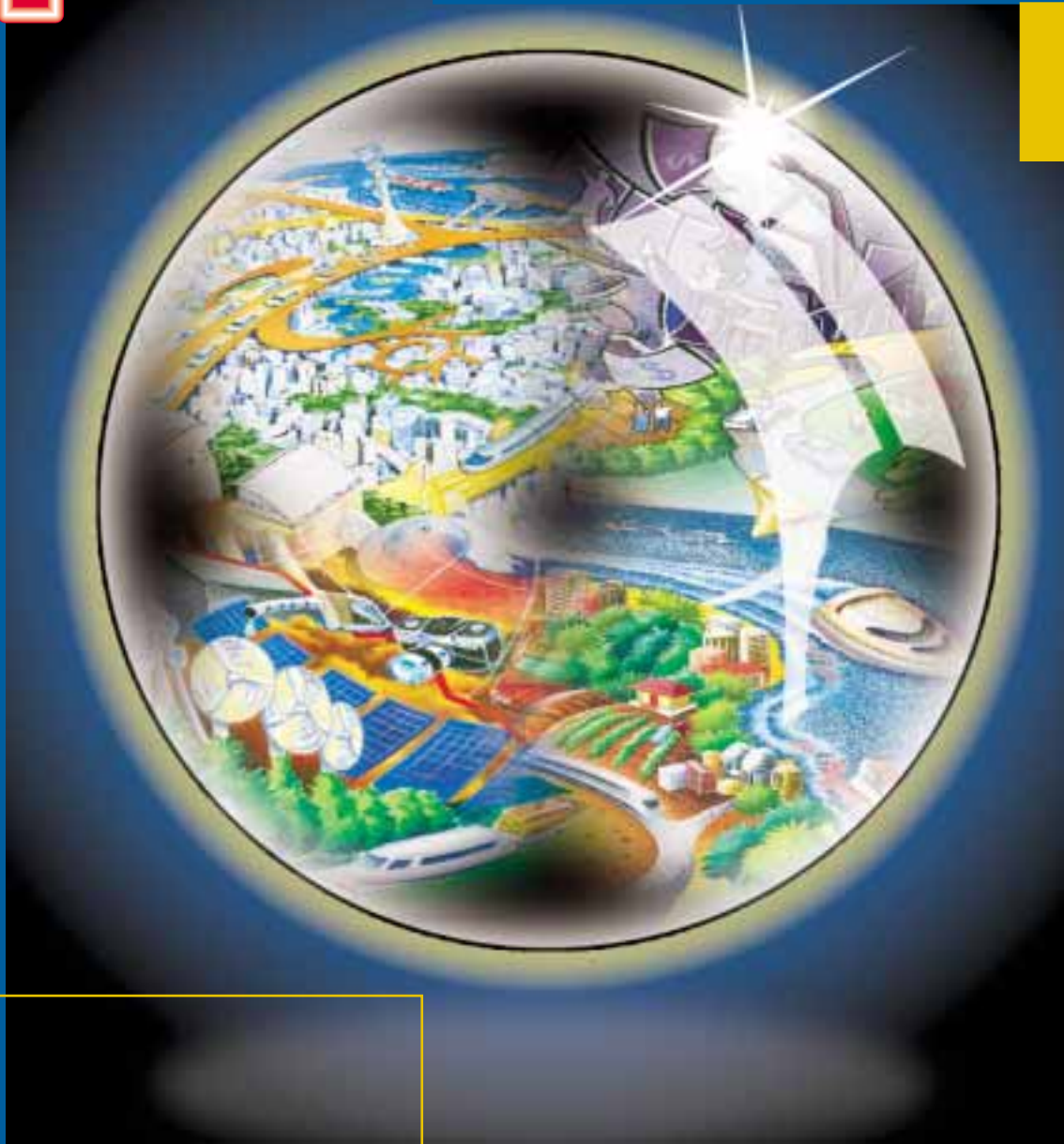


# 4

# SEEABLE

# FUTURES



**Transport Portfolio Scenario-Based  
Planning for the Queensland  
Department of Transport and the  
Queensland Department of Main Roads  
2000 - 2025**

***There is only one thing  
about which I am certain,  
and that is that there is very little  
about which one can be certain.***

***Somerset Maugham  
(1874 - 1965)***

## Foreword

Queensland Department of Transport (Queensland Transport) and the Queensland Department of Main Roads (Main Roads) recognise that the future is far from certain. The unprecedented pace of change means that organisations such as ours cannot simply rely on extrapolations of past trends in planning for the future.

The decisions we make today will directly shape our ability to meet our customers' future needs, and these decisions are themselves shaped by the assumptions we make about the future. It is therefore important that we have tested our assumptions about the future by reviewing a diverse range of plausible futures and the challenges and needs associated with each. Scenario planning is a useful tool for doing this.

Scenario planning helps us to understand the forces that drive and shape the future. By telling stories about plausible futures, scenario planning forces decision-makers to consider their plans against a range of possible outcomes. Rather than forecasting or predicting a particular future, the use of scenario-based planning allows an organisation to experience and learn from a range of futures.

The process jointly undertaken by Main Roads and Queensland Transport over a six month period resulted in the development of four scenarios – SuperCity, Coastal Bloom, Carbon Crunch and Global Bust. While the scenarios are a significant tangible output from the scenario planning process, these are merely tools that will be used in the coming months to test our planning and policy settings. This will involve the continuation of the type of collaborative activities that both departments have undertaken during the process.

While working closely together over a period of six months to develop the scenarios, senior executives from both Main Roads and Queensland Transport have strengthened the working relationship between the two departments. It is planned to build on this level of cooperative activity when the portfolio implications of the scenarios are further explored.



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### The Scenarios



#### SuperCity

- ➔ 4M+ people in SEQ
- ➔ High quality of life
- ➔ Growth economy Australia's second city
- ➔ Travel demand growth equals population growth
- ➔ Pressure on the urban transport system



#### Coastal Bloom

- ➔ SEQ quality of life decreases
- ➔ Migration from interstate, SEQ and overseas to coastal Queensland
- ➔ Growth concentrated along coast — Noosa to Cooktown
- ➔ Economy based on global services and tourism
- ➔ Travel demand is higher than population growth
- ➔ Major new demands on transport infrastructure

## A Snapshot of Scenario Planning in the Transport Portfolio

A joint Queensland Transport/Main Roads Project Team was established to research and develop Transport Portfolio scenarios for the next 25 years. The scenario planning process involved the development and exploration of plausible futures that could markedly affect how we connect people, goods and services. The process was not aimed at articulating a preferred future, nor was it aimed at determining the most probable future. The point of scenario planning is to create plausible test environments for potential strategies and policies, as a means of improving the quality of decision making. It challenges us to understand the unstated assumptions we traditionally make about the future and allows us to test whether our plans are robust in other futures.

A Steering Group comprising six senior managers from each department and five external members provided direction to the Project Team. A Working Group of 60 QT and MR managers participated collaboratively to support the development of the scenarios and explore the transport implications.

The Project Team extensively researched the wide-ranging factors that potentially impact on the transport challenge. The final product of the scenario planning process consists of four scenarios, a surrounding report and accompanying analysis. However, more important to the portfolio is the increased understanding gained by staff and management of the potential for radical changes in the needs of Queensland communities as the result of changes in technology, demographics, business practices and the like. By challenging and testing our unstated

#### Scenario Planning

##### DOES

- ➔ Identify key drivers likely to shape our future
- ➔ Gauge the impact of key drivers
- ➔ Engage members of the organisation in dialogue about the future
- ➔ Build shared understanding of potential impacts and implications of change into the future

assumptions we are more likely to develop portfolio-wide plans and strategies which are sufficiently robust to be useful in a range of futures.

### The Focus

The primary strategic issues or decisions facing an organisation provides the focus for scenario research and development. These issues are expressed as a question about the future that the scenarios are expected to answer or illuminate. The focal question selected for the project was:

***How will we be connecting people, goods and services in 25 years and what will that mean for transport?***

This question became the focus for over 100 interviews and extensive research, and guided the development of the scenarios.

### The Future

In many ways, the report merely marks the real start of scenario planning in the portfolio. The next steps include:

- ➔ developing a vision for the Transport Portfolio;
- ➔ further exploring the implications of the scenarios for the portfolio;
- ➔ using the outcomes of the scenario planning process to inform strategic planning in Main Roads and Queensland Transport;
- ➔ using the outcomes of the scenario planning process to inform policy development and organisational planning activities within Main Roads and Queensland Transport;
- ➔ developing an on-going scenario planning capability within the portfolio that enables indicators regarding the scenarios to be developed and monitored and for scenarios to be adjusted to reflect changing circumstances;
- ➔ ensuring that the lessons and implications learned in the course of scenario development are communicated and understood by staff throughout the portfolio.

#### Scenario Planning DOES NOT

- ➔ Use straight line projections from past trends
- ➔ Predict a particular future
- ➔ Identify preferred futures



#### Carbon Crunch

- ➔ Global warming occurs
- ➔ Increased natural disasters cause insurance cost to rise
- ➔ Kyoto Protocol ratified
- ➔ Global Carbon Trading
- ➔ Low carbon technology
- ➔ Coal market collapses
- ➔ Urban form and urban transport patterns change



#### Global Bust

- ➔ Initial globalisation of Queensland economy
- ➔ Social & environmental concerns reglobalisation
- ➔ Protectionism introduced
- ➔ Global computer network failure – global market crash
- ➔ Shrinking export markets
- ➔ Low capability re manufacturing
- ➔ Rise in localism and sustainability
- ➔ Triple bottom line for business – people, planet, profit (social, environmental & economic costs and benefits equally important)

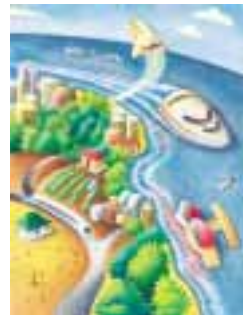




# Scenario Planning Process

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### Aims and Objectives

The scenario planning project aims to explore the range of potential future contexts for transport in Queensland, and to display these in the form of scenarios extending to the year 2025.

Queensland Transport and the Department of Main Roads jointly initiated the Scenario Planning project for the Transport Portfolio in June 1999. The objectives of the project were to:

- ➔ develop future scenarios for use in strategic policy and planning across the Transport Portfolio;
- ➔ develop a shared view and on-going dialogue about possible futures for the portfolio;
- ➔ develop a shared understanding of assumptions underpinning decision making and planning;
- ➔ challenge existing assumptions about the future;
- ➔ test the robustness of portfolio planning in a range of futures;
- ➔ develop effective relationships across the portfolio;
- ➔ assist the departments to develop future-oriented strategic plans;
- ➔ share resources and avoid duplication in scenario planning activities.

### Transport Portfolio

It is becoming increasingly difficult to meet all of the transport needs of the community and industry. Queensland has a growing population that has a high expectation of personal mobility. Expanding tourism, minerals and other commodity markets places increased demands on the transport system.

Other issues of significance to the Transport Portfolio include:

- ➔ continuing to build the relationship between Queensland Transport and Main Roads and Queensland Rail;
- ➔ positioning the portfolio to provide integrated solutions for the government;
- ➔ responding to whole-of-government agendas and community needs in order to ensure continued relevance;
- ➔ competing demands for infrastructure funds.

## Why Scenario Planning?

All organisations need to be well positioned to respond to uncertainty. It is no exaggeration to suggest that the only certainty is that things will not be like they were. Faced with the likelihood of a wildly different future, organisations must ask questions like:

- ➔ How do we plan and build infrastructure over the next two to five years in a way that will meet our customer's needs, not only in the short-term but over the life of the infrastructure?
- ➔ How do we develop services and corporate capabilities that will not be obsolete by the time they are implemented?

Such questions have become increasingly acute as the pace of technical, social and business changes increases dramatically. These questions are especially relevant to organisations within Queensland's Transport Portfolio, because of the need to develop services and plan and build infrastructure that will meet Queensland's transport needs for many decades.

By developing a number of stories about possible futures, scenario planning allows decision-makers to explore the shape and nature of the transport task with a variety of circumstances – some good and others we would probably not prefer. By exploring these possibilities and examining their implications for the portfolio, we will be better prepared to react in a more reasoned and thoughtful way should these futures (or aspects of them) come to pass. In this way, scenario planning allows decision-makers to 'remember the future'.

It is important to get our planning for the future right. If we are not alert to the range of futures that might lay ahead and plan accordingly, we risk putting in place an ineffective and inefficient transport system that will not meet the needs of Queensland 10, 15 and 25 years from now. Such an outcome could lead to a decline in the standard of living of Queenslanders, as we find ourselves unable to compete with those states and countries that got their transport planning right.

In short, it is critical that what we do now be informed by our future needs. Scenario planning is a valuable tool in this process.

*'No longer can planning be based on more of the same.'*

(Internal interviewee, QT/MR)

*'The Future doesn't just happen - it is shaped, modelled and influenced by our actions.'*

(D. Espie, 1999)

*Stories are the chosen vehicle for describing complex environments because they can express multiple levels of meaning and show how events might unfold in a particular way. Stories have a psychological impact which formal reports, with graphs, equations and tables often lack.*

*'Scenarios are stories rather than scientific analyses. The reliability of their content is less important than the types of conversations they spark.'*

(Arie de Geus, 1997).

*'The scenario process provides a context for thinking clearly about the impossibly complex array of factors that affect any decision. It gives managers a common language for talking about these factors starting with some 'what if' stories ... Then it encourages participants to think about futures as if it had already come to pass.'*

(Peter Schwartz, 1991)

### What is Scenario Planning?

Scenario planning is a way of envisaging what the future might hold for a particular organisation (or industrial sector, State, country or the like). It is an attempt to identify the major drivers that are likely to shape our future and to gauge the impact these will have on the organisation and its relationships with customers and stakeholders.

Rather than using straight-line projections from past trends, scenario planning attempts to tell stories about possible and plausible futures in which the organisation may have to operate. It is as much a 'process' of engaging the members of the organisation in a dialogue about those futures and their implications, as it is an effort to achieve a final 'product'.

Scenario planning is a means of recognising and challenging existing assumptions. It involves researching key strategic variables and factors that are changing or that could change. It then assembles the findings into qualitative pictures or 'stories' that show the range of future uncertainty that may result. These pictures or scenarios can then be used to test the resilience of strategies and plans.

### The Process of Scenario Planning

Despite its use of stories, scenario development follows a systematic sequence of steps. A focus for the work is first established, followed by research into the 'driving forces' – social, economic, political, and technological. Driving forces can be defined as major sources of change that impact on the future.

The next step is the 'scenario logic' or pattern of interactions that explain how the driving forces could combine to determine future conditions. The driving forces are divided into 'pre-determined elements' (i.e. what is inevitable, like many demographic factors that are already in the pipeline) and 'critical uncertainties' (i.e. what is unpredictable or a matter of choice such as public opinion). The critical uncertainties are prioritised according to importance and uncertainty.

## SCENARIO PLANNING PROCESS

This analysis is then used to create scenarios—stories of future worlds that convey a range of possible outcomes. The scenario implications are then identified and appropriate leading indicators are monitored on an on-going basis.

### The Advantages of Scenario Planning

Scenarios explore the possible future shape of the strategic environment, the future context that could play a large role in determining the success of decisions made today. They are effective because they:

- ➔ allow ‘thought experiments’ — thinking through the implications of different strategies in different future environments;
- ➔ allow learning and rehearsal of the responses that would be required in plausible future worlds (e.g. developing strategies that might influence particular outcomes);
- ➔ challenge existing strategy and policy thinking;
- ➔ describe the conditions that decision-makers may have to face — they do not describe the actions that policy-makers intend to take, or conditions that they would necessarily like to see;
- ➔ deliberately present distinctly different possible futures—although the actual outcome may indeed be a blend of elements from more than one scenario. Portraying the future worlds as strongly different from one another allows greater learning than would a less distinct blend;
- ➔ sensitise decision-makers to unwelcome or subtle changes in the environment. If a threatening potential future is clearly seen, it may lead to actions which deflect that possibility.

Ultimately, therefore, the measure of good scenarios is not whether they get the future right, but whether they lead to better decisions in the present. Scenarios improve the quality of decision making by:

- ➔ questioning assumptions;
- ➔ developing fresh insight;
- ➔ getting the ‘measure’ of problems;

### Forecasting vs Scenario Planning

#### Forecasting

Focuses on certainties and disguises uncertainties

Conceals risk

Results in single point projections

More quantitative than qualitative

#### Scenario Planning

Focuses on & legitimises recognition of uncertainties

Clarifies risk

Results in adaptive understanding

More qualitative than quantitative

*'The telephone has too many shortcomings to be seriously considered as a means of communication.'*

(Western Union memo, 1876)

*'To begin with certainties is to end with doubts.'*

(Internal interviewee, QT/MR)

*'Experience has taught us that the scenario technique is much more conducive to forcing people to think about the future than the forecasting techniques we formerly used.'*

(Andre Benard, former Managing Director, Royal/Dutch Shell)

- ➔ developing shared understanding;
- ➔ rehearsing responses;
- ➔ developing robust strategies effective if circumstances change.

Forecasting based on extrapolation from past trends that results in precise future predictions usually prove to be inaccurate. By contrast, scenario planning aims to build an understanding of how all the players and forces in the strategic environment interact as a system. While the pictures of the future developed through scenario planning may not be precise, they will usually expose a range of possibilities that otherwise would have remained hidden. **In short, scenario planning is based on the idea that it is better to 'get the future imprecisely right' than it is to 'get the future precisely wrong'.**

Scenario planning has been undertaken worldwide by corporations, governments, research institutes and not-for-profit organisations. Examples of Australian organisations that have undertaken transport-related scenario planning include Transport South Australia, Main Roads Western Australia, the National Transport Planning Task Force and the Australian Road Research Board. In Queensland, government departments that have undertaken (or are currently undertaking) scenario planning include Department of Natural Resources, Department of State Development and the Department of Primary Industries.

## Our Approach

### The Transport Portfolio Scenario Planning Process

In June 1999, the Directors-General of Queensland Transport and the Department of Main Roads approved a joint project to develop scenarios for use in the Transport Portfolio for the period 2000 to 2025.

The project was headed by a **Steering Group** comprised of senior executives in the portfolio and jointly chaired by Queensland Transport's Deputy Director-General, John Gralton, and Main Roads' General Manager (Strategic Policy and Development), Neil Doyle. The Steering Group also contained members external to the Transport Portfolio.

The project also established a wider **Working Group** including the Directors-General and other senior officers of the departments in the Transport Portfolio. The Working Group engaged in substantial dialogue and significantly contributed to the scenario planning process and outcomes.

A **Project Team** composed of officers from both departments was established to conduct research and develop scenarios and other materials for consideration by the steering and working groups. The project also engaged the assistance of a consultant with extensive experience in developing transport-related scenarios, Hardin Tibbs of Synthesys Strategic Consulting Pty Limited in Canberra.

More than 30 Project Team meetings were held to develop materials for consideration by the Working and Steering Groups. The Working Group met on six occasions to consider issues and proposals made by the Project Team and the Steering Group met five times to determine the direction of the process and the shape of the scenarios to be developed.

### Scenario Planning Project Objectives

- ➔ Develop future scenarios for use in strategic policy and planning across the Transport Portfolio
- ➔ Develop a shared view and on-going dialogue about possible future scenarios for the portfolio
- ➔ Develop a shared understanding of assumptions underpinning decision making and planning
- ➔ Develop effective relationships across the portfolio
- ➔ Assist departments to develop future-oriented strategic plans
- ➔ Share resources and avoid duplication in scenario planning activities
- ➔ Challenge existing planning assumptions

*'An organisation is the entire set of relationships it has with itself and its stakeholders.*

*An organisation is not a physical thing per se but a series of social and institutional relationships between a wide set of parties.*

*As these relationships change over time, the organisation itself changes... Since we are dealing with a system, a change in any one part potentially affects all other parts and the whole system itself.'*

(Mitroff & Linstone, 1996)

*'Our capacity to learn must be even greater than the capacity to change.'*

(Internal interviewee, QT/MR)

### The Focus

The primary strategic issues or decisions facing an organisation provide the focus for scenario research and development. These issues or decisions are expressed as a question about the future that the scenarios are expected to answer or illuminate. The focal question selected for the project was:

***How will we be connecting people, goods and services in 25 years and what will that mean for transport?***

This question became the focus for over 100 interviews and extensive research, and guided the development of the scenarios.

### Research

#### The Strategic Environment for Transport in Queensland

At the conclusion of the initial interview and information collection phase, the project team explored the way various driving forces were interacting to shape the future of the transport system. These inter-relationships were studied as a series of subsystems within the larger transport system. In addition to the 'obvious' approach of taking specific transport modes as subsystems, a diversity of other perspectives was also taken, for example looking at the systemic issues around congestion, the impact of e-commerce and internet-based freight logistics, and the prospects for remote and regional areas.



## SCENARIO PLANNING PROCESS

The strategic subsystems that were explored included:

<b>Transport modes</b> road air rail water public transport possible new modes	<b>Urban futures</b> congestion urban form prospects for infrastructure projects spatial trends	<b>Transport Technology</b> hybrid electric vehicles hypercars fuel cells ITS high speed trains ground effect vehicles	<b>Information Technology</b> internet e-commerce telecommuting
<b>Government</b> decline of nation state autonomy role changes from control to facilitation levels of government community engagement localisation of decision making balance between economic, social & environmental issues	<b>Economics</b> globalisation and export trade employment & the changing nature of work work in the knowledge economy e-commerce downsizing outsourcing and contracting	<b>Environment</b> global climate change urban air quality water availability in rural areas international responses to greenhouse emissions integrated impact assessments	<b>Social and Demographic</b> ageing baby boomer generation retirement patterns migration and immigration post-industrial values, ethics & spirituality social fragmentation nationalism

The main conclusions about each of these subsystem areas are described in Section 2 of this report.

The Transport Portfolio Scenario Planning project involved extensive research over a five month period.

