



Looking forwards ... but thinking backwards

Transport investment has a profound impact on urban form. Initiatives across the country are now being routinely labelled as 'integrated' and 'sustainable'. The results are too often investments that promise something new, but which only deliver the same expansion-biased settlement patterns of the past. Re-thinking the indicators we use to evaluate network performance to better relate to urban sustainability may help change this.

By IAN MUNRO, senior associate, Urbanismplus Ltd

The sustainability mandate

In 1987, the UN report *Our Common Future* made its famous call for sustainable development. It made a number of criticisms of the way developed countries such as New Zealand had approached the use of resources to date. Notably was an acknowledgement, which has since been expanded upon, that attitudes toward energy consumption and car-based settlement patterns were not delivering sustainability.

The role of cities and infrastructure in contributing to sustainability was thus set out. The New Zealand *Sustainable Development Action Plan*, 2003, sets out an unambiguous responsibility: "Cities are essential places to achieve sustainable development because most people live there. People are at the centre of concerns for sustainable development – they are entitled to a healthy and productive life in harmony with nature."

URBAN RESIDENTIAL TYPE RELATIVE TO LOCATION

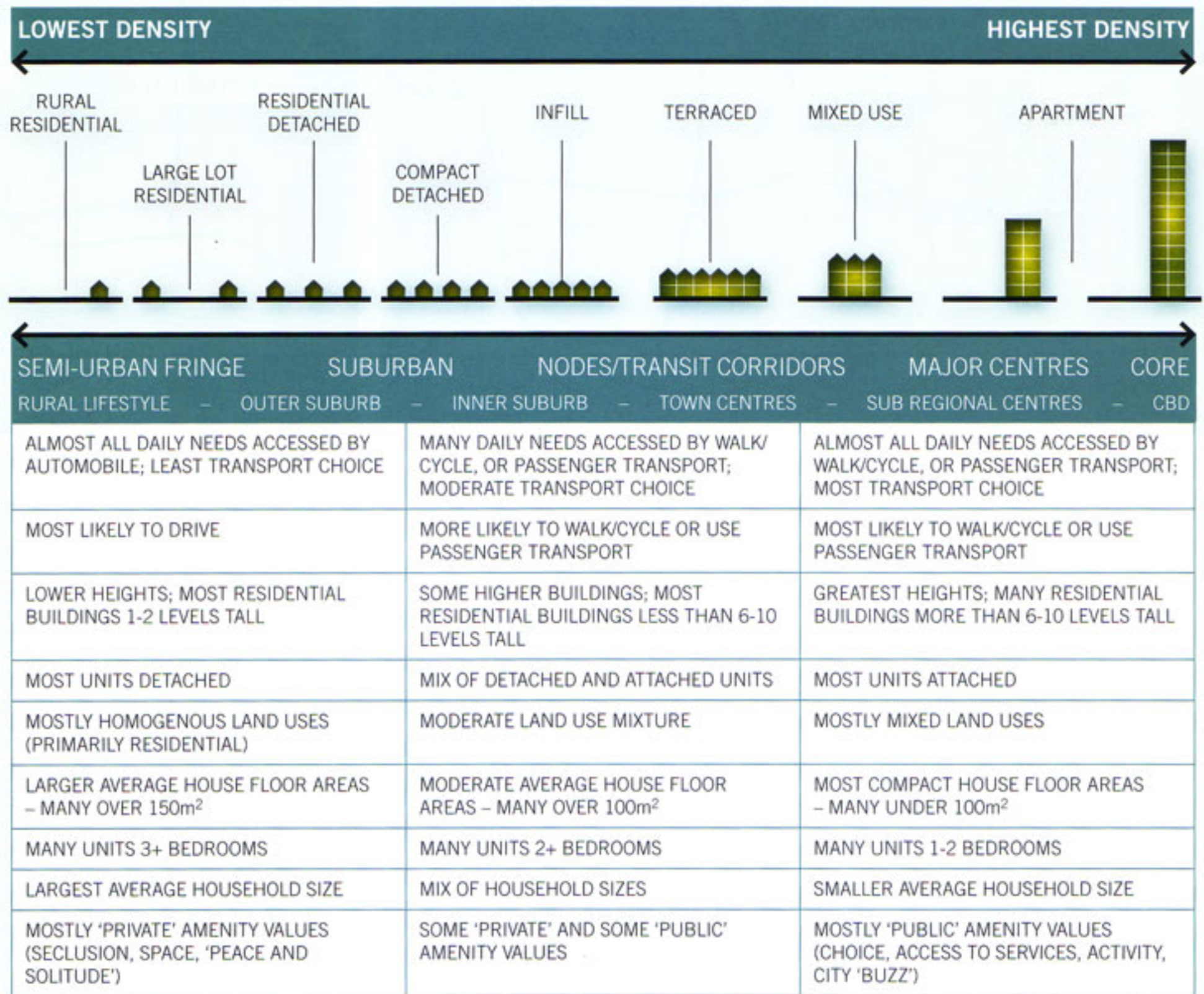


FIGURE 01

Not only do most people live in towns and cities, but transport needs now account for approximately 50 per cent of our total energy consumption. Cities and infrastructure (especially transport) therefore need to be planned well, and planned right if we are to make progress towards sustainability. To help this come about, the *Local Government Act 2002*, *Resource Management Act 1991*, and *Land Transport Management Act 2003*, (amongst others) all call for urban sustainability in some form.

Urban sustainability

But when can we tell if settlements have been planned well, or planned right? Considerable theoretical and empirical work has been undertaken to better understand how urban settlement patterns may be more, or less, sustainable. Newman and Kenworthy, 1999, have succinctly described the challenge: "It

is possible to define the goal of sustainability in a city as the reduction of the city's use of natural resources and production of wastes, while simultaneously improving its livability [sic], so that it can better fit within the capacities of local, regional, and global ecosystems."

The result of this international dialogue has been identification of numerous spatial elements. These can be broadly summarised as:

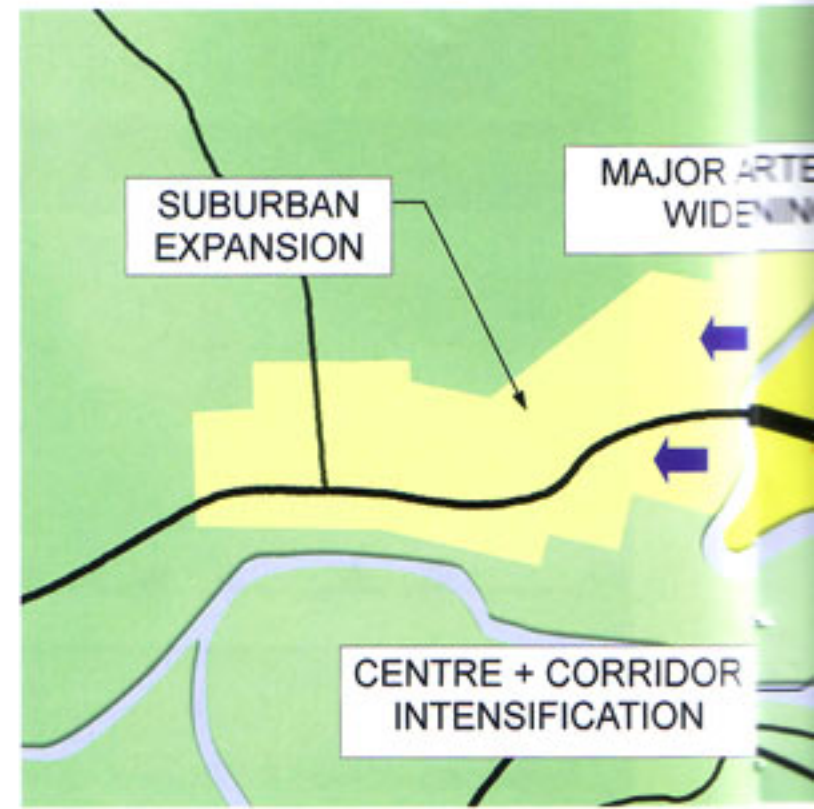
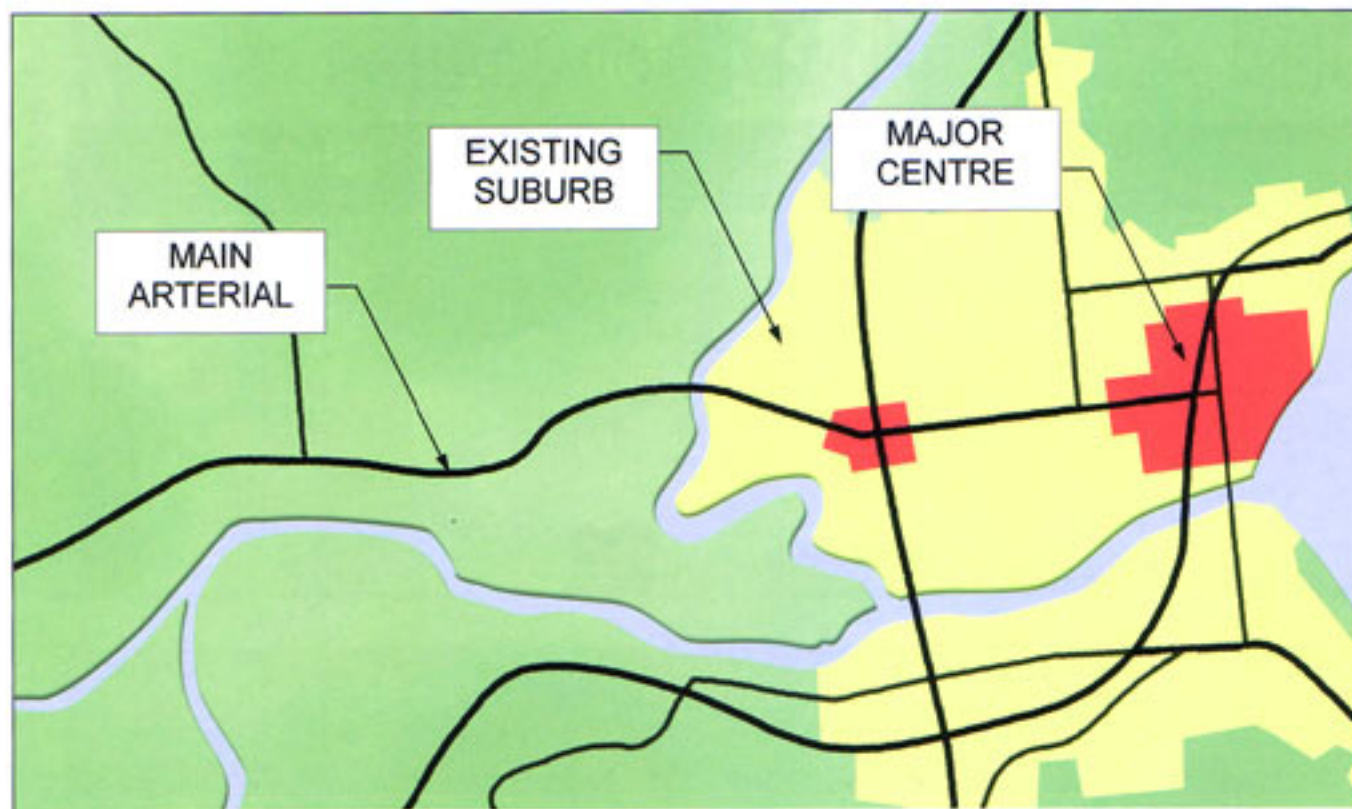
- 1 Minimised use of energy and environmental services (pollution) – including an emphasis on improved human health
- 2 A compact, dense, and mixed 'walkable' pattern
- 3 Minimised need for transport between activities and exchange
- 4 Maximised diversity and choice
- 5 Resilient, adaptable, and long term

networks that can be easily used and re-used in changing circumstances

- 6 Clear local identity and character, place-making and cultural celebration
- 7 Public investments configured to maximise use returns
- 8 Public burdens allocated to internalise the impacts and costs of individual choices
- 9 Democratic decisions made by those affected by them

Domestically, the Ministry for the Environment has provided further specific guidance on how these principles relate to ideal 'on the ground' configurations of land use and density. This has been adapted from the Ministry for the Environment, 2002, as **FIGURE 01**.

