> <li>○ Improve port access</li> <li>○ Tackle taxi's</li> </ul> </li> <li>● <b>Urban spatial planning</b> <ul style="list-style-type: none"> <li>○ Reduce parking in the city - convert parkades to flats</li> </ul> </li> </ul>

#	Item
	<ul style="list-style-type: none"> <li>○ Regulate residential transformation of CBD</li> <li>● <b>Other</b> <ul style="list-style-type: none"> <li>○ Permaculture “uplifting goal”</li> <li>○ Stop gun shops - No to selling fireworks</li> <li>○ Stop fighting – respect</li> </ul> </li> </ul>
7.	<p><b>Closure</b></p> <p>Margaret McKenzie thanked everyone for their participation and outlined the process going forward. This included the following:</p> <ul style="list-style-type: none"> <li>● Kathryn Kasavel will prepare minutes and Amanda Botes will prepare a short report summarising the content provided by the groups.</li> <li>● The technical specialist, Brett Cohen, will review the report and provide comments and recommendations.</li> <li>● The report will then be uploaded on the website and emailed to everyone for further comment.</li> <li>● A follow-up meeting will be held early next year to present the draft strategy and to collect any comments and suggestions on the transport component of the strategy.</li> </ul> <p>Derek Morgan thanked everyone for coming and closed the meeting.</p>

## Annex A: Flip chart sheet discussion notes - Aims

### Group 1

- Organisation (Fairness)
  - Public transport: Trains/ Busses/ Taxies
  - Freight transport: Ships/ Trains/ Trucks
  - Private Transport: Cars/ Bicycles/ Pedestrians
- Enforcement
  - Routes: Commercial/ Commuter/ Tourist
  - Controls: Licence/ Permits/ Training and Education/ Taxes
  - Planning: Land use/ Linkages/ Covert CBD to residential

### Group 2

- To minimise GHG emissions from transport
- To include affordability and accessibility and reliability
- To change to less carbon intense fuels
- To reduce the need to travel

### Group 3

- Effective reliable transport

- Passenger service training
- Improvement of transport infrastructure
- Reducing movement to the city
  - Introducing malls within the community
  - Organisation of lift clubs
- Introduction of passenger rails to all townships
  - Minimising traffic jams
  - Road accidents
  - Minimise air pollution

#### **Group 4**

- Must be able to use bicycle anywhere within the city
  - From Amanzimtoti to KwaMashu
- Efficient intermodal system throughout the city
- Infrastructure to support intermodal system: bicycle parking at stations (Rail/Bus)
- Reduce parking in the city to discourage private cars
  - Convert parkades into flats (avoid/reduce)
- Safe and reliable public transport service
- In 20 years from now travel mainly by rail
- In 20 years from now we depend less on imported fuel
  - Use more local sources such as algae, sugar, renewable electricity

#### **Group 5**

- Work and live closer
- Fuel efficiencies
  - Hydrotune
- Public system
  - Sustainable
  - Efficient

#### **Group 6**

- Organised transport
  - Safe, cheap, reliable transport
  - People should live and work within the same area to avoid travel
- Shift tolls
- Shift passengers and freight to rail

#### **Group 7**

- Reliable, affordable, accessible transport
- Transport to be a social changer
  - Change aspirations
  - Ensure investments that drive the change
- Promote non-motorised forms of transport
- Design of stations
  - Clean

- Accessible
- Bus routes to be improved
  - People move closer to routes
- Low carbon, efficient vehicles
  - Electric/ hybrid/ LPG – for city fleet and private vehicles
- Adopt international best practices
  - Integrating different transport modes
  - Tickets for multi-modal use
- Local initiatives
  - Carpooling
  - School bus transport
- Apps/ Games to promote awareness on safety on road/ rail use

## **Annex B: Flip chart sheet discussion notes -Strategies**

### **Group 1**

- Better regulate residential transformation of CBD
- Develop alternate Fuel Sector
- Manage travel demands
- LED
- Tackle the taxi today
  - To separate road users – road space allocation

### **Group 2**

- Improvement of public transport
  - For the encouragement of more people using public transport

### **Group 3**

- Reduce parking in the city
  - Parkades to flats (avoid/reduce)
- Regulation to have only fuel efficient cars (improve)
- Research into hydrotuning and similar technology (improve)
- Massive awareness campaign to change attitude towards public transport and obey rules(shift)

### **Group 4**

- Incentives such as Carpool lanes and toll discounts
- Discouraging private car use
  - Reduction of parking in CBD
- Promote and expand public transport systems
  - Private taxis made to be cheaper and safer and organised
  - Introduce monetary incentives to transport companies

### **Group 5**

- Conversion of public vehicles to CNG
- Subsidy for the purchase of fuel efficient vehicles

- Incentives for bus drivers

#### **Group 6**

- “Permaculture” reducing need for communities to travel
- Total re-engineering of train transport system
  - Improving accessibility
  - Pulling consumers to use trains
  - “Special” trains to attract commuters
- Promoting non-motorised transport within the city
  - Make city safer for walking/ cycling
- Punitive measures
  - Congestion charges to reduce cars or private vehicles