### The research involved:

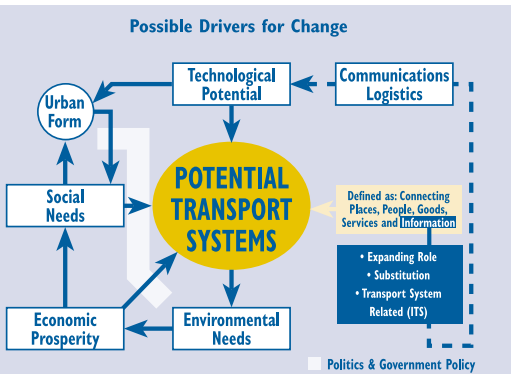
- ➔ Over 60 interviews with QT and MR senior managers & staff
- ➔ Over 70 interviews with external stakeholders, including experts from a wide variety of fields
- ➔ Extensive literature review
- ➔ Staff focus groups conducted in approximately 15 locations across the State
- ➔ E-mail input from a group of 50 QT and MR staff

### The research focused on:

- ➔ Exploring and understanding the current strategic environment, as a basis for identifying potential future developments
- ➔ The transport task for Queensland, taking into account:
  - the State's vast geography and climatic range
  - concentrated urban and coastal settlement
  - the small population in the West
  - the significance of primary industries, minerals, other commodities and tourism
- ➔ Identifying the 'right' questions to ask, such as:
  - What determines the transport task in Queensland?
  - What key forces shape the development of transport systems?

### The Focal Question

*How will we be connecting people, goods and services in 25 years, and what will that mean for transport?*



*This model represents the environmental scanning process undertaken to explore the driving forces that impact on how we will be connecting people, goods and services in 25 years time. Through this exploration, 'pre-determined' elements and 'critical uncertainties' were identified and investigated. From these, conclusions were drawn about the pattern, means and intensity of future travel.*

### Scenario Logics

The transport scenarios presented here are based on:

- ➔ a mix of 'pre-determined' elements, or future outcomes about which there is a high degree of confidence;
- ➔ 'critical uncertainties', or future outcomes which are both highly uncertain and very important to the strategic concerns of the Transport Portfolio.

The critical uncertainties, which give rise to the differentiation between the scenarios, are related to three key dimensions – the pattern, means and intensity of travel.

- ➔ The **pattern of future travel** is a function of changing economic and social patterns, expressed through spatial choices such as emerging settlement patterns, the location of work and the evolution of urban form.
- ➔ The **means of future travel** is a function of the wealth of society and the continuing search for improved quality of life, expressed through choices such as new technology adoption, modal choice, environmental protection and attitudes to public transport.
- ➔ The **intensity of future travel** is a function of factors influencing demand, such as economic growth, population dynamics, the location of opportunities and relative prices.

The four scenarios represent a mix of possible outcomes along these uncertainty dimensions. These are presented in a simplified form in the following table:

	SuperCity	Coastal Bloom	Carbon Crunch	Global Bust
Pattern	Urban	Coastal	Consolidation	Urban Flight
Means	ITS + Public Transport	Car intensive	New technology	Ageing technology
Intensity	High	Very high	Selective impacts	Low

## The Resulting Scenarios

In response to the focal question 'How will we be connecting people, goods and services in 25 years, and what will that mean for transport?', four State-wide scenarios for use in future planning and policy development within the Transport Portfolio were developed. The scenarios address a range of State-wide transport implications resulting from different sets of future outcomes. These scenarios are entitled:

- ➔ SuperCity;
- ➔ Coastal Bloom;
- ➔ Carbon Crunch;
- ➔ Global Bust.

Broadly, the **SuperCity** and **Coastal Bloom** scenarios describe two worlds in which demographic and locational trends (shaped and abetted by economic and business drivers) lead to the development of significantly different transport challenges from those currently facing Queensland.

In the case of **SuperCity**, the challenge is to meet the transport needs of more than 4 million people located in the South East corner of the State.

In the **Coastal Bloom** scenario, the challenge is to respond to the development of a series of medium-sized urban areas, some interlinked, up the coast north of Brisbane in an increasingly globalised economy.

The **Carbon Crunch** and **Global Bust** scenarios are more related to the effect on the transportation system posed by outside 'shocks'.

In the case of **Carbon Crunch**, the transport challenge is shaped by the need to react to international pressures regarding ecological and environmental concerns, including those relating to greenhouse emissions.

The **Global Bust** scenario examines the transport implications of a world-wide and sustained economic downturn.

**The detailed scenarios can be found at Section 3 of this report.**

*Research indicated that there are significantly different opinions regarding the plausibility and possibility of these issues. For example, 'flying cars' which would dramatically alter the transport task, are currently at prototype stage of development with predictions that they will be available at reasonable cost within 2 - 5 years. However, other sources argue that flying cars will not be viable until an alternative energy source is available and ITS technology is capable of regulating flight paths.*

### Wildcards

There is no certainty in planning. There are of course, certain developments that could occur, that are not included in the scenarios. Some of these represent transformational changes. If they come about they will have enormous impacts on all scenarios.

These changes or 'discontinuities' are sometimes called 'wildcards'. They include developments such as breakthroughs in transport or energy technologies, global wars or epidemics, or a wildly changed political or social environment.

Breakthroughs in transport or fuel technologies could have a revolutionary impact on the future transport task. Likewise, a modern 'Black Plague' which wiped out half the population of Europe in the 13th century would drastically alter the transport future, as would other major global calamities.

If the 'flying car' becomes a feasible and affordable mode of transportation, the task set for transport planners would be completely different from that which they face today.

A decision was made not to base any of the scenarios on these more speculative wildcards. To do so would have made the scenarios less plausible and would have meant that many people in the organisation would not be able to engage as effectively in the process of envisioning the future. Also, to incorporate some of the more dramatic wildcards into the scenarios would distract from the understanding to be gained regarding the impact over time of the principal drivers, which form the heart of the logic of the four scenarios. People might spend more time debating whether such things as world plague, flying cars or nano-technology are possible, rather than examining how other key drivers could impact on the future. If scenarios are based on drivers that are regarded as implausible, then the tendency is for people to reject the whole scenario.

## SCENARIO PLANNING PROCESS

Nonetheless, certain wildcards could have a huge impact on the future of transport. For that reason, they need to be monitored and periodic consideration given to whether or not the scenarios require modification in light of underlying developments affecting the wildcards.

These 'wildcards' have the potential to impact on the transport system. While they have not been included in the scenarios, they do need to be monitored in the future.

### 'Transporters'

- ➔ Flying car or jet car
- ➔ Gravity shielding
- ➔ Magnetic levitation trains
- ➔ Molecular transporters (Star Trek-style transporters)
- ➔ WIG vehicles operating on rail corridors

### Energy

- ➔ Cold fusion
- ➔ Zero point energy

### Epidemics

- ➔ World-wide plague/influenza
- ➔ Ebola-type fever/something more virulent than AIDS

### War

- ➔ Nuclear/biological/weather/electronic(IT)
- ➔ Religious
- ➔ Invasion from Asia
- ➔ Nuclear contaminated oil fields

### Refugees/migration shock

- ➔ Displaced millions from Asia, Africa, India, South America

### Natural disasters

- ➔ Catastrophic earthquake(s), tidal waves, cyclones
- ➔ Large meteorite strike

### Industrial disasters

- ➔ Major oil spill in reef
- ➔ A bigger version of Chernobyl impacting areas of greater population

### Political

- ➔ States abolished
- ➔ States secede
- ➔ Regional Government
- ➔ Tiers of government – 3 to 2 or 1
- ➔ The emergence of a World Government in response to inability of independent governments to manage their nations
- ➔ Terrorism; anarchy

### X-Files

- ➔ UFOs arrive
- ➔ Search for Extra-Terrestrial Intelligence (SETI) succeeds

### Nanotechnology

- ➔ Universal replicator

### People's Values Dramatically Change

- ➔ Most people stop working for money
- ➔ Massive increase in spiritualism impacting how we work and interact with each other

### Interview Quotes

From the interviews conducted with senior managers from Queensland Transport and Main Roads.

*'The assumptions held by a person will cause them to view the world with a particular set of value-based priorities.'*

*'The smart idea is to pursue multiple paths and not be afraid to change direction.'*

*'The community doesn't accept tolls. They see them as arbitrary - 'Why this road? Why this community?' Bridge tolls are more acceptable. The community sees the benefit.'*

*'Big road announcements no longer have political mileage. There is a political reaction to them.'*

*'The fork in the road for transport is congestion in the CBD and on major arterials.'*

### Underlying Questions in Transport Policy Development

The focus of scenario planning is not to make judgements about what is 'right or wrong', rather to provide opportunities through interviews and discussions, for people's mental models (the way they see the world) to be shared and better understood. The interviews conducted and the dialogue that occurred during the process highlighted that people came to the discussions with a wide range of assumptions, beliefs and values. This brings richness to the discussion. However, it can also be the source of disagreement, confusion and uncertainty. When it comes to making key decisions, developing policy or designing strategies, it is important that those involved understand the range of assumptions regarding key issues and how their own values and beliefs influence the results.

In the scenario planning process, a number of 'frameworks' or 'filters' that affect the way people make decisions became evident. These 'frameworks' include:

- ➔ environment;
- ➔ social (e.g. access and equity);
- ➔ funding;
- ➔ congestion.

In the transport policy and planning process, each of these can act as 'inputs' – each is 'rationally' considered and decisions are made to achieve the best outcome possible. Political platforms can often develop around these 'frameworks' so that any one area takes on a higher profile in decision making and policy development.

People need to be aware of the assumptions or values they hold or the 'hierarchy' of importance they might attach to these 'frameworks'. Without this level of awareness, it is probable that people unconsciously take positions without adequately understanding or considering other views or mental models. It is clear that significantly different transport system outcomes eventuate when one particular 'filter' takes

precedence over others. For example, someone with strong environmental ‘filters/values’ is likely to make different decisions from someone who is driven primarily by economic values – both will have considered the same inputs but may draw totally different inferences from the data.

The process of thinking about the future of transport is not merely a matter of isolating ‘driving forces’ and considering their potential interactions. There are a number of areas where there are significant questions of interpretation — where the available information is inconclusive or contested. During the scenario planning process, a number of complex issues and questions arose around which there is debate, uncertainty or multiple perspectives. These questions reveal important sources of uncertainty in trying to anticipate future developments. The aim here has been to identify and articulate these uncertainties rather than attempt to answer them, since in many cases there may be no definitive answers. However, a partial range of possible answers or outcomes is reflected in the scenarios.

### Key Questions and Pivotal Policy Issues that Emerged

- ➔ How can the policy and planning process ensure that decision makers hold shared assumptions and mental models around key transport-related issues, including environmental, social, funding and congestion?
- ➔ Should government make decisions on behalf of society, or should government only facilitate what society wants it to do? What might partnerships in decision making look like in the future? What is the role of Government in safeguarding community benefits/public interest in a world of privatisation and commercialisation?
- ➔ How do potentially controversial and politically sensitive transport issues (e.g. river crossings, new roads, freight corridors, road pricing, demand management) get on the agenda for public dialogue and debate? How does the media impact on public dialogue?
- ➔ How will the Transport Portfolio determine future growth in the use of the car/road system? Does it matter if there are different models used across the portfolio?

*‘SEQ has a natural connection from Redcliffe to the Gold Coast and the inland to the upper reaches of the Brisbane River. This is not being exploited for public transport.’*

*‘Environmental pressures will see great utilisation of rail freight; and political environmental issues will see greater use of rail in the public transport sector.’*

*‘We must go the extra mile for remote communities.’*

*‘Vehicles will be small, private, family sized for as long as anyone can plan.’*

*‘The use of waterways for public transport is being stifled by allowing the river front to be totally used for commercial or domestic construction.’*

*'22% of people do something else on the drive to work and 35% do something else on the way home. We need to base our planning on what is happening in society or we will get it wrong.'*

*'There will be an even greater gap between the 'haves' and 'have nots' in the future. We will be judged on how well we looked after the 'have nots.'*

*'Private enterprise will only service financially viable transport routes, requiring Government to heavily subsidise routes designed to meet societal needs.'*

- ➡ Is travel demand management an absolute requirement or is it a response related to social, economic and environmental externalities specific to the current transport technologies and urban form?
- ➡ What values drive public transport policy in Queensland? Do all public transport providers share a common view of an integrated public transport system? What is the role of the Transport Portfolio in ensuring a sustainable public transport system into the future?
- ➡ How will government allocate scarce funding; and what whole-of-government responses will be required in the future? What impacts would whole-of-government funding have on the Transport Portfolio?
- ➡ How can the portfolio continue to build effective relationships between Queensland Rail, private operators and Queensland Transport and Main Roads to ensure efficient and effective integrated transport outcomes for the future?
- ➡ How can the Transport Portfolio as a whole become better positioned to lead, manage and respond to technological change? (e.g. ITS, new vehicle technology, information systems, e-commerce use and implications)
- ➡ How sustainable is the current structure of the Transport Portfolio? What key factors need to be considered regarding duplication, policy, planning and infrastructure development across the portfolio and whole-of-government?
- ➡ What would whole-of-government project focus and funding at Cabinet level mean for individual portfolios or departments?

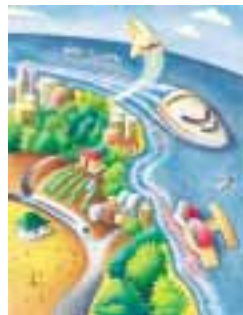


# Research Findings

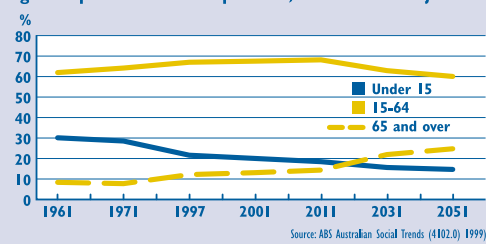
The information from the environmental scanning process presents an overview of the possible and plausible trends and forces shaping the future over the next 25 years. This material has been gathered from interviews, literature searches and focus groups.

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Age Composition of the Population, Estimates & Projections



### Implications for Transport Portfolio

- ➔ The ageing population will retire to high amenity areas of the State
- ➔ Travel will be important in retirement
- ➔ An ageing population will place significant stress on government funds in the areas of health, welfare and access to infrastructure and services
- ➔ Older people will play key roles in community decision making

## Social & Demographic Factors

The following key forces have been identified as having major impacts for the future:

- ➔ ageing population;
- ➔ population growth;
- ➔ population distribution;
- ➔ immigration;
- ➔ employment and the changing nature of work;
- ➔ wealth distribution;
- ➔ community and generational values;
- ➔ nationalism;
- ➔ spiritualism.

### Ageing Population

In June 1999, the world's population reached 6 billion people. By 2050, the world's population will be 8.9 billion (UN Publications, 1996). This figure shows a significant decline in world population growth rates. In much of the developed world, lower birth rates will eventually lead to a net loss in population and a dramatic increase in median age. This signals a trend towards an 'elder boom' and the implications of this are profound. From 1946 – 1971, only 8% of Australia's population was aged 65 years or over. By 1997, this had climbed to 12% and this age group is projected to climb rapidly after 2011 until it exceeds 21% of Australia's population by 2031 (Australian Bureau of Statistics (ABS), 1999a). Ageing-related social, political and economic issues will be a focus internationally and some of the areas that will experience the greatest impacts will be health, housing, financial services and manufacturers of consumer products.

The effects of an ageing population will be felt in the workplace as ageing 'baby boomers' and Generations X and Y will remain in the workforce beyond traditional retirement age. The ageing population is wealthier and healthier than any previous generation. They are better educated and are canny consumers. Ageing 'boomers' hold a strong conviction that 'ageing well' is their right. They desire 'retirements' where they are busy, contributing their skills and experience,

contributing to their communities and ensuring that the world is a fit place for their grandchildren. Their plans include travel and touring and adventure, exotic locations, historic sites and pilgrimages are favoured options for over 65s. The fastest growing internet user group in the USA is people aged over 50 years.

In Queensland, the current trend suggests that by the year 2020, 45% of the population will be aged over 55 years.

### Queensland Population Growth and Distribution.

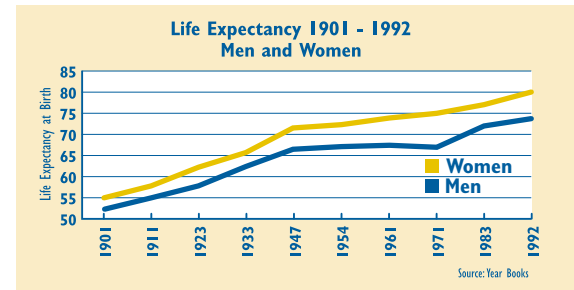
Currently 85% of Queenslanders live within 50 kilometres of the coast. Only three large cities exist further than 50 kilometres from the coast - Mt Isa, Toowoomba and Charters Towers. Since 1991, Queensland has experienced significant population increases due to interstate migration, with population increasing by 40 207 per annum between 1991 and 1996. In 1998, this dropped back to an increase of 16 000 per annum. However, over that time, overseas immigration to Queensland has also increased. Overall, 80% of population growth occurred in the South East corner (Department of Communication and Information, Local Government and Planning (DCILGP) 1999b).

Queensland is perceived as offering better quality of life opportunities - good climate, clean environment, available employment, cheaper cost of living, adequate services - than other Australian centres.

### Immigration

Overseas immigration to Queensland increased from 8000 per annum in 1991–1996 to 18 903 in 1998 (DCILGP, 1999a, 1999b). Migration patterns are capturing the attention of governments around the globe. ‘Guest workers’ are fast becoming the labour force of the global economic village as transnational companies create a work force of global citizens. In many parts of the world, this has created economic, social and political concerns regarding undocumented and unskilled workers.

However, the big issue for the 21st century will be how governments address the issue of an increasingly mobile, global population of professionals who view themselves as global citizens and expect to



### Implications for Transport Portfolio

- ➔ Probable large increase in population growth in SEQ and Coastal Queensland
- ➔ Urban form leading to transport advantaged and disadvantaged
- ➔ Demographic spread – increasing movement between more dispersed origins and destinations
- ➔ Equitable services to less populated areas

### Implications for Transport Portfolio

- ➔ Probable significant increases in immigration
- ➔ Community diversity
- ➔ ‘Global citizenship’ and people’s need to travel the world for work will impact on access to transport services

*'The Americans have need of the telephone but we do not. We have plenty of messenger boys.'*

(British Post Office Chief Engineer Sir William Preece, 1876)

work in any country as projects, profits or productivity demands. These global citizens are not interested in being absorbed by the host country and fully intend to return home or move onto the next destination.

Traditionally, world migration patterns show that large groups of poor, mostly unskilled people migrate to richer countries to improve their prospects or to escape persecution. Research shows that these groups usually contribute more to the overall economy than they take from it. Today more than 125 million people live outside their country of origin. It is predicted that by 2020 that number will have doubled as highly skilled, highly mobile workers travel the globe in search of career development. There will be policy (and economic) tensions for governments grappling with immigration policies that do not recognise global citizenship (The Global Network, 1999).

Australia has one of the most multicultural populations in the world. Sydney is already attracting transnational companies which want to take advantage of its well educated, multi-lingual population.

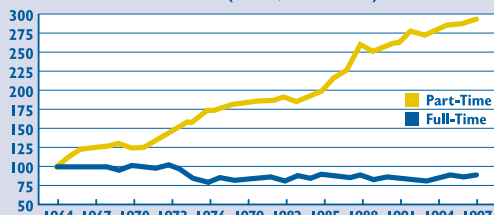
### Employment and the Changing Nature of Work

What will 'work' look like in 25 years time? Some estimates state that 70% of the jobs in 2025 have not been thought of yet.

There have been significant changes in employment patterns in Australia over the past 20 years. All indications are that transformation in the nature of employment and of work itself will continue. Some of the indicators regarding employment changes include:

- ➔ in 1998, 25% of full-time workers worked more than 49 hours per week;
- ➔ in 1999, part-time jobs accounted for 26% of employment;
- ➔ small businesses have provided over 50% of all private sector employment since 1990;
- ➔ casual employment increased from 19% in 1995 to 27% in 1999;
- ➔ the services sector provided 93% of jobs created in Australia between 1985 and 1995 – over the past 30 years, jobs in the goods industries

**Full-Time and Part-Time Employment/Population Ratios  
All Persons Australia  
1964-1997 (Index, 1964=100)**



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have fallen by 25% while employment in the personal services and knowledge-based industries has risen from 25 % in 1966 to over 44% of the jobs market in 1996;

- ➔ female participation rates in employment have risen from 40% in 1964 to 54% in 1998 when women comprised 43% of the labour force;
- ➔ in 1998, 48% of women with pre-school age children were working;
- ➔ in 1997, 27% of full-time workers took work home and 6% worked principally from home;
- ➔ by 1999, 12% of employees were individual contractors.

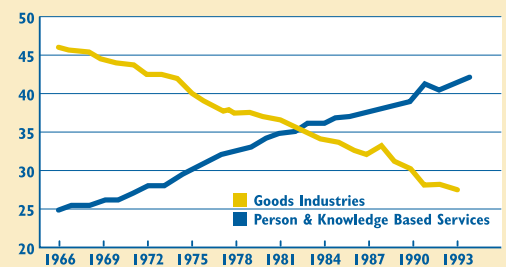
(ABS, 1999b, 1999c; Sloan, 1993; O'Connor, 1993; Kemp, 1994, 1996; DBIRD, 1995)

By far the greatest force impacting on the world of work is information technology. The internet, e-commerce and the advent of globalisation mean that where things happen, who they are done by, how they are tailored to meet the customer's needs and who or how they are controlled result in profound changes to employment patterns and the nature of work.

Today in Queensland, the bus schedules for some areas are developed in the UK; calls to Hervey Bay taxis are answered through a Call Centre on the Gold Coast; pay an insurance bill by phone and the operator sits in Tasmania. USA payrolls are processed in Asia; forget 24 hour businesses - IBM has invented the 48 hour day. At 6pm in Beijing, Java software programmers download to IBM in Seattle, where at the end of the day, that team downloads to a team in Latvia and they do likewise to colleagues in India. At the end of their shift the data is returned to Beijing in time for the morning shift (Friedman, 1999). Twenty four hours a day, seven days a week is already here in many industries.