These elements and ideal patterns underpin all of the regional and district growth strategies completed to date, and also many District Plan provisions relating to towns and cities. →



A report card: Great enthusiasm, but more attention to detail needed

In 1998 the Parliamentary Commissioner for the Environment observed that urban sustainability was being "largely ignored" in New Zealand. Bosselmann, 2008, suggests a critical reason why this may have occurred: "... since 1992, the concept of sustainability seems to have lost its contours. Its popularization [sic]... created an invitation to use it for all sorts of objectives purported to be desirable...."

It seems that there has been a disconnection between enthusiastically stated aspirations for sustainable urban outcomes, and the actual methods, tools, and approaches employed to deliver them. It may help explain why the Auckland Regional Growth Forum, 2007, when reviewing the Auckland Regional Growth Strategy, 1999, concluded that: "Even though there are a number of strategies and policies now in existence that say the right things, delivering an urban form that translates the Growth Concept 'on the ground' has proven to be particularly challenging."

Urban expansion and transport investment

Transport indicators developed since 1940 have tended to emphasise level of service ideals around the importance of:

- ▶ avoiding congestion and maximising free-flow capacity at all times including peak where possible;
- ▶ the greatest distance that can be travelled in the shortest amount of time;
- ▶ road conditions that require the least active on-going concentration and care by drivers, in the name of safety,

These indicators have surreptitiously become ends in themselves; with the pursuit of increased capacity and reduced congestion dominating concepts of current urban transport planning. They have also had clear impacts on settlement patterns. As illustrated indicatively in **FIGURES 02, 03, and 04**, the net effect of perceiving transportation as a passive 'derived demand' without accounting for the opportunity costs and induced travel of resultant infrastructure outcomes has been clear. A consistent and typically unacknowledged amenity transfer has been established whereby those looking to intensify and live in centres and along corridors – what our growth strategies are calling for as more sustainable – are rewarded with diminished amenity as a consequence of widening and capacity upgrades that serve the through movement desires of others. The amenity loss can include:

- ▶ greater street intensity

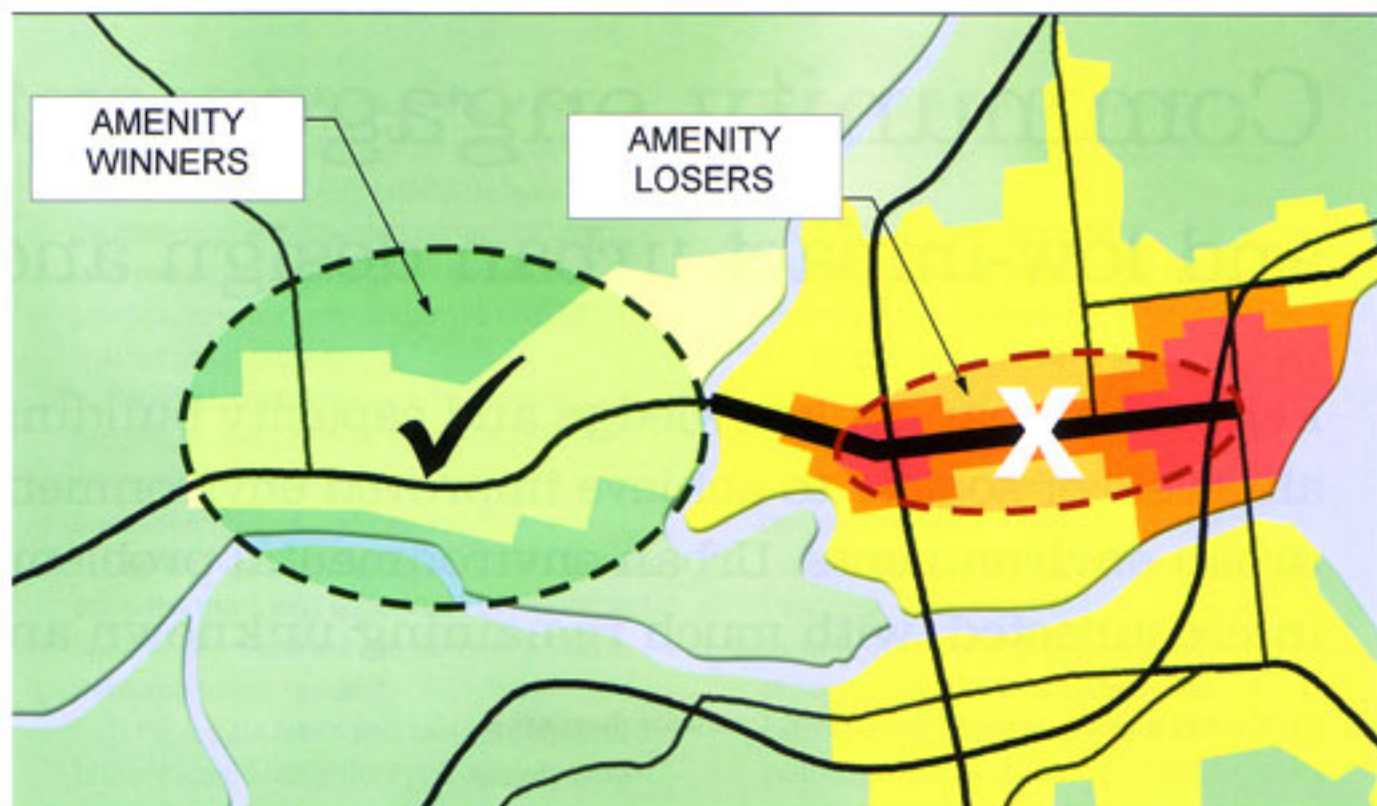
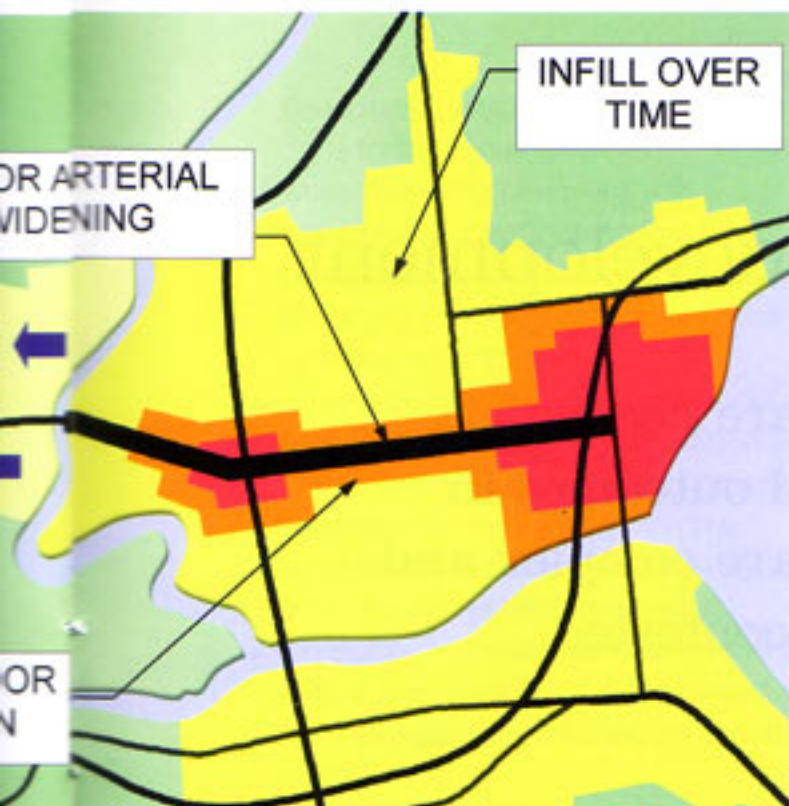
- ▶ and noise leading to less pedestrian quality and perceptions of less safety;
- ▶ loss of on-street parking and land use access;
- ▶ loss of front yards and separation from busy roads;
- ▶ loss of local economic activity (especially if tied to on-street parking or an edge amenity, such as outdoor dining is);
- ▶ greater community severance especially if widening is combined with roundabouts or delayed pedestrian crossing phasing;
- ▶ significant air quality and personal health issues.

