Sustainable Air Quality in Auckland:

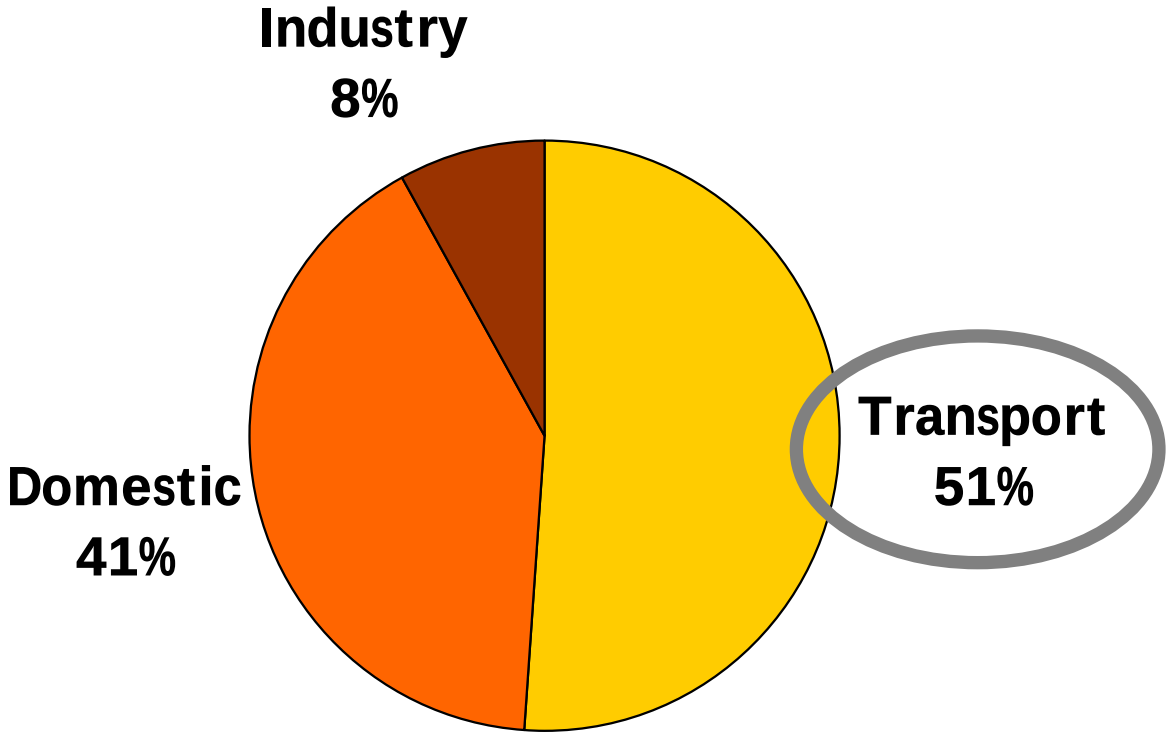
Motor Vehicles

Dr Gerda Kuschel

NZSSES Seminar
18 September 2009

emission: impossible ltd

Contribution of Motor Vehicles to PM_{10} Emissions in Auckland

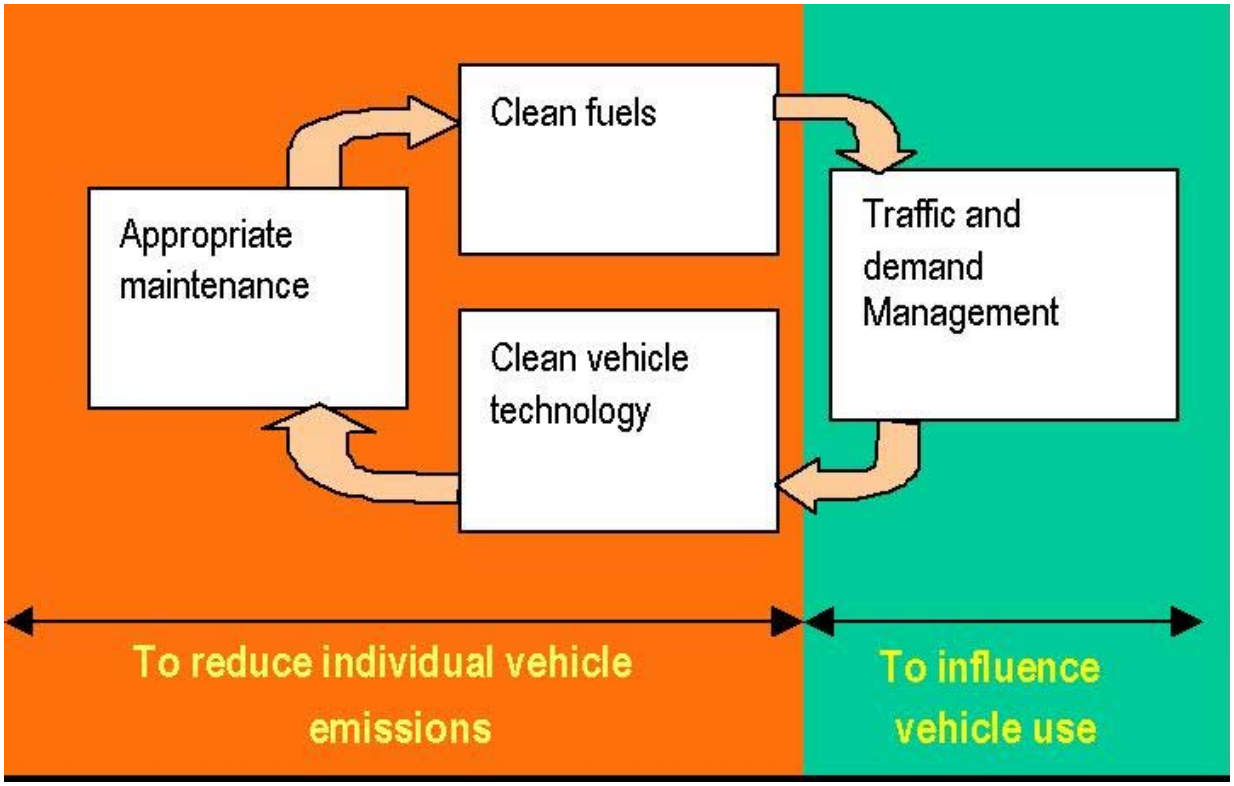