The rise in part-time and casual employment signals a trend for the future already recognised and affecting the thinking of the Federal Department of Finance. One economic forecasting group paints a picture of a world where 30% of people are in full-time, secure employment, 40% move in and out of temporary, casual or contracted jobs and 30% of people never have a job. The move towards temporary,

Industry Sectors in the Australian Economy 1966-1993  
(Shares of total employment by various classifications)



### Implications for Transport Portfolio

- ➔ Income/employment disparity will change the transport task. 'haves' and 'have nots' will have different transport needs
- ➔ Demographic spread, determined by income, will change the transport task
- ➔ Lifestyle preferences will drive transport demand and choice of mode

- 30% - full-time employment
- 40% - contingent workers; casual & temporary workers
- 30% - never employed

(Commonwealth Department of Finance, unpublished)

### Implications for Transport Portfolio

- ➔ The new paradigm around work and employment (e.g. contracting) will change employment practices in government
- ➔ Information technology will impact on travel demand – but likely to result in fewer but longer trips
- ➔ The ‘income rich/time poor’ and ‘income poor/time rich’ mix will change the transport task

casual and contracted work is already evident. In many cases, workers now choose this option, driven by career development needs, and a need to operate at the leading edge. Contracted project work, based anywhere in the country or overseas is the norm for many workers.

Young people especially have a different set of values around work. They look for organisations which offer learning and challenges. In the USA, the brightest young graduates no longer choose the traditional Fortune 500 companies but look to young, entrepreneurial organisations. Values do not include company loyalty or ‘jobs for life’. Many workers in the 21st century will place flexibility, quality of life and learning on the top of their employment requirements and will remain masters of their own destiny through contracting rather than trust an organisation to ‘look after them’. This group of people will be ‘income rich but time poor’.

However, for people with fewer skills, this move towards part-time and casual employment means increased insecurity and lower income. They will be ‘income poor but time rich’. A significant number of jobs will be created to service the needs of the ‘income rich’.

### Wealth Distribution

The changing nature of employment and the divide between income rich and poor signals a potential future issue for government and communities. One view identifies the rise of movements such as ‘One Nation’ as signifying dissatisfaction within sectors of the community of perceived inequities in the social and economic fabric of society. According to the ‘Gini Index’ used by the OECD to measure social indicators, Australia has the fourth highest level of poverty across OECD countries and has the highest level of welfare payments (Shann, 1999).

In the future, the gap between ‘haves’ and ‘have nots’ is likely to be evident through:

- ➔ location - where people live;
- ➔ levels of education and health;
- ➔ ability to choose transport and other services;

- ➔ stress-related mental health issues;
- ➔ access to information;
- ➔ access to services;
- ➔ increased crime against property.

### Generational & Community Values

There have been significant values shifts over the years and nowhere are they more apparent than the attitudes and values of different generations. Research from the USA Human Resources Institute and Australian author Hugh McKay signal profound differences in values held across generations (Read, 1998). These issues are critical when decisions are made regarding the type of workplaces and the type of cities and towns we are developing for the future.

If decisions are made by 'baby boomers' (those born 1946 – 1964), and reflect only their values and aspirations, then will our cities, our towns and our organisations attract and keep bright young people? This generation, termed 'Click & Go' or 'the Net Generation' is the first to grow up with computers and will be the first to fully and profitably exploit labour saving and information sharing technology, according to Don Tapscott, author of 'The Digital Economy' and 'Paradigm Shift' (Tapscott, 1993, 1996).

Values and attitudes of 'baby boomers' have shifted with age. Trends to consider for the future include:

- ➔ volunteerism - living a meaningful life and doing things for others;
- ➔ spirituality - seeking answers through traditional and non-traditional forms of worship; pilgrimage travel; less driven by materialism;
- ➔ entrepreneurship - wanting to remain productive; using skills and experience; starting home-based businesses; consulting; small business;
- ➔ community activism - supporting causes; lobbying; taking on community responsibilities; strong sense of making the world a better place for future generations; political and legal 'savvy';

*Lifestyle comes first if you were born after 1965!*

### Implications for Transport Portfolio

- ➔ Government will need new ways to engage in decision making with communities
- ➔ An increasing challenge will be helping communities to balance environmental, economic and quality of life agendas
- ➔ Values of different age groups will impact on the transport task in communities – especially public transport modes
- ➔ The Transport Portfolio will need to implement changes in workforce planning and practices to attract young people and offer them the career challenges and learning they value
- ➔ Increase in project teams comprising part-time employees and external members

*'With any initiatives, take the community along for the ride – walking next to them rather than leading them is an effective strategy.'*

(External interviewee, Local Government)

- ➔ learning and personal development - retirement planning; further education; adventure, luxury and educational travel;
- ➔ nostalgia for the past - old music, movies, places, reunions; genealogies; moving back to place of origin.

With an ageing population, this cohort of people will be a powerful and well informed force in Queensland communities.

### **Nationalism**

Another key value to consider for the future is that of nationalism. In 1950 there were 58 nations in the United Nations. In 1999, there were 185. The internet and the global economy have been major forces in 'fracturing' countries into new nations. The net makes nationalism easier to express and share.

Globalisation of the economy makes it easier for small places, with something valuable to sell, to 'go it alone'. With regional security arrangements, small countries do not need to bother with their own armed forces. However, this new nationalism, can have catastrophic effects. Currently there are 90 wars occurring across the globe and 90% of casualties in today's wars are civilians (Lateline, 1999).

While transnationals move across the globe conducting business and talking money, nationalists across the world hold values rooted in ancient grievances, religious difference and loyalties. While it is possible to handle nationalistic fervour in a relatively civilised fashion, the risk for small isolated nations is that they will be left out of the transnational confederations (e.g. USA and Western Europe) and become economically and socially disadvantaged.

### **Spirituality, Ethics and Values**

A resurgence of interest in religion and spirituality is occurring around the world, especially in countries such as China and the former Soviet Union where religious observances have been suppressed. Everywhere, people are searching for meaning in their lives. In the USA, religious radio has seen an increase of 44% in the past 10 years and there are now 1648 religious radio stations. Researchers at Kings College, London



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have identified more than 500 new religious movements. Religious sales over the internet are booming and in 1997, over \$US3 billion worth of religious merchandise was sold through retail stores in the USA.

The interest is not only in 'organised' religion. As more people exchange materialism for spirituality, ethics and values take on meaning in workplaces and business. The Clemenger Report identifies two key characteristics (as well as profitability) that Australians look for when investing in the share market:

- ➔ companies that have good employment practices and treat staff well;
- ➔ companies that demonstrate strong civic and environmental values.

(Clemenger Melbourne, 1998)

With 40% of Australian adults owning shares, this is a powerful force for business to adopt explicit ethical business values and practices. In fact, 'triple bottom line' (people, planet, profit) reporting is expected to be mandatory on the New York stock exchange within the next five years.

## Government

Globalisation - the increasing integration of the world's economies through trade, finance, transport and communications - is changing the shape and role of national governments. Geography is no longer the defining element. It is not enough to think locally for the 21st century. 'Think globally, act regionally' is the call for the new millennium because domestic markets and domestic companies are a thing of the past.

### Federal Government Reforms

In Australia in 1996, reforms within the Federal Government signalled new roles for federal, state and local governments. The moves towards devolution of funding and responsibility; national competition policy reforms; new accountability measures; a customer-driven focus; integration of services and tax reforms have changed the way government does business. There has been constant debate for many

### Implications for Transport Portfolio

- ➔ 'Triple bottom line' reporting (equal business focus on people, planet and profit outcomes) requires values shifts and different performance measures
- ➔ Strong environmental values exist in the community – how can they be harnessed to ensure a sustainable transport system?

*'About the USA: Founded in 1789, the USA is the most successful nation in the history of the world and has been a beacon of democracy and opportunity for over 200 years. Headquartered in Washington DC, the USA is a wholly owned subsidiary of Microsoft Corporation.'*

(Anonymous spoof of Microsoft from the internet reported by Friedman, 1999)

### Interview Quotes

*'We need a more genuine whole-of-government approach with the ability to take in external perspectives and new ideas. This approach is essential in the development of 'full' transport solutions.'*

*'A Department of Infrastructure is very close to politicians' hearts.'*

*'Government needs to take a long-term view. Series of short-term decisions will be damaging for transport, the community and the environment. Government needs to be backed by a good public service.'*

*'Customers in Australia want hi-tech and hi-touch. That is, they value the relationship with the service provider.'*

(Telstra Survey, 1998)

*'Sooner or later all tyrannies crumble. Those that keep putting their customers on hold tend to crumble sooner.'*

(Advertisement in the Washington Post announcing Star Power, a new phone, cable and internet service provider)

years regarding the viability of the three spheres of government in Australia. While most pundits believe that this structure will not continue, few are willing to predict when such a change might occur.

### **Globalisation**

The power of global corporations and the growing influence they hold over the world and regional economies is a key factor in the changing role of government. In the 21st century, government will not 'control' big business, rather they will facilitate outcomes for the 'common good'; governments cannot 'control' the information channels; the movement of capital globally and global or regional trade alliances will be more powerful than any one government. The new global economy will demand changes from governments and governments will constantly balance the tension between 'public interest' and 'the good of big business'. While global corporations may set new rules, rising community engagement will demand that standards are set, especially in the realm of the environment.

### **Localisation**

At a State level, growth of global networks and new business structures combined with significant population growth in Queensland, signal that traditional ways of operating between Commonwealth, State and Local Governments will not deliver necessary outcomes. The rise of localisation which can engender self interest-driven responses on an ad hoc level will demand different responses from government. Coordination issues across local government boundaries will demand a regional focus. State Government could find itself playing a role that demands facilitation of coordinated State-wide responses across policy, planning and infrastructure with service delivery either devolved, abolished, outsourced or privatised. In 1996, the Commonwealth Government set a target that sees 60 - 70% of traditional services either devolved, outsourced or privatised. In some states in the USA, 80% of government funding is devolved to local authorities.

### Major Issues for Government

National and state governments will have significantly less influence over emerging agendas in the future. Globalisation and the associated mobility of both people and capital will oblige governments to behave more competitively.

Reaction to globalisation could result in communities being more interested in local issues & the local good.

Rising complexity will force governments to act in a more facilitative manner. The old view of government as an entity that sets the rules across all agendas is becoming less valid. Government is more and more emerging as only one (albeit key) player in any agenda.

The emergence of 'Third Way' politics will mean that there will be a greater emphasis on community capacity building. The community is increasingly demanding of government and better informed than ever before. This could lead to greater localisation and less reliance on centralised decision making.

Need to work with communities and focus on trends and options.

### Community Engagement

Trends around the world indicate that many people have lost faith in governments and politicians. Open access to information, better educated citizens, global travellers, a skilled and mobile ageing population with an agenda to contribute to making the world a better place for future generations mean that communities will demand and expect to be involved in government decisions. The internet sees the rise of 'E-Poli' which allows citizens to vote on many issues. Already in Australia, media web sites offer daily voting which gauge the community's support on a wide range of policy and ethical issues. Up to 25 000 people per day vote on particular issues on the 'ninemsn.com' web site. This information provides the media with a powerful 'pulse' on opinion.

*'1980s: You can never have too much memory in your computer.*

*2000s: You can never have too much band width in your country.*

*If you want to know how connected a country is, measure its bandwidth per capita. Jobs, knowledge use and economic growth will gravitate to those societies most connected.'*

(Freidman, 1999)

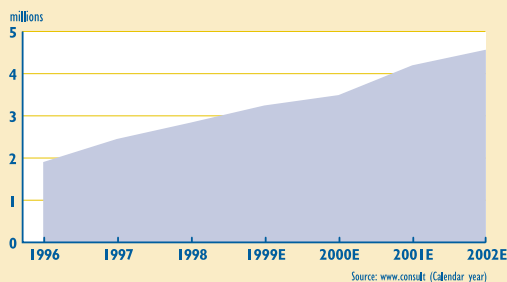
*'The internet is going to be important - but if you don't have a deep sense of how radically it's going to change today's industrial order - you're going to lose.'*

(The Global Network, 1999)

*'300 000 new users join the internet each week globally.'*

(Friedman, 1999)

**Australian Households with PCs**



## Information Technology

### The internet

The internet is arguably the single most important technological development of the twentieth century. A mass medium, a marketing channel, a mechanism for efficient, cost effective business transactions - more than all of those, the internet will be the infrastructure of commerce for the 21st century.

The net is open to anyone with a PC, a telephone line and an increasingly low cost monthly access fee. With net cafes, interactive game consoles and e-mail vending machines it gets more accessible daily. It has given a whole new meaning to the term knowledge management - it facilitates the sharing of information; enables business across the globe to form strategic alliances and collaborate on business ventures and it builds relationships between companies and suppliers. It is non-hierarchical - in cyberspace race, colour, gender, age are not issues! What is more, it requires little capital for any entrepreneur to enter the game.

Competition in business today is not between products - it's between business models - and those which exploit the internet's architecture are the most successful.

### E-commerce

E-commerce has been defined as 'the transformation of business and industry structures and principles in order to take full advantage of electronic capabilities and compete in the global information economy' (Department of State Development, 1999). It is turning the business world upside down.

From a consumer's point of view, one of the significant business changes is the introduction of the 'auction economy'. Already in the USA, 16% of new car buyers 'shop' the internet to gain information or negotiate the best price. 140 million 'net surfers' visit a site called e-Buy daily to bid against each other for over 900 000 products listed for sale on the

site. Airline tickets, home mortgages, cars and other big ticket items are 'auctioned' over the net and in Australia, GoFish.com has entered the auction market. USA company EnergyMart allows suppliers of natural gas (and soon electricity) to compete for the business of big corporate users and soon the domestic market will be able to select their utility suppliers in the same way.

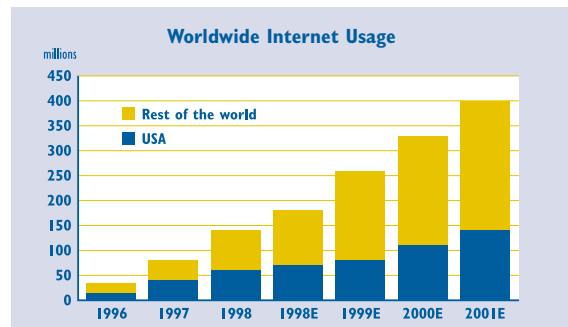
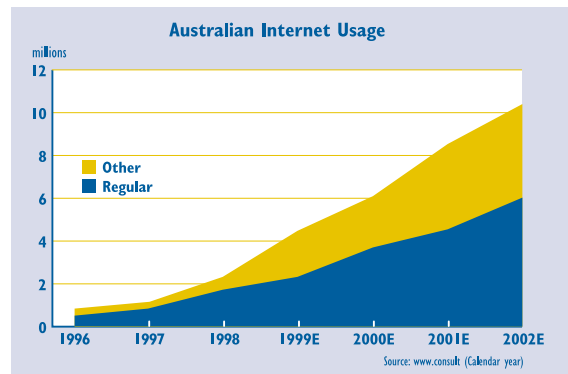
In the USA, online shopping revenue is expected to surpass \$40 billion in 2002, up from \$2.7 billion in 1997. It is predicted that 50% of household products (food, white goods etc.) will be purchased over the net in ten year's time. This means big changes for the retail industry. Shopping centres and malls are already starting to reinvent themselves as 'recreational experiences' for customers.

Companies that assemble, deliver and distribute goods increasingly rely on the internet to remain competitive. Enterprise Software, including enterprise resource planning software (such as SAP) is a growth industry which creates a seamless path between automated finance, manufacturing and HR and customers, dealers and suppliers and has now moved into providing decision making support.

Software products that help companies increase sales and profits and manage customer relations; support supply chain planning and make resource allocation decisions are in the latest wave of products that are transforming the way business is done.

As at November 1999, anecdotal evidence suggests that Australia is 18 months behind the USA in the take-up of e-commerce. The USA Department of Commerce puts Australia in fourth position (31%) behind USA (37%), Canada (36%), Nordic countries (33%) in internet take-up rates. Australia's access rate is more than double that of the UK, three times that of Germany and Japan and almost four times that of France. This puts Australia in a relatively strong position to exploit the e-commerce opportunities afforded. However, Queensland has been slower to embrace e-commerce than some other States (NSW and Victoria). As the telecommunications and networking infrastructure improves, so too will take-up rates.

*In the auction economy of the future there will be no such thing as a fixed price*



*'Bandwidth is the delivery system by which companies sell their goods in the information age. Bandwidth in the late 1990s is important for commerce in the same way that railroads were important in the 1890s and seaports were in the 1790s. It's the way you sell your product.'*

(B Reid, 1997 in Freidman 1999)

E-commerce opens up not only new business models but a new paradigm about the who, what, where and when of work. Businesses no longer need to be located in CBDs or traditional commercial or industrial centres. Where work is done is not important. This offers great opportunities for regional development; already people are making quality of life choices about their locality, confident in their ability to connect with the world from wherever they settle.

E-commerce is also about customisation. No longer will 'one size fit all' as products and services are customised to fit individual needs. New car purchasing in the USA is an example of where people can design their own requirements (colour, features such as ITS, GPS, sound systems, safety extras) over the net and have their customised car home delivered within eight days.

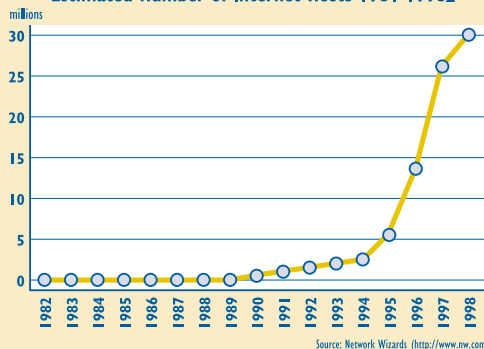
Governments are moving towards e-commerce for the delivery of services. The UK is aiming for 100% of Government transactional services to be delivered over the net by 2010. Using domestic WEB TV, the UK Government is negotiating band space for services that will be delivered in relation to customer life events. For example, the birth of a child necessitates registering the birth, securing a passport, family benefits, health nurses. The 'Birth' site will join up related services so that any life event (e.g. unemployment, retirement, health related etc.) will make it easy to negotiate the government services maze. The decision to have services accessible through home-based appliances supports the belief that people are most comfortable with domestic technology. The TV in the lounge room will become the gateway to the government office, recreation, shopping, travel, education and health.

### Telecommuting

Currently in the Brisbane/Moreton districts, it is estimated that 3.5% of workers regularly telecommute (Thomas, 1999). Data suggests that many corporations have yet to understand the different work practices, employment standards and the new business paradigm that is involved with a telecommuting workforce.

However, organisations that have introduced telecommuting in well thought out ways have introduced new workplace designs including

Estimated Number of Internet Hosts 1981-1998



*'Global Nomads will take over the airport lounges of the world!'*

(T Friedman, ABC Lateline, (September 1999))

## RESEARCH FINDINGS

'hot-desking', and 'hotelling' where employees can come into the office at any time during the week and simply 'plug in' to a workstation. These offices have multiple small meeting rooms for team and client meetings - gone are the days of large corporate offices and individual 'cubby holes'.

While telecommuting lowers the number of work-related trips and certainly lowers peak hour trips, there is debate as to whether it also results in fewer but longer trips due to the wide networks established through telecommuting. International, national and project-based telecommuting is common with numerous examples of teams being established to develop projects where members are located in countries across the globe.

Telecommuting is a force that can profoundly change the nature of work and impact significantly on travel demand, especially at peak periods. Yet, in order to overcome some of the problems associated with it, organisations must quickly come to grips with new workplace management practices, standards, employment conditions and contracts, OHS, staff satisfaction issues and training. 'E-ghettos' are seen as replacing the 'sweat-shops' of the 1980s unless warnings are heeded.

## Science & Technology

Science and technology is dynamic and growing at a rate never experienced before in human history. Human knowledge is doubling every ten years. In the past decade, more scientific data has been generated than in all of human history. So in the next 25 years, what can we expect in relation to technology? There are three obvious areas of development: the computer age and information technology, biotechnology and nanotechnology.

### The Computer Age

The very rapid development of computers is expected to continue, based on Moore's Law which holds that computer power doubles or the cost halves every 18 months. Keeping on this trajectory will require major new technologies for miniaturisation, including such concepts as

### Implications for Transport Portfolio

- ➔ E-commerce, e-business and telecommuting will change:
  - the freight task in urban, regional and remote areas
  - the role and location of shopping centres and warehouses
  - home and business delivery – 24 hour delivery of multiple small packages
  - the delivery of Government services
  - work-related travel patterns and demand
  - transport services that will be required to service the needs of e-commerce businesses
- ➔ The jury is still out on whether telecommuting will dramatically alter travel demand. What role does the Transport Portfolio need to play in the introduction of telecommuting in Queensland?
- ➔ What will telecommuting mean for our staff?

*'Silicon Intelligence is going to evolve to the point where it'll get hard to tell computers from human beings.'*

(Gordon E Moore, Chairman Emeritus, Intel Corporation)

*'Decoding human DNA will be to the 21st century what the development of the internet was to the 20th century.'*

(The Global Network, 1999)

*'If you want a new cell phone, you'll purchase the recipe on the net. It will tell you to insert a sheet of plastic and squirt electronically conductive molecules into the toner cartridge. The nanobox will pass the plastic back and forth, laying down patterns of molecules, then electrically direct them to assemble themselves into circuits and an antenna.'*

(Business Week, 30 August 1999)

quantum computing. At present rates of development computers may reach the power of the human brain by 2020. According to Gordon Moore, co-founder of Intel Corporation, 'Silicon Intelligence is going to evolve to the point where it'll get hard to tell computers from human beings'. (Kaku, 1997)

### **Biotechnology**

Biotechnology will allow us to read the genetic code of living cells as a matter of routine. In the future, diseases may be managed by genetic engineering. Prevention may become the dominant approach as new genes are introduced into people to avoid and treat diseases. Tissue engineering will replace body parts by growing new ones, making organ donations obsolete. The ethics of cloning will be strongly debated and access to genetic information will be a concern for society in the future.

### **Nanotechnology**

Nanotechnology is the emerging ability to construct engineering components with dimensions smaller than a hundred nanometres (a nanometre is a millionth of a millimetre), using positional control of individual atoms. The emergence of nanotechnology would have huge impacts on many aspects of society. Computers no bigger than a grain of salt could be built into clothes, appliances and furniture allowing them to interact with each other and with a 'smart house'. Computers could be produced by changing the magnetic properties of groups of molecules with the real possibility of downloading hardware from the Net, just as we can now download software.