This amenity is transferred to those developing at the outer periphery – what growth strategies are not calling for. Those choosing to live ever remotely from their daily needs are being given significant travel time savings and otherwise unachievable levels of transport amenity (convenience).

The nature of ongoing investment in peak transport network capacity from the general public sector makes new areas of peripheral land superficially viable for development. This can only be seen as a subsidy towards the true costs of peripheral development relative to intensification. This expansion-bias is additionally reflected in all development contribution policies adopted by the major

towns and cities to date. The over-standardised household equivalent requires more sustainable developments such as town centre apartments – which can generate as little as 3 to 4 vehicle trips per day – to pay the same share of transport infrastructure costs as a detached house generating up to 10 vehicle trips per day, despite being two to three times as efficient. Furthermore and by virtue of spatial relationships, apartments in centres create demands on transport networks in a far different manner than typical detached houses. One critical aspect is that apartment-based car travel is much less likely to occur in peak time at peak direction than that from a detached house in a suburb. This peak-pressure is one most significant generators of demand for new capital expenditure in existing road networks. It is new capital expenditure, rather than just new travel, that is the lawful focus of development contributions.

The consequence of these biases has been to systematically reward the least sustainable development outcomes at almost every turn in terms of amenity, convenience, and subsidised lifestyle costs. It may be unfair to blame market participants for 'making the poor choice', when they are faced with such cumulative market distortions and mixed messages



from public authorities.

So it is perhaps unsurprising that we continue to romanticise the detached house, and drive more than ever in New Zealand. The Ministry for the Environment, 2009, has confirmed that in 2007 40.2 billion kilometres were travelled on New Zealand roads. This reflects a 3 per cent per capita VKT increase between 2001 and 2007, and a 55 per cent total VKT increase from 1990. This freedom brought with it 362 deaths on New Zealand roads in the year to November 2008, with a further 16,121 injured.

New regime of indicators?

It ultimately seems clear that real urban sustainability will not come about on its own or by accident – or through some revelation that old practices are suddenly somehow much better than we ever realised.

This has been previously stated, but is now increasingly supported by clear local evidence and facts. Entering the second decade of the 21st century, it may be time for a more open dialogue around exactly what we are trying to achieve when we use the word sustainable, and how we manage both our transport networks and land use investments to deliver it.

We may ask, for example, whether congestion and constrained network capacity, rather than always being an ill to

be cured, has a legitimate role in promoting urban sustainability.

Careful congestion management and network equilibrium planning may help communities begin to understand the reality of their lifestyle choices – that actions have a cost to be met, a cost that cannot always be written off in the era of sustainability by either the environment or the increasingly constrained public sector.

It is proposed that the adoption of a new set of indicators with which to evaluate the performance of transport networks is essential to better entwine sustainability issues into decision making. Some suggested ones to think about are:

- ▶ whether developments or network investments will result in lower than average VKT per capita by users?
- ▶ whether network interventions will decrease total VKT per dollar of GDP earned?
- ▶ comparing the quantity and quality of a given type of exchange to the amount of time or CO₂ emissions required in transport to meet that exchange?
- ▶ looking for the shortest possible distance and travel necessary to meet all daily needs?
- ▶ setting minimum mode-share requirements to be met by new developments?
- ▶ designing streets around

perceptions of safety by vulnerable users rather than around the perceived limitations of car drivers? **U**

(A version of this article with all references and notations in place

is available on www.UrbanNZ.co.nz. Click on Features).

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