Seminar Outline

- Where have we *come from*?
- Where are we *now*?
- What are the *targets* we need to achieve?
- What is the *future* looking like?

emission: impossible ltd

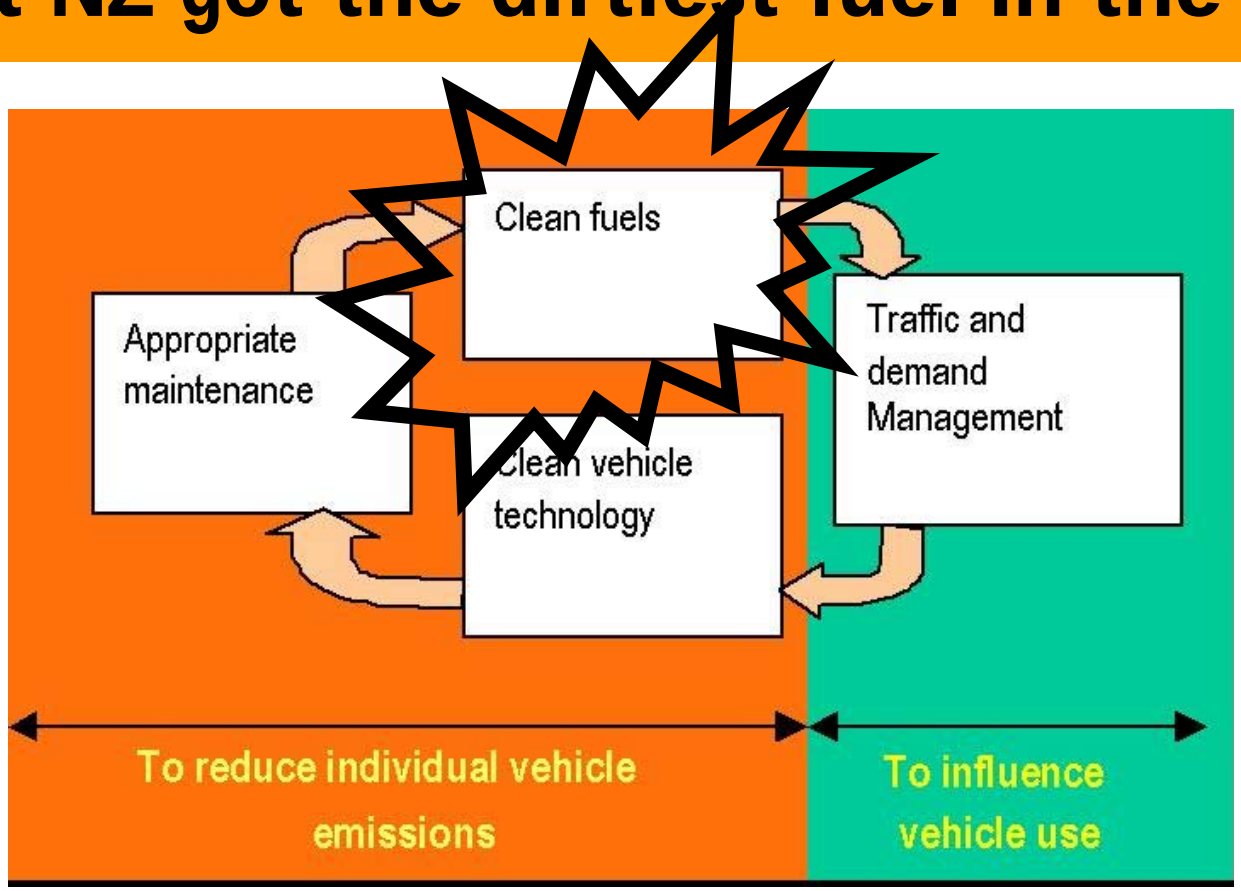
Effective Management of Vehicle Emissions Requires a “Holistic” Approach