## **Transport Modes**

### **Road**

The car-road system has a number of drivers that influence and shape the existing system. The primary drivers and 'shapers' include car manufacturers, energy companies, government, the travelling public, tourism and urban form. Secondary drivers include business and lobby groups, the economy and quality of life issues.



There is evidence that the use of the car-road system in Queensland is growing and over the past decade has been substantially in excess of population growth (Apelbaum Consulting Group, 1998). However, there is a body of thought that argues that a number of ‘one-off’ demographic factors has been responsible for the 100% increase in road travel in Australia over the past 20 years. These factors include: the peak of ‘baby boomers’ reaching driving age during the 1960s and 1970s; and the significant growth in female participation in the workforce since 1960.

The combined effect of these factors means that the vehicle driving population is now effectively saturated. Given this situation and the overall ageing of Australia’s population, it is argued that the increase in road travel over the next 20 years is more likely to be in the order of 35% rather than the 100% increase experienced over the past two decades (Cox, 1997).

The existing car-road system and the accompanying urban form generates a range of social and environmental externalities. In addition, a number of external developments such as those in the areas of fuel, transport and information technology, and post-industrial economic patterns and policies also influence the evolution of the system. In the medium-term, it is likely that low carbon and high energy efficiency vehicle technologies will be introduced. These include hybrid electric driveline vehicles, extreme lightweighting (ultra-lightweight hybrid electric vehicles have been described as ‘hypercars’), fuel cells and hydrogen storage systems etc. These technologies do not promise to transform the fundamental urban car-road system but are likely to allow it to continue to evolve while alleviating some of its more obvious problem areas.

In the longer term, fundamentally new transport technologies may emerge which do have the potential to transform the system. Candidate technologies include exotic and speculative developments such as ‘zero point energy’, flying cars and gravity shielding — but even if these are demonstrated they would be unlikely to appear in a practical form until close to the end of the scenario period. For the majority of the scenario period, urban transport is likely to be dominated by some incrementally-improved form of the car-road system.

#### Increases in Queensland domestic transport (1985 – 1995)

Total domestic passenger vehicle (km)	66%
Total domestic passenger (km)	73%
Total domestic freight (tonne-km)	65%

(Queensland Transport, 1999)

### Motorised Passenger Travel in Australia

#### Passenger travel (% of total)

	Road	Rail	Air	Sea*
Urban	95.3	4.6	–	0.2
Non-urban	78.6	2.1	18.9	0.4
Total within Australia	86.3	3.6	7.7	0.3
International travel	–	–	99.6	0.4
Total passenger travel	68.1	1.1	27.1	0.2

\*Sea includes travel by ferry

(Cox, 1997)

### Air

The primary drivers for air travel are related to the globalisation of the economy, increasing affluence of developed societies, tourism and the increased access needs of rural and remote communities. The current air travel system is one in which there are close links between domestic and international freight and passengers and these operate within tight regulatory regimes. Aviation infrastructure such as airports, involves substantial resources and creates enormous benefits to public and business interests. However, this type of infrastructure exerts significant impacts, both positive and negative on the physical, economic and environmental life of communities.

Air travel in its current form not only has a high environmental impact due to the emissions it produces but also due to the noise produced by aircraft during take off and landing. The ready availability and relatively low cost of air travel in high volume routes has exerted significant influence over the pattern of both international and domestic tourism, patterns of work and rural population levels. Fly in/fly out operations have tended to decrease some rural populations while better, faster access to other rural and remote communities has provided opportunities for growth.

Growth in air travel for both passenger and freight has shown and continues to show high growth (approximately 6% per annum). This growth must be viewed in the context that for passenger travel, road travel dominates in urban areas while air travel dominates international travel. Overall, air travel constitutes almost one-fifth of Australian non-urban passenger travel.

The period of the scenarios will see incremental development of the air system with trends towards:

- ➔ cleaner, faster and longer haul aircraft for international travel;
- ➔ smaller, cleaner and quieter aircraft for domestic travel;
- ➔ increasing pressure on the availability of land for infrastructure;
- ➔ increased pressure from other modes of travel such as high speed rail.

The evolved state of the air transport system will result from continued rapid growth in both the passenger and freight movements. Air travel may be the most viable option for rural and remote communities as traditional transport infrastructure is withdrawn or becomes too costly.

In the longer term, technology may produce the transformational change that will result in a fundamentally altered air transport system. Candidate technologies are similar to those mentioned in the road transport mode. As with road travel, even if these technologies are demonstrated in the next few years, it is unlikely that they will appear in any practical form until close to the end of the scenario period.

### Rail

The rail system in Australia has been the subject of significant rationalisation in recent times. An analysis of this process carried out by the Bureau of Transport and Communications Economics shows that while the economic benefits exceed the costs for closing rail services, the social impact regarding employment and the viability of rural and country towns due to rationalisation and rail closures is significant (Cox, 1997).

Queensland's rail system has not been exposed to the same level of rationalisation as has been the case in states including New South Wales and Victoria where there is a growing trend towards private operation and ownership in the rail system.

Rail is regarded as a key component of the passenger and freight transport picture. The importance of rail in the future is largely dependent on the success or otherwise of operational cost savings, further infrastructure investment and the response of institutional reforms regarding private access to rail tracks. A challenge for rail in the future will be the requirement to cope with new integrated intermodal freight logistics. This will require changes in work practices and an updating and upgrading of technological capability.

High speed passenger trains could play an important inter-city transport role in competition with airlines if the necessary investment is forthcoming.

### Freight movements in Australia (1993)

#### Freight moved (% of total)

	Road	Rail	Air	Sea
Within Australia	73.8	23.3	—	2.8
International	—	—	99.0	1.0
Total	60.4	19.1	0.2	20.2

(Cox, 1997)

**Container transit times for various modes (hours)**

	Road	Rail	Sea
Melb. - Sydney	12	16	33
Melb. - Brisbane	21	37	62
Melb. - Perth	46	66	99

(Cox, 1997)

### Sea

The real growth in the maritime scene in Queensland is in recreational boating. With growth in this sector standing at 4% per annum (compounding), the challenges lie in developing infrastructure, education and compliance strategies to meet the needs of this rapidly growing market.

Shipping accounts for only a small percentage of freight transportation within Australia. This sector is dominated by road transport. One of the reasons is the longer transit times for freight moved by sea. It is also difficult for sea transport to compete with the overnight service provided by road for the Adelaide-Melbourne, Melbourne-Sydney and Sydney-Brisbane routes. While road is quicker, it could be asked if businesses are paying for a service that could be just as well served by a slower and cheaper service, when speed of delivery is not critical.

Improvements in technology will increase the importance of sea freight by improving transit times. New, so-called 'FastShip' designs now under development promise to substantially enhance the role of sea freight in international transport logistics. International transport logistics increasingly relies on reliability and speed. FastShips combine a number of technologies to not only reduce total sea freight transit times by more than two-thirds but also practically eliminate delays.

Wing-in-ground (WIG) or surface effect vehicles may also prove to be significant in terms of coastal shipping. The WIG vehicle technology is described in the 'Transport Technology' section of this report. WIG vehicles have the potential to improve not only the speed but also the convenience of coastal shipping for passengers and freight. There is already a company in Cairns that has a permit to conduct tests on WIG technology.

Cruising is one of the fastest growing tourism markets in the world. However, facilities and berths for large cruise ships in Queensland are limited. The cruising market is segmented, ranging from 3 000 passenger ships (many of whom 'live' on the ships permanently), luxury cruising and exotic location cruising. The largest ships have the capacity to

anchor outside harbours and transport passengers into shore using their own boats. For Queensland to benefit from the growing cruise market, significant infrastructure development is necessary.

### Public Transport

There is a widely held view that there is a need to improve the public transport system. When this issue was researched in the 1995 ANOP national study (ANOP, 1995), improvement to the public transport system was seen as the most important transport issue, even though almost 90% of those surveyed said that they were not very likely to use this mode of travel (Cox, 1997).

The results of studies conducted by the ABS and other bodies indicate that even though voters espouse public transport, in practice, they are reluctant to use it. As a result, fare box receipts do not cover rising costs. Slowness, the safety and reliability of services and the interconnections between services are seen to be the major problems in using most forms of public transport.

A range of mechanisms to increase public transport usage include privatisation, integrated ticketing, 'travel blending', full-cost road pricing, and long-term changes to urban form. Of these mechanisms, travel blending appears to be one of the easiest to introduce and is the least bureaucratic in nature. It relies on educating the travelling public so that more informed choices may be made regarding the mode and frequency of travel.

#### Reasons for not using Public Transport

No service available	36%
Too slow	26%
Vehicle needed for work	11%

(ABS, 1995)

#### Household transport expenditures, 1993

Motor vehicles	92.8%
Public transport	3.0%
Other	4.2%

(ABS, 1996)

*'Congestion costs Australian cities approximately \$5 billion per annum.'*  
(Cox, 1994)

### Urban Futures

#### Congestion

While cities can be defined socially or demographically, they are also seen as collections of economic activity that rely on the ability to move goods and services. They are also generators of wealth and creators of diverse lifestyles.

Congestion serves to hinder mobility and hence reduce productivity, consume time, erode livability and lifestyles. In addition, the presence of congestion causes producers and sellers of goods and services to build in safety margins to account for the uncertainty of delivery times.

The recent and apparently continuing trend towards 'just in time delivery' will tend to increase congestion – especially in major cities.

Inefficient levels of congestion tend to reduce the productivity of cities which, in turn, flows on to the national economic well being. Measures available for the control of congestion include road pricing, however its impact is much greater if integrated with other initiatives such as appropriate urban form and land use, public transport initiatives and the use of ITS. However, pressures toward increasing congestion remain, especially in the main urban centres of SEQ and reversal of this trend will be difficult especially with continued economic growth.

#### Urban form

The design of local areas can facilitate a reduction in car dependence. Strategies related to achieving a better fit between land use and transport include:

- ➔ the location of services, diverse employment and facilities close to where people live;
- ➔ planning transport for the 24 hour needs of people;
- ➔ increasing residential densities in corridors where transport can be provided;

- ➔ selective concentration of housing and employment as cities grow;
- ➔ integrating land use and transport in growth corridors and provision of orbital routes.

The future prospects for large infrastructure projects is different now when compared to the past. The NIMBY (not in my back yard) and NOTE (not over there either) syndromes are evidence of the reluctance of local communities to support changes aimed at large scale development that impacts on urban amenity.

There will be increasing pressure for a more integrated approach in regard to diverse transport solutions and infrastructure projects. This approach will need to take account of and successfully accommodate the issues of land use, quality of life, accessibility and the environment.

### **Spatial Trends**

There is a likelihood that coastal growth may prove to be more significant than continued metropolitan growth. This situation is explored in the 'Coastal Bloom' scenario. Urban and coastal growth is likely to occur in an environment that will see a continued decline in rural and remote population. While these populations are likely to decline as a percentage of the total State population, absolute numbers will remain steady assuming that State population levels continue to rise.

## Transport Technology

### Hybrid Electric Vehicles

The continuing pressure to improve fuel efficiency, reduce tailpipe emissions and reduce carbon dioxide emissions is likely to lead to the demise of conventional motor vehicles with mechanical drivelines driven by internal combustion engines. This means that the internal combustion engine is likely to be an early casualty of the 21st century, being replaced by technological advances such as the Hybrid Electric Vehicles (HEVs).

The HEV has a small internal-combustion engine and an electric generator on board which feeds power to the wheels and charges the batteries. HEVs do not share an electric vehicle's main drawback: limited range between charges. HEVs are extremely fuel efficient and 'clean', being one-eighth as polluting as a conventional well-tuned internal combustion engine.

### The Hypercar

The 'Hypercar' is an advanced automotive design concept proposed by Amory Lovins of the Rocky Mountain Institute in Colorado, and is now being explored by several of the world's major car manufacturers. The Hypercar would achieve very high fuel efficiency by means of a combination of advanced, innovative technologies. Amory Lovins estimates that such a car would be able to achieve between 0.7 – 0.4 litres/100 km (300 – 600 miles per US gallon) with 1% of current automobile tailpipe emissions.

The Hypercar would be an extremely light vehicle with a hybrid-electric drive train. It would use carbon-fibre reinforced plastic composite body panels—the same material now used for the wings of advanced aircraft. It would have a small gas turbine engine able to run on a variety of fuels, powering an electrical generator which would drive the wheels via four independent high-efficiency electric motors, as well as charging a small battery bank for zero emission vehicle (ZEV) mode operation in



urban areas. The electric motors in the wheel hubs could also create a braking force to stop the car by acting as generators, and the electricity generated would be returned to the batteries.

### Fuel Cells

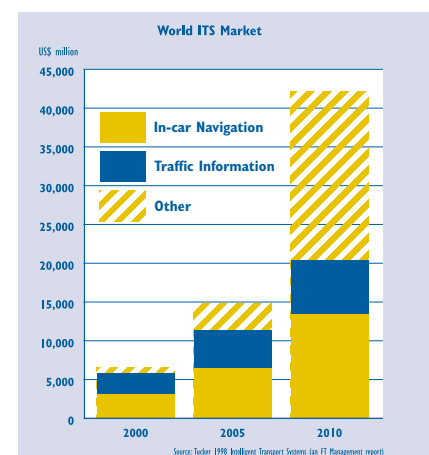
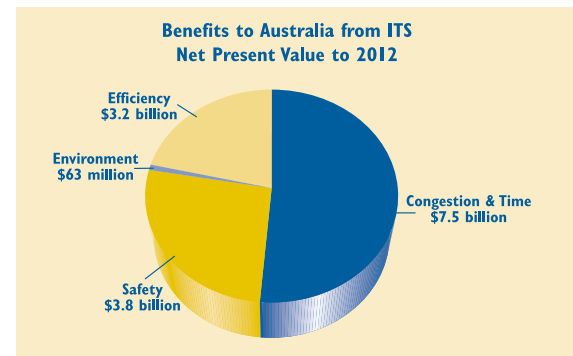
Fuel cells should make it possible to produce genuinely eco-friendly vehicle propulsion systems. Fuel cells emit only water vapour, can make use of renewable fuel, and offer the advantages of quiet operation and high energy efficiency. Existing fuel cells require hydrogen, which must be carried in the vehicle, and oxygen, which is drawn from the ambient air. While some experts believe that hydrogen is the basis of a future environmentally-benign economy, at present hydrogen is still relatively expensive to produce, and there are still technical difficulties with on-board storage in vehicles. Nevertheless, many car manufacturers are actively experimenting with hydrogen-powered fuel cell vehicles.

### Intelligent Transport Systems

Intelligent transport systems (ITS) are poised for widespread adoption. ITS are sophisticated multimodal tools that combine advanced technologies to equip vehicles and transport networks and systems with computers and sensors that increase safety, increase capacity, redistribute demand and reduce congestion. This is achieved by automating some of the functions now carried out by drivers.

ITS will become increasingly significant as vehicles are factory fitted with the necessary electronics and communications capability. Initially, ITS will be used for electronic tolling, but will increasingly play a greater role in urban traffic management. In this way, ITS will help to reduce congestion and accidents and allow 'autopilot' functions well beyond the scope of current cruise control features

The gradual introduction of ITS may well prove to be the prelude to real-time road pricing, as motorists get used to the convenience of electronic tolling and increasingly come to accept electronically levied road charges and congestion fees.



### Public Rapid Transit

Public Rapid Transit (PRT) is a proposed system of small driverless vehicles about the size of a passenger car, running on a local web of light monorails. The system is controlled by a computer system that has much in common with air traffic control systems. PRT automatically brings individual vehicles to selected destinations in the system without intermediate stops. It thus resembles a cross between a taxi and a train.

### High Speed Trains

In addition to existing high speed train technologies, such as the French TGV and Japanese Shinkansen, various forms of magnetic levitation train may see widespread adoption in the future. Maglev trains are able to travel at 500 to 550 km/h suspended over a special track. However, the cost of constructing Maglev infrastructure is currently about three times more than for high speed trains. The Swiss have proposed a concept for a magnetically levitated train running in an underground evacuated tunnel at a mean speed of 3000 km/h.

### Ground Effect Vehicles

Ground Effect Vehicles (GEVs), Wing in Ground (WIG) Effect or Surface Effect Vehicles have the potential to provide efficient transport and cost savings with a minimum of transport infrastructure. GEVs are able to travel at 350 km/h over water, landing and taking off from ground or water. They fly just above the surface by taking advantage of the extra lift effect produced by the airstream flowing through the gap between the bottom of the wing and the ground or water surface.

GEVs can carry passengers or freight and are suitable for both long- and short-haul trips. However, GEVs can travel to places where neither ships nor planes could go before. A GEV can operate at up to 40% less fuel burn than an equivalent sized and loaded aircraft. This means that GEVs have the potential to make fast, cheap marine transport a viable alternative to air transport, in an ever increasingly cost conscious global market place.

## Environment

The environmental movement is gaining momentum internationally. There is general recognition that the earth's resources are not infinite, and that environmental and ecological systems are fragile. Economic development initiatives worldwide are being guided by the '3 Rs' of the environmental movement - reusable, recyclable and renewable. Internationally, partnerships are being formed to cooperate on projects that attempt to find a compromise between economics and environment and protect endangered ecosystems. Organisations such as the Smithsonian Institute and Conservation International (USA) work with corporations, governments, land owners and farmers to ensure sustainable economic development and environmental protection.

### Kyoto Protocol – 1998

International action resulted in the Kyoto Protocol in 1998. The protocol attempts to halt greenhouse emissions caused by industry, commerce, land clearing and transport. A key international assessment of the Kyoto Protocol is that it will require a reduction in global emissions of some 60% from 1999 levels to prevent greenhouse gases continuing to rise. Kyoto proposes targets for emissions and provides for response actions including carbon taxes, carbon sinks (i.e. tree planting) and carbon trading.

### The Australian Experience

Some of the trends with the worst implications for Australia and Queensland are apparent at the global level. Reports by the United Nations and some private agencies in recent years have highlighted some of these adverse trends. They include the steady trend to forest and native vegetation clearing in many countries, with a series of attendant problems including erosion, loss or fragmentation of species habitat, loss of fertile soils, losses of water quality and reliability, saltation, and deterioration of allied ecosystems such as wetlands and species breeding zones. Urban sprawl is continuing rapidly in many areas, resulting in many forms of degradation in surrounding areas and a

*'Human activities inflict harsh and often irreversible damage on the environment and critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and may so alter the living world that it will be unable to sustain life in the manner that we know.'*

(Rio de Janeiro Earth Summit, 1992)

*'Of the 130 people interviewed 40% of internal and 80% of external interviewees raised the environment as a major concern.'*

steadily rising transport task (and emissions). Air quality is causing health problems in many major cities and towns.

The pressures from development (and transport systems) do not always occur in a regular trend form. Some risks to the environment occur in one-off or occasional events - such as oil spills near coral reef systems, or in major urban systems such as the 1999 oil spill from a sea freighter in Sydney harbour - or in road or rail transport such as spills of toxic chemicals (and on occasions with major toxicates in local streams and town water systems).

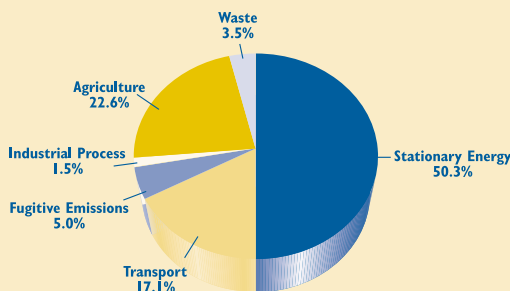
### Queensland

In Australia, following the early work on the National Greenhouse Strategy, the Queensland Government endorsed the initial Queensland Implementation Plan in October 1999. At this stage, the Queensland economy relies heavily on the coal, other mining and service industries. Land clearing accelerated during 1999 in an attempt by some farmers to beat the new environmental legislation which sought to restrict this practice. In 1995 Queensland's domestic greenhouse emissions were 13% over the 1990 levels. Queensland's transport emissions had grown by 40% between 1990 and 1998 and were expected to grow by a further 30 - 40% up to 2010 (for a total of 80+% over 1990 by 2010). Sectors of government and business accept that many measures which could reduce transport emissions would offer significant benefits to Queensland in terms of reducing emissions to meet Kyoto targets.

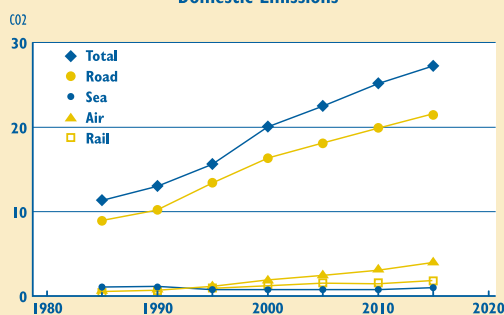
### What's the future for the environment?

The OECD now regularly evaluates the performance of member nations in environmental management - Australia was reported on in 1998 and the next appraisal is due in 2001. The number of treaties concerned with environmental protection has risen sharply in the past decade and the body of allied law is also increasing in most countries. In Queensland one of the major tenets of the Environmental Protection Act is the concept of 'due diligence' - this commits the community to at all times to give due care and attention to ensuring that environmental damage does not occur as a result of poor planning, work programs and daily operations and activities.

Queensland Greenhouse Gas Emissions by Sector 1995  
% Contribution by sector



Transport Emissions - Queensland by Mode  
Domestic Emissions



Many companies have also commenced programs aimed at ensuring that their profit quest does not come to be associated inevitably with environmental damage. Such companies are now reporting annually on a 'triple bottom line' basis which reports on social, environmental and financial (people, planet, profit) performance measures.

Many existing traditional motor vehicle companies are now very actively addressing the greenhouse risks and emerging commercial opportunities by pursuing research and development and active product development towards less fuel and carbon-intensive propulsion systems.

New industries are being spawned in areas such as environmental and urban design and planning, biotechnology, and in areas developing better energy and carbon efficiency.