These principles can apply to AQ, GHG, or SW issues

Where Have We Come From #1

Hasn't NZ got the dirtiest fuel in the world?



Not any more!

emission: Impossible ltd

Clean Fuel Milestones

1996 - Banning *lead in petrol* (MED)

allowing catalytic converter technology

2002 - Reducing *sulphur in diesel* to 1000ppm (ARC, Oil Co's)

improving existing emissions

2006 - Reducing *sulphur, benzene* **to 50ppm & 1 wt%** (MED)

allowing Euro 4 diesel, Euro 3 petrol vehicle technology

2008 - Reducing *sulphur* **in petrol** to 50ppm (MED)

allowing Euro 4 petrol vehicle technology

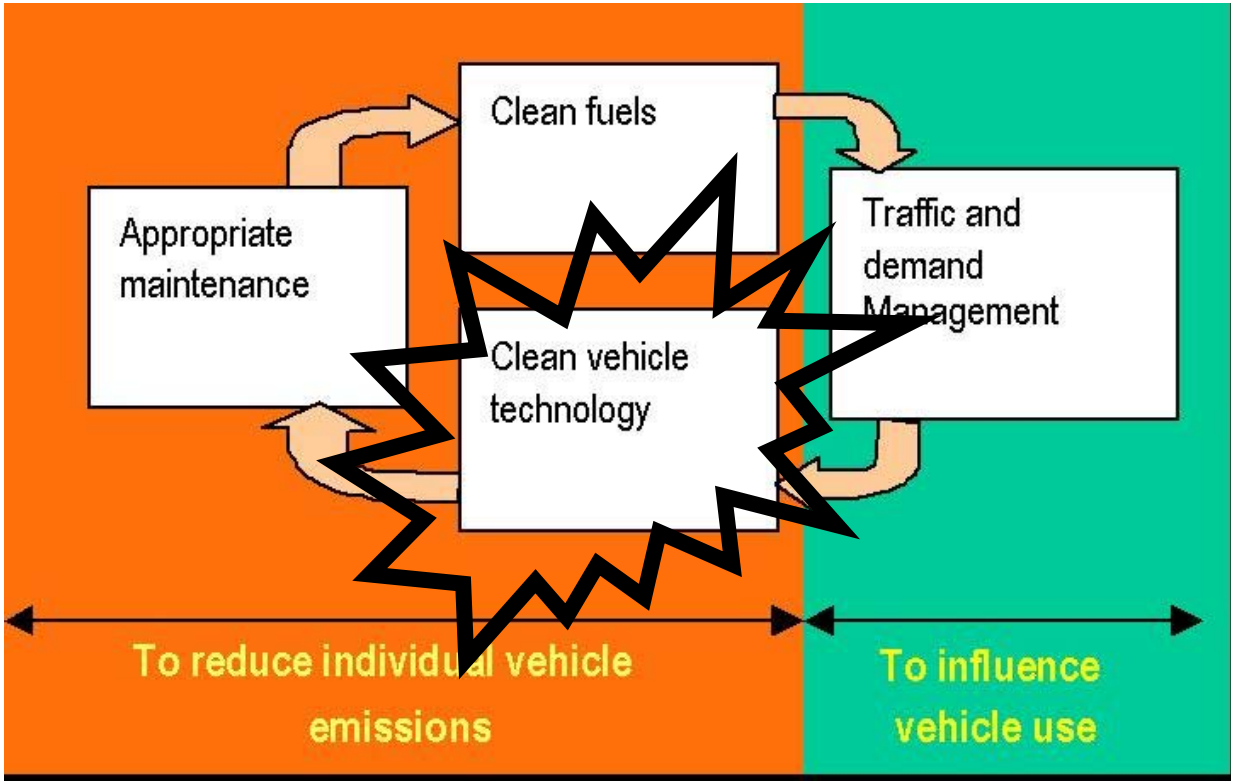
2009 - Reducing *sulphur* **in diesel** to 10ppm (MED)

allowing Euro 5 diesel vehicle technology

emission: Impossible ltd

Where Have We Come From #2

Hasn't NZ got the dirtiest fleet in the world?