#### Implications for Transport Portfolio

- ➔ Pressure to reduce emissions from traffic congestion
- ➔ Increasing international pressure to develop policy measures to restrict carbon dioxide emissions, and carbon fuel use
- ➔ Continued pressure to improve urban air quality will drive the development of new fuels and vehicle technology
- ➔ Effective management of urban sprawl
- ➔ Environmental focus when planning infrastructure
- ➔ Preservation of natural vegetation on Transport — or Main Roads'-owned land
- ➔ Support for environmentally sustainable transport solutions



# The Transport Portfolio Scenarios

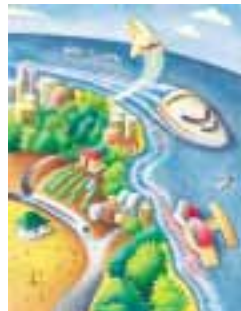
SuperCity

Coastal Bloom

Carbon crunch

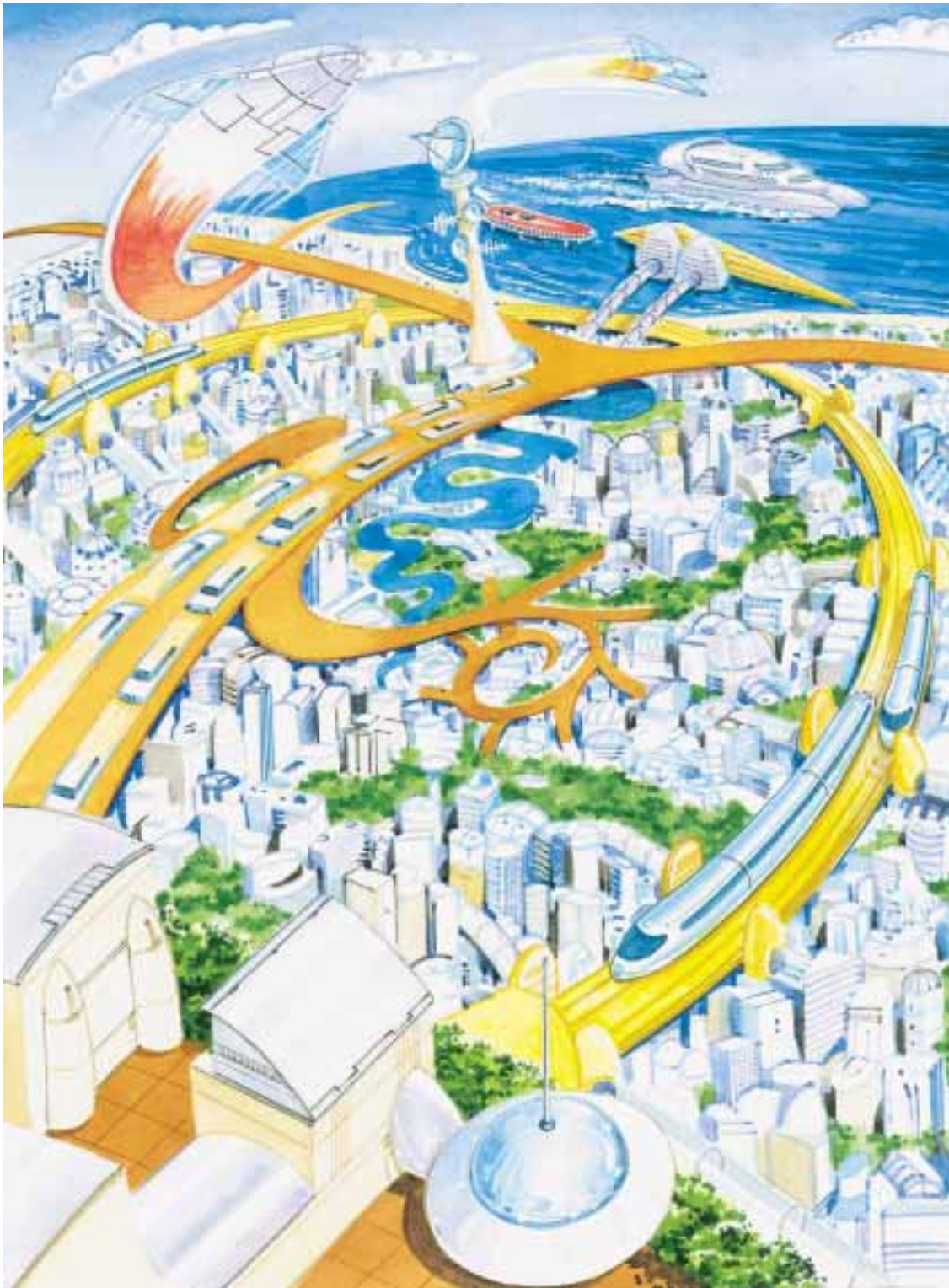
Global Bust

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**SUPERCITY**



## SuperCity

### Foundations for a SuperCity — The Years 2000 to 2010

South East Queensland grows rapidly in economic vitality and importance. The region's outstanding climate and lifestyle attracts both interstate and international migrants and the population of Queensland increases at up to 3% a year. Between the years 2000 and 2010, international demand for commodities and commodity prices remains high, providing a solid fiscal base for the development of a society and economy in Queensland that is knowledge-based and globally-connected.

The rapid take-up of information technology and the research infrastructure put in place since the 1990s stimulates rapid economic growth. Initially, regional centres within South East Queensland grow in importance. However, business no longer has to cluster at a few central locations for face-to-face contact, to access services, to attract employees, nor to effectively serve regional and overseas markets. Consequently, dispersed employment, recreational and entertainment nodes progressively dominate the pattern of development.

Population, skills, commodities and wealth are initially sucked into the South East Queensland development area from regional and rural Queensland and northern New South Wales. This expands to include the rest of Australia, and by 2005 the area is drawing large numbers of people from rival Pacific Rim growth centres.

Teams of specialists come together locally and from around the world for short periods to advance specific projects. This is becoming the norm for employment and requires people to decide where best to be based and to 'park their families' when they are away. Coastal areas, hinterland communities and the 'Scenic Rim' are frequently favoured. There is strong demand for rental accommodation for 'global nomads' and their families seeking to work and live close to the 'hubs of activity' for long periods. Also, for temporary accommodation for those on short term contracts. Both groups favour high amenity areas with good regional and local accessibility.

### SuperCity

This is a scenario in which:

- ➔ Population in Queensland grows rapidly
- ➔ Growth is concentrated in the South East corner
- ➔ Quality of life in SEQ is considered highly desirable
- ➔ High-growth economy forms in SEQ
- ➔ The economy is based on high technology and services
- ➔ SEQ as a multi-centred 'supercity' achieves 'world city' status
- ➔ SEQ is Australia's second city after Sydney
- ➔ Travel demand grows at the same rate as population
- ➔ Substantial pressure on the urban transport system is successfully managed

### Global Nomads move in

➔ Buy real estate NOW!

### SEQ – trading hub for Pacific Rim

- ➔ Air travel grows
- ➔ Knowledge + Green = SEQ growth industries

Tourism and business travel is focused on Brisbane airport. Good accessibility to this airport is considered essential to enable the continued growth in tourism and tradable services expected to underpin the State's future economic and employment growth. The Brisbane Airport Rail Link has only solved CBD and rail link problems.

South East Queensland is recognised as an international trading hub for Australia in the South Pacific. This reputation is built around the real advantages of the Gateway ports as a sea and rail intermodal interchange and Toowoomba as an 'inland port' on the Melbourne to Darwin inland standard gauge rail network. Brisbane international airport is part of this intermodal transport complex but concentrates on high value, low bulk, fresh and perishable cargoes. General air cargo, regional airlines and general aviation are being diverted to the Amberly air base. Their operations are coordinated to create Australia's only truly integrated, intermodal transport network 'hubs'. These initiatives are jointly marketed under the 'Trading Coast' banner, and in combination bestow a real competitive advantage for South East Queensland compared with other Pacific Rim cities.

Brisbane City Council's 'Livable City Strategy' is successfully promoting internationally the environmental and lifestyle benefits of living, working and doing business in South East Queensland. Advanced, specialised health care, educational, training and R&D research capacity, and quality family facilities are recognised as essential to attracting and retaining those with the scarce skills that underpin the new 'knowledge-based economy', who can afford to choose to live anywhere.

The Government's 'Smart State', 'Low Tax State' strategy is attracting new knowledge-based and environmentally-friendly growth industries to South East Queensland. Research and development, education and corporate training clusters are forming. Multinationals and big business operate their call centres and locate higher-skilled back office functions here. However, South East Queensland is only just beginning to attract major corporate headquarters and the Asia/Pacific regional offices and facilities of multinationals and major finance houses.

Considerable government expenditure has been incurred in providing quality 'leading edge' and 'world class' education, research, training, entertainment, cultural, sporting and recreational infrastructure and facilities to underpin the region's future position in the global service-based economy. Key corporate and cooperative research centres are being attracted — particularly those based on the government's thrust into new energy technology and biotechnology. The 'SEQTechQuad' banner is being used to market the infrastructure that exists to support collaboration between specialised research facilities, including networked supercomputers and broadband, high speed information links.

### Threats to Growth — The Years 2010 to 2015

By 2010, the attractiveness and lifestyle of the region are seriously threatened by urban growth pressures, the failure to adequately address traffic, congestion and amenity issues, and disparities in the distribution of wealth. If these pressures continue to build, South East Queensland will inevitably fall into rapid economic, social and environmental decline.

Wealth 'trickles down' through society slowly. Gaps in wealth and income between the 'haves' and the 'have nots' have substantially increased. There is now overwhelming dependence on low-paid, service sector jobs. Reliance on temporary jobs, with variable and often long periods of unemployment between jobs, has become the norm.

There are major concerns about the deteriorating natural environment, widespread urban congestion and rising property prices. Each of these is threatening to undermine the economic prosperity of the region and, therefore, the State as a whole.

Air quality is continuing to deteriorate, pollution haze is usually clearly visible, photochemical smog is often obvious and TV news bulletins report high daily pollution counts and frequently mention pollution-related illnesses. While clean engines are available, they are expensive and the high percentage of low income households delays the changeover. Poor maintenance of the ageing vehicle fleet is significantly adding to vehicle emissions.

*SEQTechQuad: leading the way in research, information and communications collaboration.*

#### Growth = urban pressures

- ➔ Traffic
- ➔ Congestion
- ➔ Loss of amenity
- ➔ High property prices
- ➔ Rich/Poor divide
- ➔ Air quality a growing problem

### Urban Pressures

- ➔ Loss of community
- ➔ Water-health risks
- ➔ Clean cars expensive
- ➔ Public Transport marginalised
- ➔ Passenger/freight road safety problems

Congestion is becoming a real political concern. It is no longer easily solved through major infrastructure projects. Transport and road improvements are frequently seen as amplifying these problems and serving the needs of 'outsiders', rather than the locals. Multiple river crossings and even tunnels are proposed but are strongly opposed by local communities who no longer respect the opinions of external experts. They demand different solutions.

Congestion is widespread largely because of dramatic increases in cross-city trips between the growing multitude of dispersed destinations. Congestion is acute on key arterials, around suburban centres, at bottlenecks and key intersections and throughout the inner city. Those with the ability to afford to live anywhere they want are abandoning the central city and congested suburban areas that previously provided good accessibility and great amenity. Consequently, residential property values are soaring in high amenity places without these afflictions.

The character of local areas is being destroyed by strong population, business visitor and tourism growth, which are being blamed for the loss of 'community'. High amenity areas are being overwhelmed by growth pressures. Consequently, well-informed, increasingly vocal community and special interest groups are actively lobbying against growth in their 'back yard' and near places they value.

Public transport generally continues to be dogged by adverse perceptions about inconvenience, lack of reliability and personal safety. It is stigmatised as an inferior form of transport used mainly by the disadvantaged and those with no other choice. Improvements projected in the Integrated Regional Transport Plan for South East Queensland remain unfunded and largely unrealised except for extensions to the inner city light rail network. But even this is being blamed for increasing central city congestion, despite the heavily funded northern suburbs/Fortitude Valley inner city bypass.

Road safety is a real issue, with increasing conflicts between tourism and heavy freight vehicles on regional roads resulting in many fatalities. A rise in cycling fatalities on urban roads highlights an urgent need to address improvements to the cycling network.

Water quality is also deteriorating and is further threatened by pollution from urban growth, nutrients leached from gardens and horticultural areas, untreated stormwater runoff and lack of tertiary treatment of sewerage.

Wealthy individuals, experienced executives, those with scarce skills and others able to live anywhere are beginning to abandon South East Queensland, just as they began to leave California after 1989 as a result of loss of environmental amenity, deteriorating quality of life and high housing costs. Thus the emerging 'South East Queensland SuperCity' faces the very real prospect of being stillborn, and the region threatens to deteriorate into a dysfunctional, low-income, welfare-dependent economy.

### **Achieving Sustained Growth — The Years 2015 to 2025**

Government and business at last wake up to the very real prospect of economic and welfare decline and recognise a new imperative to live up to the past rhetoric of environmental sustainability, and improving the quality of life for all Queenslanders. The immediate environmental threats to continued growth are overcome by strong environmental controls, the adoption of low emission vehicles, the widespread use of intelligent transport systems and major improvements to the public transport system — in particular major extensions to the light rail network. Public transport is given priority rights of way through congested parts of the urban area and priority use of any additional capacity created within the existing transport system.

Rival urban areas are under increasing environmental and social stress and struggling to preserve what they have or to prevent further deterioration in these key attributes. Sydney is gradually succumbing to increasing environmental and congestion problems, high housing costs and urban inefficiencies. The NSW government is having to invest heavily merely to stop Sydney slipping backwards, whereas public investment in South East Queensland can still be used to underpin future economic development.

#### **Will the bubble burst??**

➔ Wake-up call for quality of life issues

### Sustained Growth

- SEQ 2025: Noosa – Murwillumbah – Toowoomba
- Population: 4M+
- Australia's 2nd city
- Global economy flourishes
- Tradeable services rival tourism & overtake commodities
- Cultural diversity makes SEQ a vibrant city

### The 'e-world' changes travel patterns for passengers and freight

- Localism prospers
- Communities of interest

The region's growth trajectory is regained and firmly founded on successfully maintaining environmental quality, and the region's climatic, quality of life and life style advantages. South East Queensland has a decided competitive advantage over other major cities in the Pacific Rim in this regard.

South East Queensland becomes increasingly urbanised and coalesces with northern NSW to become Australia's second most populous urban area with a population exceeding 4 million in 2025. By this time, urban development extends from Kingscliff/Murwillumbah in the south, to Noosa/Cooroy to the north and west to Toowoomba.

Tradeable services rival tourism and have overtaken commodities in share of Queensland's export earnings and interstate trade — having already overtaken commodities in trade value in 2015. South East Queensland is closely connected into the global economy through individuals, academics, research institutes and global strategic business alliances. Growing cultural diversity is fostering and encouraging this trend. It is reinforced by combining tourism, conferences, conventions and recreation with holistic personal development and family education and health services — especially targeting Asian and Pacific markets.

Information technology is widespread and affordable — providing direct purchasing opportunities and real time on-line access to diverse sources of information and expertise. Access to the internet for e-employment opportunities is easy from home using digital WebTV and integrated home entertainment systems. This is proving to be a two edged sword in terms of travel demand. E-mail, visual telecalling and on-line shopping are substituting for some local travel. However, there is regular contact with many more dispersed and distant business colleagues, acquaintances, and interest groups. Greater information is available about places and opportunities. Sales people are working entirely from home or their cars, travelling when necessary to clients. Overall, there is more travel, to more distant places. However, more of this travel is off-peak.

Telecommuting is widespread with over 50% of employees telecommuting at least four times a month. But this has not taken over

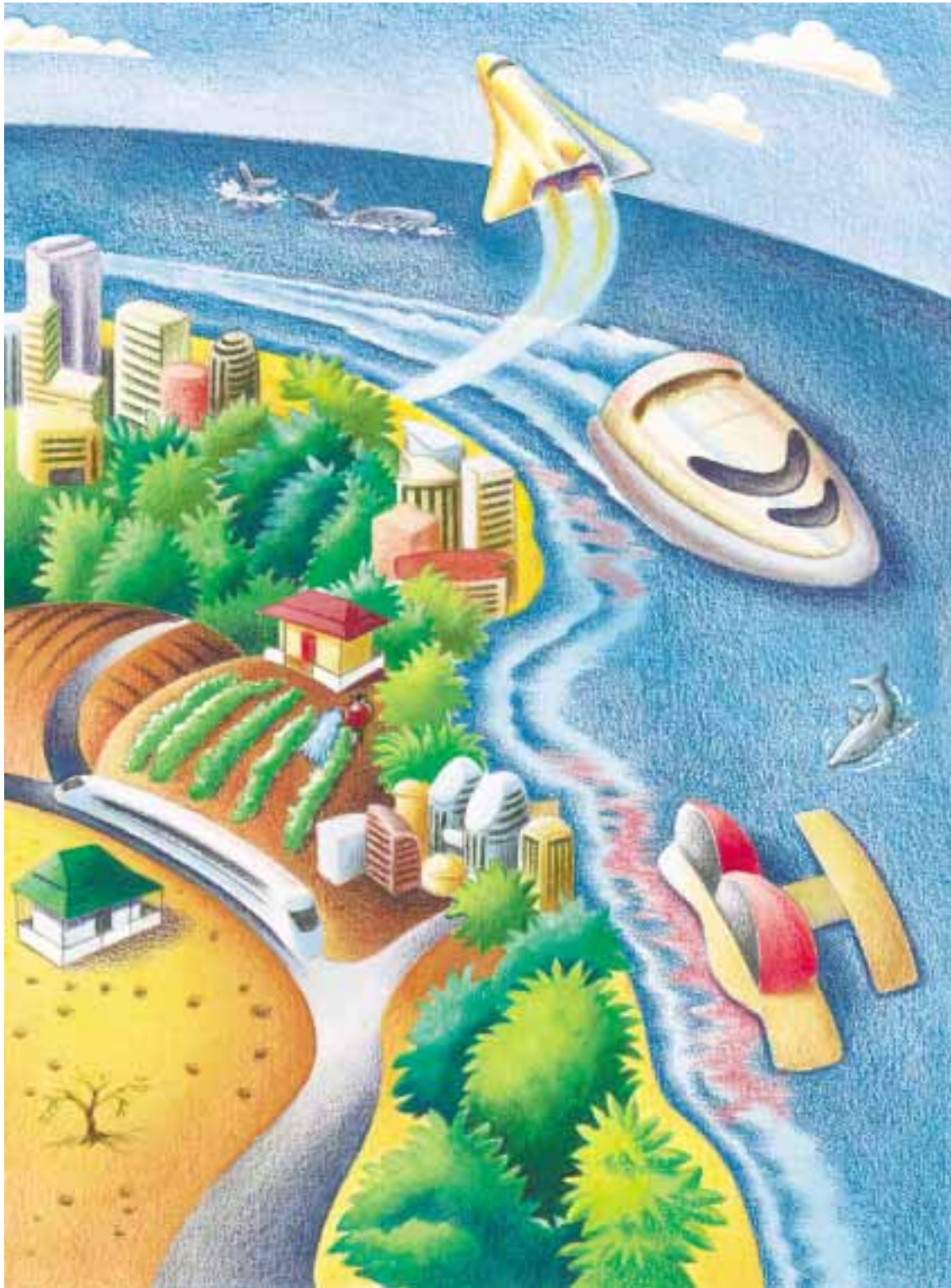


from travelling to employment centres because of the social isolation of working from home, and the impact of family commitments on the ability to efficiently work from home. Social contact at work and with dispersed people of similar interests is beginning to replace social interaction and communities previously built around home and schools. For these reasons governments, and other large employers, have set up local and regional employment centres close to people's homes.

A 'new localism' increasingly prevails. There is a resurgence in the importance of local areas, local business centres and communities. Places with natural attributes or a unique 'sense of place' are highly valued. The wealthy cluster in pockets at localities offering the greatest accessibility and amenity. The less wealthy infill between and are forced to disperse to more affordable, but less desirable, parts of the urban fringe. People form alliances and allegiances based on membership of a number of work, business, social and recreational groups and to address particular interests and issues. Individuals and groups are well informed and insist on being engaged in any decision that could affect them, their children, the environment and places or other things they value. The struggle for survival of 'community' with all its multifaceted aspects is won. People are conscious of their rights and belong to different communities of interests. 'Community-based management' becomes the norm.

The contiguous urban areas of South East Queensland and northern NSW have coalesced to become a cosmopolitan '24 hour SuperCity'. Here businesses and transport operate around the clock, 365 days a year. SuperCity is a magnet for high income executives, professionals, skilled workers and wealthy retirees. Supporting them is a post-industrial, artisan and crafting economy with large numbers of people engaged in small businesses providing personal, household, business, distribution, education, training and recreational services.





**COASTAL BLOOM**



## Coastal Bloom

### Growth Swings to the Coast — The Years 2000 to 2005

Queensland is a highly desirable destination for interstate migrants and footloose ‘global citizens’. State population growth is being driven by a number of factors, including the relative decline in the ‘livability’ of southern capital cities and major urban areas around the Asian Rim. Government policies are introduced that recognise the need for foreign capital and expertise to enable the rise of a globalised state economy. Related technical and business changes appeal to ‘global workers’ who can locate themselves anywhere in the world.

People are attracted by the Australian lifestyle, with its multiculturalism, relatively low crime rates, and stable social, political and economic structures. Queensland’s climate and high levels of amenity, coupled with open markets and the high take-up rate of technological innovations, make it a growing focus of the emerging global knowledge economy.

Initially this migration and economic growth focuses on South East Queensland. But the negatives of major urban areas are increasingly outweighing the perceived benefits of living there. The problems associated with South East Queensland and the southern capitals are accelerating. Sprawl, congestion, pollution and crime have worsened. Day-to-day living in these cities has become more difficult and many people, especially older people, wish to escape from it.

In contrast, the benefits associated with living in coastal areas are driving a ‘SeaChange’ effect, in which many of those who can, choose to leave the cities, to escape to a simpler, less hectic life. They are drawn by the high quality lifestyle which offers everything available in the urban centres, plus the natural environment, perceived lack of crime and personal security issues, and lower housing cost. The ageing, but highly mobile population of Australia, make quality of life choices for their ‘retirement’, with many starting small service businesses or e-commerce enterprises from home.

### Coastal Bloom

This is a scenario in which:

- ➔ Population in Queensland grows rapidly
- ➔ The quality of life in SEQ deteriorates substantially
- ➔ There are high levels of interstate migration
- ➔ Growth is concentrated along the coast north of SEQ
- ➔ A decentralised high-growth economy forms in coastal centres
- ➔ The economy is based on global services and tourism
- ➔ Travel demand grows faster than population
- ➔ Major new demands for transport infrastructure are created

### Queensland:

- ➔ Life style
- ➔ Multiculturalism
- ➔ Low crime rate
- ➔ Stable politics
- ➔ Stable economy
- ➔ Open markets
- ➔ Technology innovations

### Quality of life in SEQ declines

- People move to coastal centres
- 2005 – 40% of growth in regional coastal Queensland
- Retirees migrate to the coast
- International tourism booms

South East Queensland has been taking the lion's share of the State's growth, but the balance is swinging towards the coastal centres north of Noosa. South East Queensland is still a growth area, hooked increasingly into the global economy. However, it progressively experiences the same declining quality of life issues driving migration from the southern capitals to Brisbane, leading many South East Queensland residents and new arrivals to look to the coastal areas in Queensland as alternatives to Brisbane.

From 2003 onwards, Queensland's coastal strip begins to develop rapidly as the kind of growth already seen in areas such as Cairns and Hervey Bay takes off in other centres. The essential building blocks for the growth of Queensland's coast are the beauty of the coast, the clean environment, the natural attractions of reef and rainforest, the leisure activities and the somewhat slower pace of life.

By 2005, communities along the coastal strip and near hinterland areas from Noosa to Cooktown are becoming highly desirable places to live. Coastal areas have increased from 20 to 40% of the state's annual growth. As these coastal communities achieve a population base of around 100 000, they are able to offer the levels of the social, educational, entertainment services and other amenities which those relocating to the communities expect and demand.

The natural beauty and enhanced amenities and dynamism lead a number of coastal towns to become tourist meccas, drawing large numbers of international tourists from the expanding Chinese and North American markets. Not only are these towns places to visit in their own right, but they also act as jumping-off points for the eco/bush/reef cruise tourism market. Hospitality and services industries develop and these in turn attract further residents to the areas.

A growing percentage of people over 60 feel that they have a right to the good life and a desire to be close to the tourism and recreational facilities available in the coastal communities. Housing costs are less in coastal communities than the high-amenity parts of major cities. Many retirees decide to sell up to move to cheaper high-amenity coastal communities and live, in part, off the surplus capital released from selling their higher-value family home.

### E-business Takes Off — The Years 2005 to 2015

The new ‘coastal bloom’ phenomenon depends on more than just retirees and tourism. The biggest contributing factors are the technological and business organisational developments that have made it practicable for many working people to move to the coast. The information super-highway has opened up enormous opportunities for people to establish new and innovative businesses.

Many of the growing coastal communities are strongly linked to the global economy. Many highly profitable new businesses are based in these communities. The location of businesses outside the traditional urban centres depends on the new ability to create geographically dispersed business structures. These new businesses, which exploit innovation to take market share with minimal overheads, are highly entrepreneurial in nature. They are characterised by their ability to change their focus rapidly to take advantage of continually emerging strategic opportunities.

Such businesses tend to be high-technology oriented or to have very decentralised production and distribution chains. They often consist of nothing more than a strategic planning, design and marketing capability, with the rest of the company’s business being done in any geographical area that offers low cost services and good communications. They survive by quickly responding to new tastes and needs in potential markets and depend on their ability to rapidly adapt or redesign products or services. They often form business partnerships with other ventures to more effectively respond to strategic opportunities. By year 2000 standards, they are extraordinarily entrepreneurial. What matters most for such global companies is their flexibility and ability to obtain and effectively use information. Where they are located is relatively unimportant, if not completely irrelevant.

By 2010, a new paradigm emerges, based on the concept of the ‘global entrepreneur’. Business now has as one of its iconic images, a business person for whom the tyranny of distance and the bonds of the city (and often those of the nation state) have been totally broken. Like a butterfly emerging from its chrysalis to fly free, the ‘global entrepreneur’

#### Entrepreneurial businesses

- ➔ Hi-tech
- ➔ Decentralised
- ➔ Minimal overheads
- ➔ Innovative
- ➔ Global focus
- ➔ Strategic alliances
- ➔ Telecommuting
- ➔ Often home-based

### Increased travel demand

- ➔ Longer trips
- ➔ More personal trips

*Multitude of services supports business entrepreneurs.*

casts off the yoke of geography and can freely choose to live and work in locations such as the green, vibrant and pleasant atmosphere of the coastal communities. While there are parallels between the 'coastal bloom' phenomenon and Silicon Valley two decades earlier, 'coastal bloom' is fuelled by much greater decentralisation.

The 'global entrepreneurs' attract large numbers of service providers — from personal services such as hair and body care, house, laundry, car and garden; to professional services such as health, legal and accounting; to food and entertainment services. In numbers, these service providers far outnumber the entrepreneurs themselves. A large number are home-based small businesses, continuing the trend toward working from home. Many of the retirees moving to the coastal communities start such businesses.

Such working from home does not dampen per capita travel demand, in fact, it increases that demand. People take longer trips and more personal trips. Also the trend toward just-in-time logistics is intensified as a critical element in meeting global consumer demand. The spatially dispersed nature of development along the coast means that even routine trips tend to be longer than equivalent trips in the city would have been. As a consequence, travel demand is rising significantly faster than the rate of population growth.

Not everyone works in businesses headquartered on the coast. A significant percentage of people telecommute from the coastal centres to work in businesses that operate out of major urban centres in Australia and elsewhere in the world.

### Coastal Consolidation — The Years 2015 to 2025

The period from 2015 to 2025 sees on-going growth in the coastal communities. High-technology, information-intensive businesses continue to be established and attract people looking for employment and quality of life. Increasing numbers of people retire to the coast as the Australian population ages, especially to communities offering a range of support services for the 'active age' lifestyle. The total



## COASTAL BLOOM

population builds steadily and by 2025 there are three booming cities of over 250 000 and several large 'towns' with over 100 000 people. Each large centre supports a number of smaller regional communities.

There are mixed fortunes for rural and remote communities. The communities in the remote regions that have successfully taken advantage of the opportunities to develop niche farming, tourism and other service-related ventures draw populations from those remote communities that haven't adapted. By and large, these communities are supported by the increasing availability of goods and services and markets made possible by the development of the coastal centres.

Two main factors determine the winners and losers - water and niche markets. Towns that are in dam catchment areas utilise the water and continue to provide much of the produce and agriculture to Queensland and international markets. Other communities are recycling water or using drip-feed mechanisms to maximise water use. The most successful towns are those that exploit their water resources to tap into niche markets. These include 'green' power generation, and organic and genetic engineering-free agriculture.

Having invested heavily in world-class telecommunications infrastructure, this area now has one of the highest levels of e-commerce operating in Australia. By 2020 traditional retailing is effectively dead in the coastal communities. The larger metropolitan centres maintain a few large-scale shopping centres, with a focus on recreation and entertainment, because of their heavy existing investment in retail infrastructure. But the full adoption of e-commerce in the coastal communities has provided a significant cost of living advantage, as the scale of e-commerce has driven prices way below traditional retail. This development is supported by improvements in high-speed transportation, which further lowers unit costs. Together, these factors accelerate migration out of the large centres to coastal centres and other 'new' communities that have been the best and brightest in adopting e-commerce.

Three cities of 250 000+  
several 'towns' of 100 000+  
with surrounding clusters of small towns

*Rural and remote winners and losers.*

### Variety of Travel Modes

- Fast trains
- Fast 'ferries'
- High speed air
- Road and rail freight improvements

### International air travel demand

- Tourism
- Global entrepreneurs

Travel along the coast is much easier. No longer is North Queensland 'isolated': fast trains between towns, high speed ferries, good air access and major improvements in road and rail freight mean that the coastal strip is readily accessible from anywhere. Another plus for the coast back in the early part of the 21st century was the cost of land and housing. Apart from some of the high profile tourist areas, it was considerably less than any of the other capital cities. So people kept moving to the area from the south and from overseas and by 2025, the coastal area has become home to over 1 200 000 people and sees more than 10 million international tourists a year.

This major movement of population affects the affordability of housing, however, putting a curb on the overall cost advantage of the coastal region. This is an ironic reversal of the situation at the beginning of the century, where housing was cheap in coastal communities but the non-housing cost of living was high.

Tourism continues to be a significant economic driver for the coastal communities. Coastal Queensland remains a tourist destination for those seeking a clean, natural environment, access to the Barrier Reef and rainforest ecotourism in a safe, politically stable location. The appeal of such safe and spectacular attractions continues to grow in Australia and the rest of the world. Since 2010, super-cruise ships have been operating into Queensland, with passengers visiting coastal cities and the reef. Many of these tourists combine cruise holidays with ecotourist attractions in rainforest and 'outback' destinations.

By 2025, Queensland gains an additional international airport at Mackay. Queensland's international airports are kept busy responding not only to tourist demand but also to the needs of global entrepreneurs. The other coastal communities are connected to these international hubs by high-speed water transport and high-speed rail links.

Overseas tourism to the coastal communities and to Australia as a whole increases as a result of improvements in air transport that dramatically reduce the time it takes to fly from Asia, Europe and North America. By 2020, a new generation of high-speed commercial aircraft enter service. Advanced supersonic aircraft that reach Mach 2.4 with a

greatly reduced sonic boom are introduced, as well as 'spaceplanes' that travel outside the atmosphere at orbital speed for most of the journey, offering flight times from Europe to Australia of less than three hours.

In a world of seven billion people, one of Australia's greatest tourist asset is its emptiness, its lack of people. People feeling crushed in the mega-cities of the world, make the Australian outback one of the world's top tourist destinations. While they come principally to see and enjoy the 'bush', many of these tourists also visit the reef and the coastal communities while they are there. Tourists also come to buy Aboriginal art, and Aboriginal art colonies are established in remote areas of Queensland, similar to the indigenous art colonies in Arizona and New Mexico in the United States.

By 2017, the influx of retirees and business people into the coastal communities has resulted in significant investments in infrastructure to keep pace with travel demand. Travel demand is driven by two factors: the rapid population growth from migration (internal and overseas); and the lack of compact urban structure (e.g. no CBD) which leads to growth in demand greater than population growth.

These communities (especially those driven by e-commerce and/or retirement) are comprised of individuals who are very engaged in the decision making process for all infrastructure provision. Retirees in particular are active in dealing with infrastructure decisions:

- ➔ they have the time, as their non-work commitments are minimal;
- ➔ they have the inclination, as they came principally for lifestyle reasons and wish to maintain amenity;
- ➔ they have the capacity, as the information needed to participate in the process is widely available on the Internet and elsewhere;
- ➔ they have the necessary technical expertise.

The engaged communities pose particular problems for planners as those communities are at heart conflicted. On the one hand they demand the services that require significant infrastructure support (e.g. roads, airports or trains); on the other hand, they left the city in part to avoid the complexity and costs and externalities that such

*Huge infrastructure demands + quality of life issues = planning problems!*

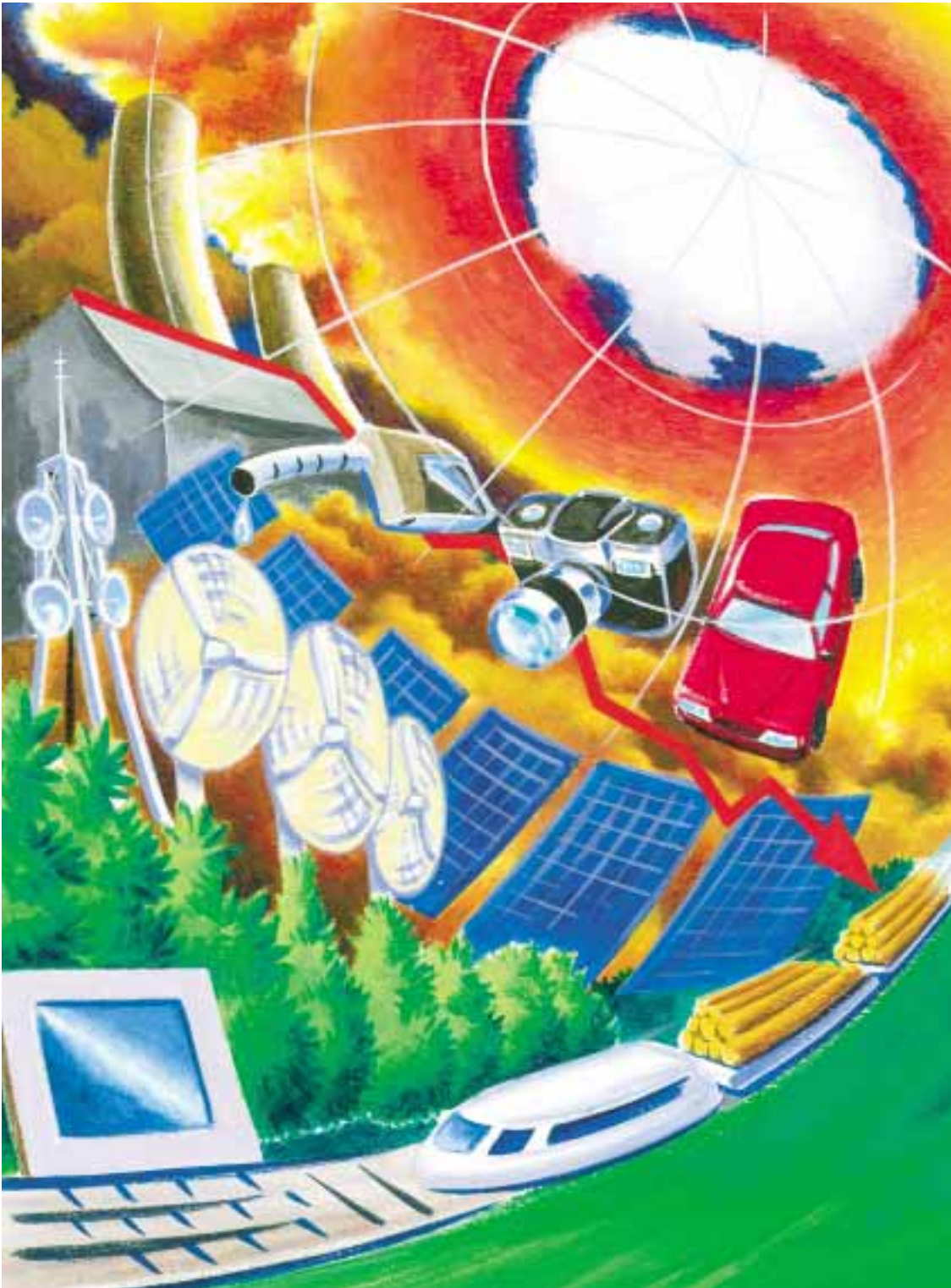
*Communities engage in decision making*

*34% of coastal population is 60+ years by 2020.*

infrastructure entails. This leads to moves to cap growth in a number of communities, raising social justice and economic viability issues.

Falls in transport costs (driven in part by the completion of the Melbourne to Darwin super train link and fast coastal shipping) makes coastal communities more affordable. This provides a further incentive for the older population to move to the coast. Australia's ageing population — in 2025, 24% of the population is 60 or older — increasingly chooses the coast as the place to live and retire. By 2020 the percentage of people over the age of 60 living in the coastal communities exceeds 34% of the total population.

The over-60 population is healthier and less concerned about debilitating illnesses requiring family support. The internet has made the delivery of high level medical and other professional services much less dependent on the physical presence of a patient in the specialist's office. As specialist medical advice from Sydney, New York or London is available to assist local practitioners in the coastal communities, the need to reside in large cities to obtain high level services is reduced. This need is further reduced as a result of fast, low cost travel becoming available. In any case, doctors and other medical practitioners are also mobile and want to live in the coastal communities too.



**CARBON CRUNCH**



## Carbon Crunch

### Carbon Becomes a Serious Business — The Years 2000 to 2005

By the year 2000 many parts of the world are experiencing unusual and often severe changes in weather patterns including very high and low temperatures, unusually strong winds, floods, droughts, cyclones and hurricanes. The insurance industry is facing mounting financial pressure resulting from the escalating trend in weather-related disasters around the world. Economic losses from storm damage have soared from levels below \$US10 billion per decade before the 1990s to \$US100 billion a year by the late 1990s. Reinsurance costs rose by 400% globally between 1995 – 1999. Insurers increasingly react by switching their investment portfolios away from carbon emission-intensive industries that they see as increasing their exposure to storm damage losses.

This real dollar cost plus continual adverse news coverage drives a major shift in global public opinion. People perceive that greenhouse emissions are definitely changing the climate in ways that are beginning to affect them personally, and in some cases with direct costs through property damage and loss of life. Concern about climate change is linked with concern about environmental degradation in general. Many people in developed countries begin to consciously use their consumer buying power to influence producers, manufacturers and retailers to behave in more environmentally responsible ways.

Some sectors of industry and commerce react quickly to the pressure from global public opinion. In an effort to be ‘ahead of the game’ many companies recast the issue as an opportunity. The concept of sustainable development becomes a rallying cry with its ‘Triple Bottom Line’ slogan — ‘People, Planet, Profits’. Leading energy companies such as Shell and BP pioneer the practical business implementation of sustainability in their world-wide operations.

BP invests heavily in alternative energy infrastructure following the introduction of internal carbon emissions trading throughout its international operations. Shell continues to move out of high-carbon

### Carbon Crunch

This is a scenario in which:

- ➔ Global public perception regards ‘global warming’ as proven
- ➔ Insurers attribute increasing storm damage losses to CO<sub>2</sub> emissions
- ➔ Insurers start shifting their investment portfolios out of carbon-related stocks
- ➔ The USA decides to bet on the trade leverage of new low-carbon technology
- ➔ The Kyoto protocol is ratified soon after 2002
- ➔ A global carbon trading regime is introduced, with carbon taxes in some jurisdictions
- ➔ Urban transport patterns change and urban form begins to change
- ➔ New low-carbon transport technology is quickly adopted by the market
- ➔ World markets for coal contract dramatically, and faster than predicted
- ➔ Queensland coal exports are substantially reduced
- ➔ Aluminium and other light recyclable metals are favoured, but virgin production falls
- ➔ By 2025, global CO<sub>2</sub> emissions are falling dramatically

*Weather patterns change. Insurance costs blown out by cost of natural disasters. Investment moves away from carbon-based industries.*

*Triple bottom line = People, Planet, Profits.*

*New, clean vehicle technologies.*

*USA ratifies Kyoto Protocol in 2002.*

energy sources, following its 1999 exit from coal, and launches low-carbon fuel trials. Car manufacturers such as Honda, Toyota, Ford, GMH and Volvo compete to introduce hybrid electric vehicles and quickly phase out traditional car technology based on internal combustion engines with mechanical drivetrains. The early hybrid electric vehicles are still powered by combustion engines — usually turbines — but manufacturers prepare to move rapidly to fuel cell power sources as costs fall.

This combination of strategy and technology initiatives triggers a groundswell of strategic and technological rethinking across industry. It is evident that there is a whole range of powerful new technologies and engineering practices for increasing supply-side efficiency of energy delivery and reducing demand-side energy consumption. These new technologies promise substantial increases in the overall efficiency of energy use and can potentially reduce carbon emissions by a factor of between four and ten. The United States in particular is quick to recognise the significance of this new technological potential. Policy advisers in Washington decide that American industry is well positioned to gain world-wide competitive advantage if these technologies can be favoured by international legislation.

By 2002 the United States government concludes that the combination of world-wide concern about climate change and the availability of the new generation of low-carbon energy-related technology makes it worthwhile to ratify the Kyoto Protocol. After a round of aggressive diplomacy aimed at securing adequate participation agreements from developing countries, the United States ratifies the Kyoto Protocol late in 2002. Together with northern European nations that have already ratified, this assures that the protocol becomes internationally binding.

Following ratification, a series of policy instruments are agreed and introduced to accomplish the agreed reductions in carbon dioxide emissions during the first commitment period from 2008 to 2012. The centrepiece of these instruments is an international carbon emissions trading regime modelled on similar schemes a decade or more earlier



that facilitated the phase-out of leaded petrol and sulphur in smokestack emissions in the United States. Some individual countries introduce additional measures such as carbon taxes and accelerated depreciation of carbon-intense capital assets.

In Queensland, recognition dawns that the Kyoto Protocol presents a fundamental challenge to the State's economy. A multi-pronged approach is taken by the Government, which attempts to anticipate the impact of the international changes on coal and other fossil fuel industries, land clearing and transport emissions. An extensive marketing campaign to raise awareness of greenhouse issues is undertaken and Queenslanders are exhorted to assist the State to meet its greenhouse commitments. Nevertheless the understanding is growing that both the economic and climatic problems will get worse before they improve and that they will have a serious impact on most sections of industry and society in the State.

As part of the Government's analysis of strategies for mitigating greenhouse gas emissions, transport is identified as an area that could achieve significant savings in a reasonable timeframe. Queensland's transport emissions grew by 40% between 1990 and 1998 and had been expected to grow by a further 30 to 40% up to 2010. This implied an 80% rise in transport emissions between 1990 and 2010. Transport emissions are a significant contributor (approximately 17%) to Queensland's overall emissions. Given the national overall level target of 8% under the Kyoto Protocol, many sectors of government and business realise that measures to reduce transport emissions would offer significant benefits to Queensland in meeting the Kyoto target. They would also result in improved system and energy efficiency and improved living conditions.

The Transport Portfolio identifies a suite of initiatives to change travel pattern behaviours and raise awareness by individuals in the community of ways to reduce their car usage. Responsible car usage is encouraged and is assisted by a policy decision to introduce road pricing and raise fuel prices. Road and rail networks are examined with a view to

*Kyoto bites in Queensland.*

### Carbon cuts

- ➔ Transport travel patterns targeted for change
- ➔ Petrol prices rise
- ➔ Government supports new clean technologies

*Rich go green – poor can't afford it!*

rationalising freight logistics operations. Following these decisions, the price of petrol begins to rise steeply, partly due to the new charging and taxing regimes, and to the market response to carbon trading.

Meanwhile, there are reports that mosquito-borne tropical diseases such as malaria are becoming prevalent in areas further from the equator. And in many parts of the State, changing patterns of rainfall are putting pressure on fresh and clean water supplies as well as exacerbating soil erosion and salinity.

### Carbon Cuts Begin — The Years 2005 to 2015

As the Kyoto Protocol begins to bite, international manufacturers enter the market with an array of new energy-related technologies. Many of these products offer not just improvements in energy efficiency but also lower operating costs and enhanced convenience and quality of life. This results in active consumer choice becoming a substantial force in driving the shift to environmentally sustainable industry and commerce.

The new technologies and products cover a wide range:

- ➔ cheap biotechnology-based fuel cells that can use methane directly, and very cheap biotechnology-based solar cells;
- ➔ so-called 'hypercars' — hybrid-electrics built from ultra-lightweight composite fibre material that are able to drive from Sydney to Perth on a single tank of fuel;
- ➔ the widespread deployment of Intelligent Transport Systems (ITS) for traffic management in cities — allowing drivers on ITS-equipped highways to put their cars on full autopilot.

The Queensland Government actively promotes and supports the development of industries based on the new technologies.

Affluent people in urban areas are eager to express their 'right' to drive a car and to travel at will and enthusiastically seek to own the new vehicles because of their status and novelty value. By 2008 there is an even mix of traditional internal combustion engine cars and new vehicles operating on the road system. Generally, those who cannot afford the new vehicles are regarded as anti-social and there are

reported instances of vandalism of old cars because the older vehicles are highly polluting compared to the new generation cars. In 2010 a 'fossil tax' is imposed on all internal combustion engine vehicles in combination with a 'scrapage' allowance to encourage more people to change to the new technology.

Elsewhere in Queensland, many Australian as well as overseas companies are purchasing extensive rural properties to use as carbon sinks to earn 'carbon credits' under the emissions trading system. In a parallel move, the Queensland Housing Industry purchases forest areas to help ensure continued industry growth. Some of these initiatives conflict with the objective of preserving native forests and the carbon sink industry is forced to balance its Kyoto Protocol activities with more conventional environmental management practices. Employment is generated by this expansion of the forestry industry, revitalising a number of rural towns. Some of the rail links previously used for transporting coal and energy-intensive mining products start to carry timber products instead.

Indigenous and other communities in rural and remote Queensland develop strategies to generate income and create employment based on forestry carbon sinks. Taking a lead from similar activities commenced in Israel in the 1990s, by 2011 many rural communities have formed alliances with coastal cities to use carbon sinks to process effluent. This provides a guaranteed water and fertiliser source for the sinks and avoids problems of nutrient pollution of reef areas by the coastal communities. The effluent is transported by pipeline and in some cases by rail and road. These arrangements have long-term benefits for rural communities in terms of regeneration of land and income from timber products. They also provide coastal cities with an alternate sewerage processing system and help protect the integrity of waterways and fisheries. Other rural communities in Queensland see the potential of carbon sinks for income generation, and cooperatives form to buy land that is then leased to Australian and overseas investors. They compete with the direct corporate investors, triggering a 'land rush' which causes rural land prices to escalate.

*Carbon sinks become popular investment opportunities.*

**Coal impacts felt**

- ➔ Backlash to foreign land acquisition for carbon sinks
- ➔ Coal industry hard hit – major impacts on government revenue
- ➔ Alternative energies – wind and solar takes off

In 2012, due to the community backlash at the ballot box, the Queensland Government introduces provisions to preserve land from acquisition by overseas investors for use as 'sinks'. This policy change impacts on investment in the fledgling forestry industry and on some employment opportunities. In 2014 these social conditions result in the rise of Independent members in Parliament. Independents are able to exert their influence on the major parties, sometimes to the detriment of consistent and coherent policy formulation.

Queensland's coal industry is hit hard by the push to reduce carbon emissions. The combination of rising prices for carbon credits, and the introduction of new energy technology in most of the major consuming nations, reduces the demand for coal much more quickly than industry observers predicted. The biggest impact is felt between 2010 and 2014, when the coal industry contracts fall by more than 60%. Long term contracts for coal are terminated by overseas countries which prefer to opt out rather than pay the penalties imposed by carbon consumption. Only a few coal mines in Queensland remain viable. These are supported by the State Government, which still has residual interests in traditional power generation.

While some impacts on the State Budget had been anticipated from a decline in the coal industry, the sudden termination of many major coal contracts catches the State Government on the back foot. Tax revenue falls sharply and funding problems in the provision of key government services multiply dramatically.

From 2010 onwards, alternative energy technologies are able to generate electricity as or more cheaply than traditional fossil-fueled generating technology. Cheap mass-produced solar cell sheeting and coatings are allowing many individual households to use their rooftops as solar energy generators, and the market for photovoltaic power systems grows exponentially as prices fall. The State Government encourages solar and wind energy manufacturers to establish businesses in rural communities which have been hit hardest by employment losses from the closure of central power stations and coal mines. Some rural

communities compete to persuade solar and windpower generating companies to establish in their community. Other rural communities develop their own alternative generation businesses to sell 'clean' electricity to the grid for use by urban and industrial consumers. By 2015, many rural communities are flourishing in this new regime of distributed power generation.

The combination of high fuel prices and the shift to new generation vehicles increases the popularity of public transport as a mode of travel. Those in society who cannot afford the new vehicles or the constantly rising price of fuel are forced in larger numbers to use the public transport system. Projects are commenced from 2010 onwards to provide greater speed, reliability, convenience, quality of interconnectivity, security and lower cost, as a way of making public transport an attractive and socially acceptable option. The impact is felt largely in cities where education programs are successful in raising awareness of the effects of traffic congestion on health and lifestyle as well as on the climate.

By 2015, the greatly improved public transport services are attracting people from all walks of life. Large numbers of people decide they do not need to own their own car because of better public transport options. Many families opt for one car only and all members use public transport as their main mode of travel. By 2015 individual car ownership is down by almost 40%.

### **Carbon Targets are Met — The Years 2015 to 2025**

Advances in information technology are deliberately used to reduce the amount of travel required for work. Many people opt to telecommute and organisations begin to provide opportunities for people to live and work in their own town or suburb. To avoid problems of isolation from work colleagues, people meet regularly with others in community libraries, coffee shops, and shopping centres. In some cases, workplace centres are used for meetings and shared by many different organisations. This is particularly useful in regional areas where

*People forced to use public transport through high cost of fuel and of the new vehicle technology.*

*2015 – public education campaigns successful; public transport services popular; car ownership down by 40%.*

*Telecommuting strategies introduced to relieve travel demand.*

*Local work centres, meeting areas developed and shared by organisations.*

*Travel blending a success.*

*Car travel focus shifts from commuting to leisure and pleasure trips.*

*E-commerce impacts on freight task.*

*Rail and sea freight grows; road transport industry under threat due to emissions and safety concerns.*

*Unstable weather; cyclone damage; reef bleaching; air travel costs decimate the Queensland tourism industry.*

government agencies are able to utilise shared resources to deliver more integrated services to communities. Neighbourhoods become centres for meeting people and sharing ideas.

Programs are offered which provide households with the information needed to assess and rationalise their travel patterns and to coordinate travel with others, an approach known as 'travel blending'. The impact on transport of working from home or locally and rationalising travel patterns is enormous. Peak hour travel is largely eliminated. Not having to travel to work allows many people to find extra time for leisure activities. The focus of travel shifts to leisure and pleasure trips.

Massive restructuring of freight systems from 2015 onwards provides full integration of the freight transport task. Distribution channels are streamlined with many goods reaching the customer direct from the manufacturer or distribution warehouse via small batch carriers. The requirement for freight transport to achieve very high levels of energy efficiency results in a shift away from road transport to more domestic goods movements using rail and sea. The road transport industry lobby mounts a campaign to 'save' their industry, but they find few supporters in the community because of the belief that heavy road transport contributes disproportionately to carbon emissions and climate change. In addition, the community is no longer prepared to accept large trucks on roads due to safety concerns.

The impacts of unstable weather patterns are felt severely by the Queensland tourism industry. Weather problems continue to escalate and in 2020 substantial damage to the natural environment and to many coastal resort areas from frequent cyclones is clearly evident. Many tourists seek destinations outside Queensland because of the bleaching of large sections of the Great Barrier Reef. Cyclone damage to resort areas, roads, rail and airports causes insurance costs to climb rapidly. Additionally, overseas tourists are finding air travel more and more expensive due to increased fuel prices and carbon related penalties and charges placed on airlines. North Queensland is increasingly viewed as a risky location for holiday purposes. Despite extensive marketing many resort operators lose substantial income. They are forced to reduce

staff and services, with allied further impacts on the local economy. Similar climate problems are accelerating around the world, and world attention focuses on the need to negotiate much more intense restrictions on emissions during subsequent rounds of the Kyoto Protocol.

The Queensland coal industry is unmistakably on its last legs, and there is a terminal decline in coal exports as the last long-term contracts expire. Unemployment in minerals-based primary industry is severe, resulting in loss of population and government services and business closures in the worst affected rural towns. There are substantial changes in freight patterns and greatly reduced demand for freight services along the old coal freight corridors. As the coal industry disappears and arable land is sold to overseas interests, and climatic conditions force many of Queensland's agricultural and tourism businesses to the wall, Government assistance is demanded by many communities.

This puts further pressure on the State budget and government services. Politicians in coastal and rural electorates face defeat at the ballot box if the Government is not seen to be taking action. Community power is gaining pre-eminence. Communities focus heavily on green and social issues and demand more autonomy and responsibility for their own directions.

By 2025, Queensland's greenhouse emissions are substantially reduced, although this has meant the almost total loss of the coal industry. The progress is achieved through a combination of behavioural changes in the community, new approaches to urban planning, and through major technological advances. However these changes have also resulted in many other regional, social, community and governance problems which were not foreseen in the early years of the new millennium.

Queensland's industrial and commerce base has changed significantly. Clean power sources provide energy for industry. Households are able to generate their own electricity through solar and wind technology. The manufacturing sector makes extensive use of light recyclable materials such as aluminium, but due to the very high levels of recycling

*Demise of coal industry results in high unemployment.*

*Government under pressure to support communities hit by greenhouse-related impacts.*

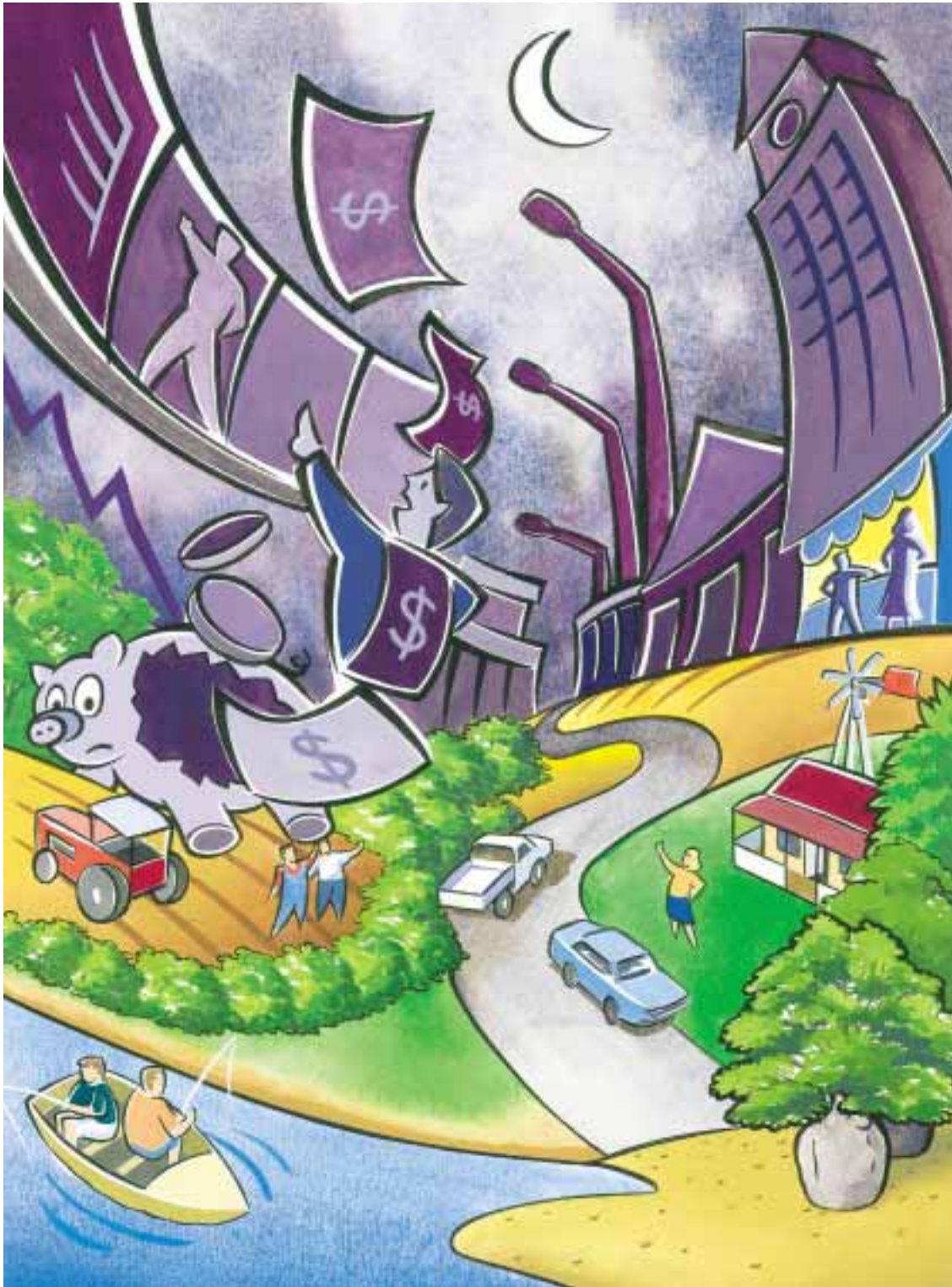
*Communities demand more power – focus on social and green issues.*

*By 2025, greenhouse emissions are below 1990 levels – BUT – not enough to prevent further climate damage.*

internationally, the demand for virgin mining products has slumped. There are booming housing, furniture, boating and craft markets for timber products from the flourishing forestry industry. Environmentally-friendly products and choices have improved the quality of life for many people. This is reflected in the way neighbourhoods have become the focus of work and community, enabled by the redesign of urban planning and transport systems.

The Kyoto Protocol is progressively strengthened between 2015 and 2025, and by 2025 annual global greenhouse gas emissions are down to well below 1990 levels. Unfortunately this is not enough to prevent further climate change since the total amount of carbon dioxide in the atmosphere is still well above historical levels. More change may well be in store, unless atmospheric carbon dioxide levels can actually be reduced.





**GLOBAL BUST**



## Global Bust

### Early Growth and Globalisation — The Years 2000 to 2005

From 2000 to 2005, Queensland thrives as commodity prices improve, and globalisation accelerates. Queensland's exports recover from the slight downturn that accompanied the late 1990s Asian financial crisis. Commodity demand and prices rise and primary and resource production increase. However, oil and fuel prices almost double. Petrol prices in Brisbane are now \$1.70/litre, \$2.10/litre in the bush. Diesel prices continue to be subsidised under the GST agreement.

The North West Mineral Province and Surat Basin development have taken off along with the Burdekin irrigation area. New coal, gold and nickel mines have opened. This triggers a resource-driven boom with high infrastructure investment and new production stimulating strong regional employment growth. Much of this is fly-in/fly-out, but existing and new regional towns are also major beneficiaries.

The wealth generated is rapidly being transferred to urban areas and Brisbane where its accumulation is forcing up property and other prices. The costs of services are rising rapidly as demand exceeds supply in both urban and regional Queensland. Local farmers and those with technical skills are being sucked in by the high wages and good conditions offered by the mines. It is almost impossible to get a tradesperson to call 'for love or money' — skills are in particularly short supply in rural and regional areas. Savings and profits are increasingly being placed on the stock market both directly and through managed trusts and superannuation. The more conservatively inclined invest in property.

Australia's private debt continues to expand exponentially. The stock market bull run continues with Australians borrowing to invest on Australian and overseas stock and commodity markets. Private and corporate savings have fallen to historic lows whilst domestic consumption persistently exceeds productivity gains and wages growth. Australia's current account deficit repeatedly exceeds past records as consumption-driven imports exceed tangible exports.

### Global Bust

This is a scenario in which:

- ➔ The economy of Queensland initially globalises and grows rapidly
- ➔ Growing rejection of globalisation leads to a resurgence of protectionism
- ➔ Social and environmental concerns lead to a growing rejection of globalisation
- ➔ Nations and localities begin to introduce direct and indirect protectionist measures
- ➔ Computer network failure triggers a major market crash affecting all global markets
- ➔ Around the world, countries draw back from globalisation
- ➔ Australian export markets shrink, but Australia has lost its import-replacement skills
- ➔ Australia rebuilds a self-reliant economy, while still communicating globally
- ➔ People leave major urban areas and move to regional communities
- ➔ Economic policy focuses on localism and sustainability
- ➔ After 2015 the global economy returns, but with a 'triple bottom line' focus.

### 2000 – 2005

- ➔ *Commodities boom*
- ➔ *Globalisation grows*
- ➔ *Wealth → Brisbane*
- ➔ *Property & services costs escalate*
- ➔ *Population shift from rural → city*

### Boom time

- ➔ *Huge private investment in stock market and hedge funds*
- ➔ *Australia's private debt grows*
- ➔ *Private and corporate savings at all-time low*
- ➔ *Account deficit exceeds past records*
- ➔ *State government revenue absorbed by major infrastructure projects*
- ➔ *Internal migration to Queensland high.*
- ➔ *Property prices soar*
- ➔ *Interest rates high*

### **BUT – the other side of the picture:**

- ➔ *Rich/poor divide grows*
- ➔ *Social deterioration*
- ➔ *Environmental deterioration*
- ➔ *Protectionism grows*
- ➔ *Trade rows*
- ➔ *Growing backlash against globalisation*

The Federal budget has gone into deficit to fund the continuing conflict in Timor and major, politically-driven, rural infrastructure projects. State government revenues appear plentiful but are fully absorbed in major infrastructure projects: in particular sporting complexes, the inland standard gauge rail links, and infrastructure partnerships. The partnerships include resource development; value-adding mineral processing; bulk water supply; co-generation of power and assistance to local authorities in high growth areas. Consequently there is little scope for counter-cyclical public expenditure in case of economic downturn.

There is strong internal migration to Queensland — exceeding 55 000 people a year. Property and land prices are skyrocketing. It is proving almost impossible to purchase properties for future transport corridors and claims for expensive ‘hardship acquisitions’ accompany every ‘designation’ of corridors in planning schemes. Infrastructure and construction costs are also soaring due to high labour costs and the competition for building materials that are largely controlled by overseas corporations. The Reserve Bank raises interest rates to all-time highs to dampen demand and counteract rampant ‘cost push’ and ‘demand pull’ inflation.

In stark contrast to the rising speculation and surging prosperity for the elite, there are disturbing counter trends of growing income polarisation, and significant social and environmental deterioration. Increasingly there are protests against the ‘evils of globalisation’ and calls for speculative financial flows to be curbed. Protectionist sentiment is rising, both at the grassroots level as well as among industry groups who feel they are being undermined, and among politicians whose constituents feel they are being shortchanged. There are increasingly frequent trade rows as countries restrict imports of specific items to protect vulnerable domestic industries (or voters), usually framed in ways that do not technically contravene World Trade Organisation rules. The intellectual climate is beginning to move away from pure free trade rhetoric as the social and economic downside sinks in.

The protectionism is partly culturally based, so that Australia is gradually frozen out of its existing and potential Asian markets. Alternative commodity markets are threatened when countries use environmental concerns to propose imposing import levies based on assessments of 'embedded carbon'. Queensland is particularly vulnerable to this because of its continued economic reliance on exports of resources and rural commodities.

### The Globalised Economy Stumbles and Falls — The Years 2005 to 2010

Against this unstable background of a global bubble economy coupled with growing social concern about globalisation, a communications meltdown strikes. Early in 2005 an unprecedented global information network failure not only causes global financial trades to be frozen, but causes the loss of critical information relating to financial positions immediately before the shutdown. Technically, the network failure is a complex domino effect triggered by a massive solar flare that simultaneously burns out dozens of communications satellites and ground-based installations. Financially, the network failure is disastrous.

International trading is halted for days on world stock markets—already nervous due to the activities of highly geared speculators and the fear of interest rate rises. International finance and commodity trading is interrupted and the Bank for International Settlements (BIS) fails to settle — triggering a collapse of the international money market. This triggers a wave of stock market collapses around the world — destroying both personal and corporate wealth and investor confidence. Futures traders and hedge funds managers are unable to cover their positions — causing a steep decline in locally traded futures prices, then their collapse, closely followed by the collapse of global commodity markets.

The resulting global financial wipeout leads to a critical loss of confidence in global financial interconnectedness as the basis of national

*Australia frozen out of Asian markets.*

#### Communication meltdown bursts the global economic bubble

- ➔ Global economic collapse
- ➔ Personal wealth destroyed
- ➔ Super funds wiped out
- ➔ Property market collapses
- ➔ Export markets collapse
- ➔ Commodities market dries up
- ➔ Tourism evaporates

prosperity and security. Concern had been growing about the increasing vulnerability of international financial markets and the global economic system and this disaster makes the case decisively.

The loss of personal wealth and investor confidence when the stock market collapsed meant the USA was no longer the 'consumer of last resort' keeping the global growth engine running and propping up ailing economies. The global interdependency achieved by electronic interconnectedness — so celebrated a few years earlier — now makes global economic collapse unavoidable.

Personal wealth is destroyed as paper profits on the stock and futures markets turn into real financial losses. Market-linked superannuation and investment funds are reporting losses equivalent to over half of their worth. Many are projecting further negative returns in future years. Some are announcing moratoriums on withdrawals. Corporate wealth is similarly devastated as demand disappears, prices tumble, equity evaporates and businesses, their premises and investment properties cannot be sold.

Australian export markets shrink rapidly as international commodity demand collapses. Australia is both priced out and frozen out of what remains of its traditional commodity markets and prevented from entering any new markets overseas — most pointedly in Asia and the Middle East. Commodities are being 'dumped' on the thin remaining markets to earn scarce hard currency. Queensland is particularly badly affected because of its reliance on minerals and rural commodities. Queensland's rural exports of coal, cattle, wool, cotton, sugar and rice all wither without the prospect of finding new markets. The prices for these products on the domestic market plummet and many mines and growers are forced out of production. Tourism evaporates, and many coastal communities suddenly find out how dependent they have been on visitor expenditure. The only bright spot is the demand for gold as a 'store of wealth', particularly in Asia, which is providing some resilience for the gold mining industry.

Highly geared investors and speculators have lost their homes. Self-funded retirees, those with high personal debt and those thrown out of employment by the recession are attempting to sell their investment properties and homes. Consequently, the property market is collapsing, property values have fallen by at least 40% and many properties are worth less than their mortgaged debt. A moratorium on mortgage payments is being considered.

Unemployment has quickly risen to 15%. There are fears it could peak at over 25%. This is because of the rapid increase in personal contracting since the 1990s and because of the large numbers of jobs dependent on tourism, or the discretionary expenditure of business, individuals and households. High disguised unemployment already exists in rural areas as farmers, their families, and rural service providers are clearly under-employed. Early retirees and older people, who lost their life savings, and those retrenched are actively seeking to re-enter the work force, or to become self-employed.

Internal migration to Queensland, and to South East Queensland in particular, has slowed to a trickle. There is even a return of people to rural centres and the bush in search of any opportunity for employment, or returning to family and friends for support. Rural youth is no longer leaving rural and remote areas to move to the cities or travel overseas. Recent migrants have returned overseas and interstate in droves.

Foreign funds are being repatriated to meet the financial crisis in their home countries. Multinationals are pulling out of Australia, due to their own financial plight and declining domestic demand in Australia, and closing down their operations, often without any redundancy payments.

Australia is suffering badly from loss of confidence and unemployment. The foreign trade deficit continues to mount and the Australian dollar exchange rate deteriorates as exports dry up but imports continue to be sucked in — particularly information technology imports and personal and household consumption goods. Australia's lack of any significant import substitution industries is clearly exposed and the country lacks the confidence, finance and skills to quickly create new ones.

#### Gold prices hold up! BUT.....

- ➔ Unemployment soars to 25%
- ➔ Internal migration to Queensland slows to a trickle
- ➔ People return to the bush or regional areas
- ➔ Multinational pull out of Australia — mass unemployment results

*Pressure is off urban infrastructure and transport and environmental issues.*

*Government strapped for funds with many competing pressures and demands.*

Queensland is particularly exposed to the serious downturn in both resources and commodity prices and demand. This leads to a sharp decline in government revenue and State fiscal strength. Migration from interstate reverses, and people move from urban areas to rural and regional centres. All levels of government seek ways to 'pump prime' local economies to create employment and generate new sources of wealth. Community attitudes harden against globalisation and major corporations, and favour self-help initiatives whereby local communities can take more control of their own destiny.

The economic collapse and rapid reduction in population growth and development activity has taken the pressure off urban infrastructure, transport and environmental issues. Urban areas have ceased to grow. Deteriorating air quality due to commuting by car and congestion are no longer major problems. There has been massive resurgence in demand for public transport since the recession.

The Government is increasingly strapped for funds and seeking ways to credibly distance itself from the unrealistic expectations for a quick recovery to the 'good old days'. Consideration is being given to seeking competitive budget bids across all departments and agencies, with those showing strong self-funding or income raising possibilities being well regarded in the budget allocation processes.

Major rural and remote area infrastructure projects continue for a while because of existing contracts and as employment generating activities. The government is seeking other ways to stimulate employment. The Transport Portfolio has been asked for its ideas. The government is seriously considering creating a new integrated Department of Infrastructure and Development.

There are significant new, competing pressures for the use of Federal and State funds. These include bids for greater health care, mental health funding, security and police services to meet genuine needs and as employment-generating initiatives. Funds available have evaporated as employment collapsed, GST income dissipated, export royalties have dried up and large property and financial transactions have all but ceased.



## Achieving Local Sustainability — The Years 2010 to 2025

In the wake of the economic problems there is a strong public reaction against globalisation, multinationals and big business. They are blamed for the recession, and for social and environmental problems. The new emphasis is on partnerships, self-sufficiency and more sustainable, small scale, local development — ‘small is beautiful’. The recession has resulted in a resurgence of mutual assistance and self-help in the face of adversity. There is a surprisingly strong spirit of partnering, mutual support and assistance that has been sustained since the depths of the recession, when people were forced to share and rely on each other.

Between 2010 and 2025 Queensland shifts to economic policies based on the principles of ‘sustainability’ and localism. Queensland is able to make this transition faster than the rest of Australia and many other western economies. The State is less encumbered with old industries, outdated technologies, older people unable to re-enter the workforce, and massive social and welfare payments. The recovery is catalysed by knowledgeable, informed, globally-connected communities engaging government and business in partnering arrangements. These result in locally-focused, often small-scale development that is economically, socially and environmentally sustainable.

This new sustainable economy is creating large numbers of low-income, casual and part-time jobs. Some are home-based and scattered throughout urban areas. Others are widely dispersed throughout rural and remote areas. Large numbers of unemployed, the self-employed and those finding temporary, casual employment, are concentrated in family homes in existing outer, middle and inner suburbs or living in caravan and mobile home parks. Others are squatting in abandoned business premises, coastal tourist accommodation, abandoned second homes and investment properties. Many are reliant on sharing old cars. They use public transport where it is readily available, cheap or preferably free.

There are many with valuable skills and experience unemployed or working casually. This has resulted in a significant surge in self-employment. It has also resulted in an informed, engaged community

*Public blames globalisation, multinational and big business for the recession, social and environmental problems.*



(Reproduced courtesy of Sean Leahy)

### ‘Small is beautiful’

- ➔ Sustainability and localism underpin new economic policies
- ➔ Small businesses create many low-income, casual and part-time jobs
- ➔ Transport pressures re old cars and demands for public transport
- ➔ Rise in home-based and artisan and crafting businesses
- ➔ Technology accessed widely, but local focus

both willing and able to take control of its own destiny. People are collaborating and cooperating with each other on multiple mutual-interest and self-help initiatives. The common motivating factor is the strong public reaction against globalisation, multinationals, big business and government intervention, which are blamed for the economic collapse, subsequent massive unemployment and the financial plight most people are suffering.

Innovative, new, small businesses are being incubated and grown in large numbers. A small business and home-based artisan and crafting economy is rapidly developing based on modern needs and using appropriate, affordable, modern technology rather than a return to pre-industrial approaches. People are using the internet to build businesses, find markets, access information and share experiences and expertise, but with a strongly local focus. Bartering is common using the internet. The return to e-commerce is strong but based on small business rather than big business to source and supply products and services.

Multicultural tolerance and interest in personal spiritual development are strong and allegiances to the local community and to social, cultural and special interest groups are primary. International electronic communications have been restored, but are primarily used for cultural exchange and information about local development. Lifestyle and personal development are frequently valued ahead of earning money or acquiring personal wealth by most people — especially among those who lost all their wealth, property, and most of their possessions in the Global Recession. The new ethos is being described as the era of ‘Resilient Communities’.

There is broad-based community concern to protect the environment. The take-up of new technologies is very rapid when it is appropriate and affordable but exceptionally slow if it is expensive because people generally lack money or an assured income to support borrowing. Low energy, low impact, environmental friendly technologies are favoured if affordable. There is no money for most people or businesses to buy new vehicles. Existing vehicles are ageing, are poorly maintained and in

frequent need of repair. The impact on road safety and air pollution is a source of community concern and further boosts the use of public transport.

Population is now much more dispersed and far less focused on large urban centres. There is exceptionally high demand for personal interaction and large pent-up demand for both short- and long-distance travel throughout Australia. However, travel has to be undertaken at minimal cost. Low energy, highly efficient modes are favoured. This sustains the exceptionally strong demand for affordable public transport.

Around 2020, electronic communications begin to be widely used once again for trade, but this time it is not dominated by global corporations, but by local communities determined to retain their economic independence and to preserve a balance between social, environmental and economic outcomes.

#### Lifestyle shift – new ethos of ‘Resilient Communities’

- ➔ Environment a concern – cheap new technologies are taken up – but the car fleet is ageing. Emissions are still a problem
- ➔ Dispersed population; high demand for travel but at minimal cost
- ➔ 2020 – internet again used for trade but not dominated by global corporations

## Preliminary Implications

The scenarios highlight many trends and drivers that would have major implications for the services and transport infrastructure needed to meet the transport needs of Queenslanders in the future.

This report does not purport to identify all of the implications that would arise from the scenarios. Indeed, a central goal of the scenario project is to provide the foundations that enable the agencies in the portfolio to begin a process to identify and develop strategies to respond to the implications inherent in the scenarios. This process will involve not only the planning areas of the two departments but also the policy development and operational areas in those departments.

The following discussion, therefore, should be understood as only a preliminary analysis of the implications that the scenarios could hold for the Transport Portfolio. They are provided, not as the last word, but rather as the beginning of a process of understanding the challenges that the future holds for the way in which the Transport Portfolio helps connect people, goods and services in Queensland.

### SuperCity

#### Challenges for connecting people, goods and services

The scenario requires significant investment in infrastructure to meet the increased demand for freight and passenger services. Changes in the patterns of movements of goods and people and the total volume of such movement results from: increased population in SEQ, spread in population over wide geographical area, and a strong economy, including expanding e-commerce.

Responding to the challenges of a much larger and busier SEQ that is positioned as a player in the international economy, requires:

- ➔ an emphasis on interconnectedness and seamless integration of all modes;
- ➔ a need for integrated transport hubs;

- ➔ the creation of technologically-sophisticated, intelligent systems that can meet the demanding logistical requirements;
- ➔ the implementation of vigorous demand management strategies.

The responses must be developed in the face of high community expectations and sophisticated lobbying by community and special interest groups.

## Preliminary Implications of SuperCity

### Rural and Remote Areas

Government needs to respond to the widening gap between SEQ and rural and remote areas of Queensland caused by the drain of people and wealth from the bush. Against the backdrop of growth in SEQ, there are fewer people in rural areas. Some rural areas are winners and others fail to survive. The difference between success and failure for rural communities is how well they are able to exploit niche markets and provide support services for growth areas. Other rural issues include:

- ➔ the significant transport task involved in connecting to inland and coastal ports;
- ➔ competing high demands for infrastructure in SEQ;
- ➔ safety concerns on regional roads caused by heavy freight;
- ➔ the special needs of remote areas regarding delivery systems for on-line shopping.

### Freight

As a result of massively increased usage of just-in-time logistics and e-commerce into the SEQ economy, there will be a much greater demand for smaller, more time-sensitive cross-town shipments of freight. This will mean:

- ➔ large increase in smaller freight vehicles to meet just-in-time and home delivery demands;

- ➔ more sophisticated logistical technology (including Intelligent Transport Systems and full integration of services to get more out of existing technology) to deal with just-in-time logistical issues and the multi-modal transport hubs;
- ➔ greater air freight capacity — impacting on air passenger capacity (i.e. a need for separate airport centres to deal with freight and passenger services);
- ➔ integrated train/truck services – e.g. greater use of piggyback trains;
- ➔ new road links (possibly freight corridor) with Northern NSW and Sydney to deal with increased freight demand;
- ➔ rail hub established in south-eastern portion of SEQ;
- ➔ a very fast train between Brisbane, Gold Coast and Sydney.

### **Passenger**

Changes in the business environment lead to the emergence of a decentralised, 24 hours a day, 7 days a week economy, with several business hubs. This environment poses several challenges for the transport of people, especially for public transport. These challenges may:

- ➔ result in the development of underground rail system in the CBD;
- ➔ result in greatly increased overall passenger travel demand (i.e. above population growth);
- ➔ require sophisticated and integrated light rail/heavy rail/bus network(s);
- ➔ lead to increased travel demand management, based on pricing policies;
- ➔ require a more flexible transport system that can respond to increased cross-city traffic and the resulting local congestion (including multiple river crossings and major new links);
- ➔ require increased use of sea and very fast ferries for regional, inter-regional and inter-state movements.

### **Society/Community/Government**

The SuperCity will require a reliable, seamless system of transport (but not necessarily one provider) that equitably and inclusively meets the needs (24 hours a day, 7 days a week) of a highly-informed community. Effective and efficient transport will become even more important to preserving economic competitiveness of SEQ.

Expectations on government (and the agencies) meeting these objectives will be high, but the community will not necessarily expect government to be the primary service/ infrastructure provider.

To provide integrated transport solutions that maintain competitiveness of the State, will require that agencies possess a sophisticated issues management capability to deal with increasingly influential local communities and lobby groups.

The greatest challenge is how to address the high expectations of the public that government will deliver an effective transport system while fulfilling their equally high expectation that such a system not adversely affects large parts of the community. This will require departments to engage in community capacity building.

### **Coastal Bloom**

#### **Challenges for connecting people, goods and services**

This scenario poses the challenge of responding to the transport needs of several additional medium-sized population centres in the State. The coastal cities have to meet the needs of several groups:

- ➔ very hi-tech oriented group of business people many of whom work from home or travel internationally;
- ➔ older people/semi-retired business people who comprise a third of the population;
- ➔ large number of service providers who work in small service industries;
- ➔ large numbers of tourists to the coastal centres and, from there, to the reef and bush.

The geographic, demographic and business environment changes underlying the scenario create several challenges or implications for transport.

### **Preliminary Implications of Coastal Bloom**

#### **Rural and Remote Areas**

As with the SuperCity scenario, government needs to respond to the widening gap between coastal centres and rural and remote areas of Queensland. The rural picture is one where there are pockets of growth and areas of decline. Success is determined by access to water and the ability of communities to exploit this to their advantage. Other issues for rural areas include:

- ➔ the provision of transport infrastructure to support agriculture, tourism and niche markets;
- ➔ competing high demands for infrastructure in coastal centres;
- ➔ the need for government to assist with regional community capacity building.

#### **Freight and Passenger**

- ➔ the need for coastal freight corridors, high speed coastal shipping or Very Fast Train to service the coastal cities;
- ➔ while there is less 'lumpy' (i.e. high peak) travel demand, the just-in-time business and e-commerce pressures increase overall travel demand;
- ➔ road links to ecotourism sites and key niche market;
- ➔ the need for more and better regional and international aviation links to meet increased peak demand in passenger aviation as business (as opposed to tourism) use increases;
- ➔ questions of scale for public transport purposes (populations of 250 000 or more may support small mass transit systems, smaller communities will need a different response);
- ➔ need for on-demand, all day, personalised services;
- ➔ demand for a non-congested system.



**Government/Community Implications**

The scenario is characterised by a high level of community engagement in decision making and by a demand that world class transport infrastructure be provided that supports the needs of the diverse community (global entrepreneurs, retirees, e-commerce businesses, etc) while not adversely impacting lifestyle and the natural environment. Such demands will make government decision making and consultation very difficult.

**Related implications:**

- ➔ SEQ will be less likely to cross-subsidise prosperous coastal communities and may experience a decline of service levels as resources are committed to coastal communities;
- ➔ an increased emphasis on local or regional governance;
- ➔ challenges of ribbon development along the coast;
- ➔ need for transparent and inclusive planning;
- ➔ trend to devolving 'real' power to regional areas;
- ➔ comparatively less infrastructure needs in SEQ.

**Carbon Crunch****Challenges for connecting people, goods and services**

This scenario centres around the impact of a global emphasis on significantly reducing the use of carbon-based energy sources. The commitment is the result of the general acceptance of the proposition that the use of carbon has been a major contributor to climatic change (global warming). As a result, the Kyoto Protocol is ratified in 2002 leading to the establishment of a global carbon trading regime. Carbon taxes are introduced in some jurisdictions. While only representing about one-fifth of Queensland's greenhouse emissions, transport is seen as an area capable of achieving significant savings in a reasonable timeframe. The emphasis on carbon-based fuels is complemented by the rise of alternative transport and fuel technologies.

The scenario results in changed urban form and changed urban transport patterns. New low-carbon transport technology is quickly adopted by the market and at the same time, world markets for coal

contract dramatically. As a result, Queensland coal exports are substantially reduced and tourism declines, negatively impacting Queensland's economy and reducing revenue. Queensland is also expected to contribute to the overall reining-in of Australia's greenhouse gas emissions.

### **Preliminary Implications of Carbon Crunch**

The major transport implications of Carbon Crunch are likely to be a reduction in wealth and income accompanied by a reduction in private car usage along with an increase in the use of more energy efficient public and private transport. Freight will favour rail (or rail/road links) rather than trucks for longer trips and larger loads.

Such changes will be brought about largely by a number of technical and governmental responses.

#### **Technology**

Partly as a result of government encouragement and incentives, there will be a rapid take-up of new technology and a belief that affordable technology will be available to solve the problem painlessly.

Specific technological developments include:

- ➔ ITS leading to lighter vehicles with no loss of safety;
- ➔ vehicle improvements;
- ➔ fuel improvements;
- ➔ rail innovations.

Generally, consumers and businesses will look more to alternative energy sources (gas, nuclear, solar, wind, geothermal) than to coal.

#### **Government — Responses**

- ➔ government will be forced to examine a range of alternative initiatives;
- ➔ user pays;
- ➔ rationing;
- ➔ real time pricing of all modes;
- ➔ fossil fuel tax on consumption;

## PRELIMINARY IMPLICATIONS

- ➔ increased private provision of services/infrastructure;
- ➔ carbon free areas (low C to zero C) (parallel Pb free petrol);
- ➔ low income people are subsidised as they are disproportionately impacted by such alternative initiatives;
- ➔ greater demand on public transport as fuel costs rise and demand management strategies are put into place on private cars;
- ➔ government will be required to sponsor the rapid take-up of proven technology;
- ➔ government can't force action in its own backyard - rather government is only one player on the global playing field and government will have responsibilities for enforcing global agreements;
- ➔ the global carbon reduction requirements (and the international agencies that monitor them) will be a lightning rod for regional areas forced to bear a disproportionate amount of the burden;
- ➔ government role is to educate (travel blending, etc.), promote alternative technology and set an example e.g. car sharing, telecommuting;
- ➔ government forced to take action to mitigate the negative impact Carbon Crunch has on rural and regional cities (especially given those areas' reliance on diesel fuel).

**Additional strategies to reduce carbon emissions**

- ➔ differences between urban/regional travel will drive road/rail combination arrangements (i.e. roll on/roll off);
- ➔ development of a Very Fast Train route - Sydney/Cairns/Melbourne/Brisbane;
- ➔ coastal shipping/rail;
- ➔ may encourage travel nodes, differing land use, industry clustering to avoid shipping costs.

**Community Values**

- ➔ people expect the same level of mobility without externalities;
- ➔ people want to maintain their current lifestyle and will tend to reject new corridors (rail, road, light rail, airports) (NIMBY).

## Global Bust

### Challenges for connecting people, goods and services

This scenario is dominated by a significant and sustained global economic downturn. Unemployment during the nadir of the bust approaches Depression era proportions. Towards the end of the scenario, the economy of Queensland (and Australia) experience a rebirth—not based on global markets and forces but rather on environmental sustainability and local empowerment.

### Preliminary Implications of Global Bust

The decreased economic activity and increased unemployment during the decline phase of the scenario reduce pressures on Queensland's transport system. Unemployment and underemployment increase the demand for affordable public transport as many abandon their cars or revert to a single car. Much of the demand for regional and remote transport (both passenger and freight) decline as the commodity and tourism industries decline. However, this is offset somewhat by the increased movements of people out of the urban areas. Decline in demand makes transport unsuited to provide pump-priming infrastructure projects. Instead, government and the community favour more labour intensive projects, such as those focused on cleaning up the environment.

Pressures mount for additional subsidies to public transport to assist those who are unable to pay. This trend accelerates when the economy rebounds along sustainable lines.

However, the role of the state and federal governments in transport comes into question during the decline phase. Many individuals and/or local communities respond to the largely pent-up transport needs of individuals (especially those not serviced by the CBD-oriented fixed corridor infrastructure) as employment opportunities and develop alternative (cheap) transport systems ('Black' taxis, mini-vans used as buses).

## PRELIMINARY IMPLICATIONS

This foreshadows a trend that intensifies during the recovery phase, during which the public transport system is 'fractured'. Control is given to local communities who are seen as being better positioned to respond to local needs. The greatest challenge for transport agencies is how to release the power of local governments and local communities to achieve effective, efficient, sustainable transport solutions.

In summary, the transport implications of the scenario are:

- ➔ regional and international travel drops;
- ➔ tourism and luxury transport decreases;
- ➔ inter- and intrastate transport demand decreases;
- ➔ more people walk and cycle as their primary transport mode;
- ➔ reduced demand for urban travel (particularly discretionary travel - services sector declines);
- ➔ dispersion of population into regional centres;
- ➔ state and federal governments give up their role of planning and carrying out projects to local governments and smaller communities.

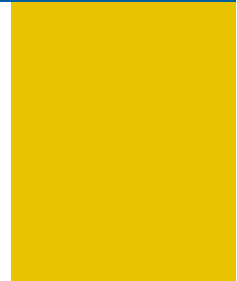
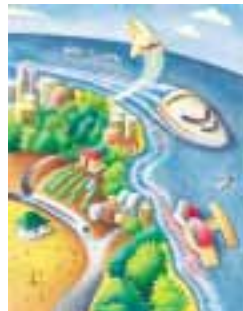
#### Related implications

- ➔ declining revenue base, requires deficit spending to maintain existing services and to avoid further exacerbating unemployment;
- ➔ government tries at first to activate the economy through infrastructure projects, then adopts a more enabling approach to assist individual and local community enterprise;
- ➔ infrastructure projects in remote communities maintained to keep those towns viable;
- ➔ maintenance of transport infrastructure increased as way of employing more people and preserving existing infrastructure;
- ➔ pressure for government to invest in community facilities.





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*Interviewees*







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## Interviewees

### External Interviews

*The titles of interviewees were correct at the time of interview.*

Bob Abbot, Mayor, Noosa Council, Noosa

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*Names in alphabetical order*

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 Barry Broe, Director (Transport Planning SEQ), (QT)  
 Neil Doyle, General Manager (Strategic Policy & Development), (MR)  
 Dr John Fenwick, Executive Director (Technology & Environment), (MR)  
 Les Ford, Executive Director (Integrated Transport Planning), (QT)  
 John Galton, Deputy Director-General, (QT)  
 Chrys Gunasekara, Director (Workforce Capability), (MR)  
 Mal Hellmuth, Executive Director (Central), (MR)  
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 Michael Hobday, Executive Director (Services Group), (QT)  
 Dan Hunt, Executive Director (Rail, Ports and Aviation), (QT)  
 Colin Jensen, Acting Executive Director (Strategic Policy), (MR)  
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 Bruce Wilson, Director-General, (QT)