It's much better than it was!

Clean Technology Milestones

1990* - *Easing Trade* Restrictions (MED?)

allowing significant numbers of used imports from Japan*

2002 - *Frontal Impact* 2001 Rule (MoT, LTNZ)

restricting age of used imports (excl. SUVs) to 1996

2004 - Vehicle *Exhaust Emissions 2003* Rule (MoT, LTNZ)

requiring all new imports to meet Euro 2 standards

2008 - Vehicle *Exhaust Emissions 2007* Rule (MoT, LTNZ)

requiring used imports to meet Euro 2 (petrol) or Euro 4 (diesel)
requiring new petrol imports to meet Euro 4 standards

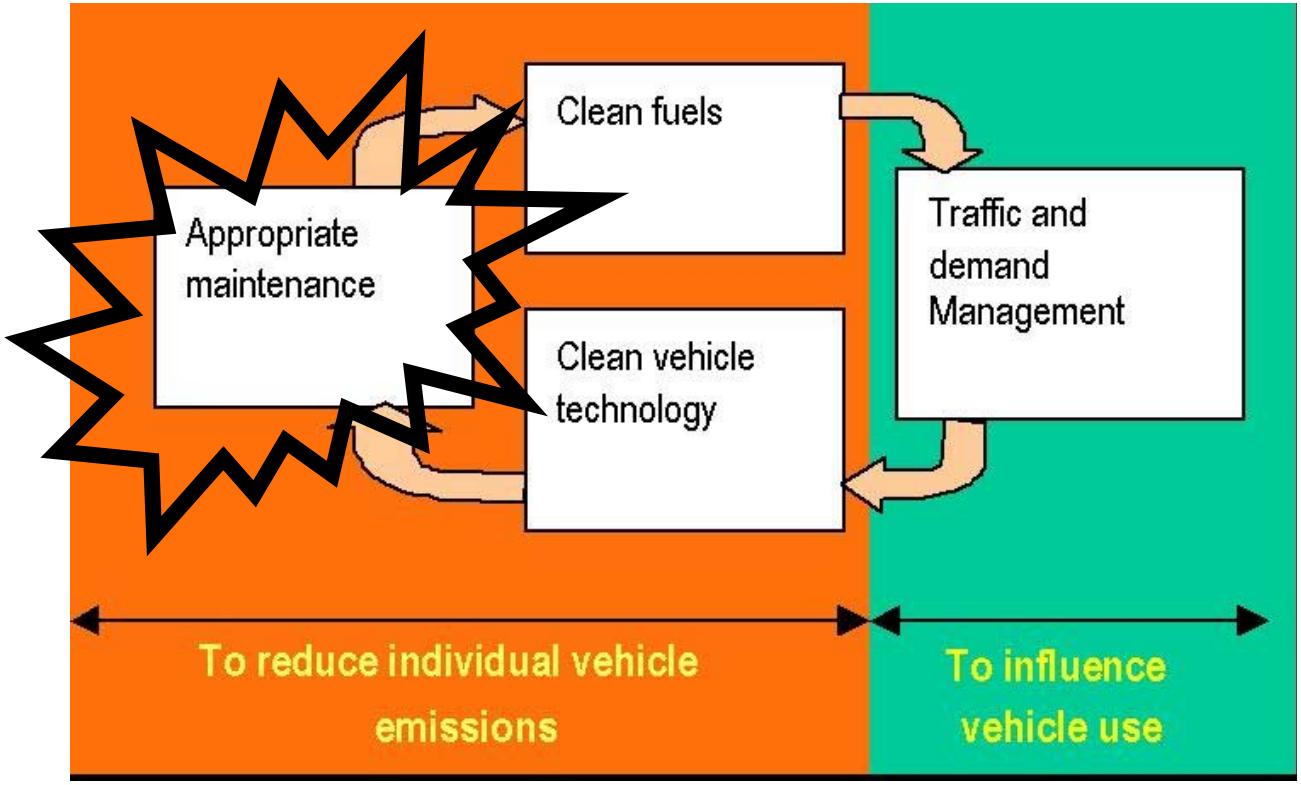
2009 - Vehicle *Exhaust Emissions 2007* Rule (MoT, LTNZ)

requiring used petrol imports to meet Euro 3 standards

emission: Impossible ltd

Where Have We Come From #3

Aren't NZers bad at maintaining their cars?



For the same vehicle technology – no!

Maintenance Milestones

2000 - *0800 SMOKEY* Campaign (ARC)
raising awareness, motivating community into action

2001 - *10 Second Rule* for Excessive Smoke (MoT, LTNZ)
targeting on-road "gross-emitters" (mainly diesels)

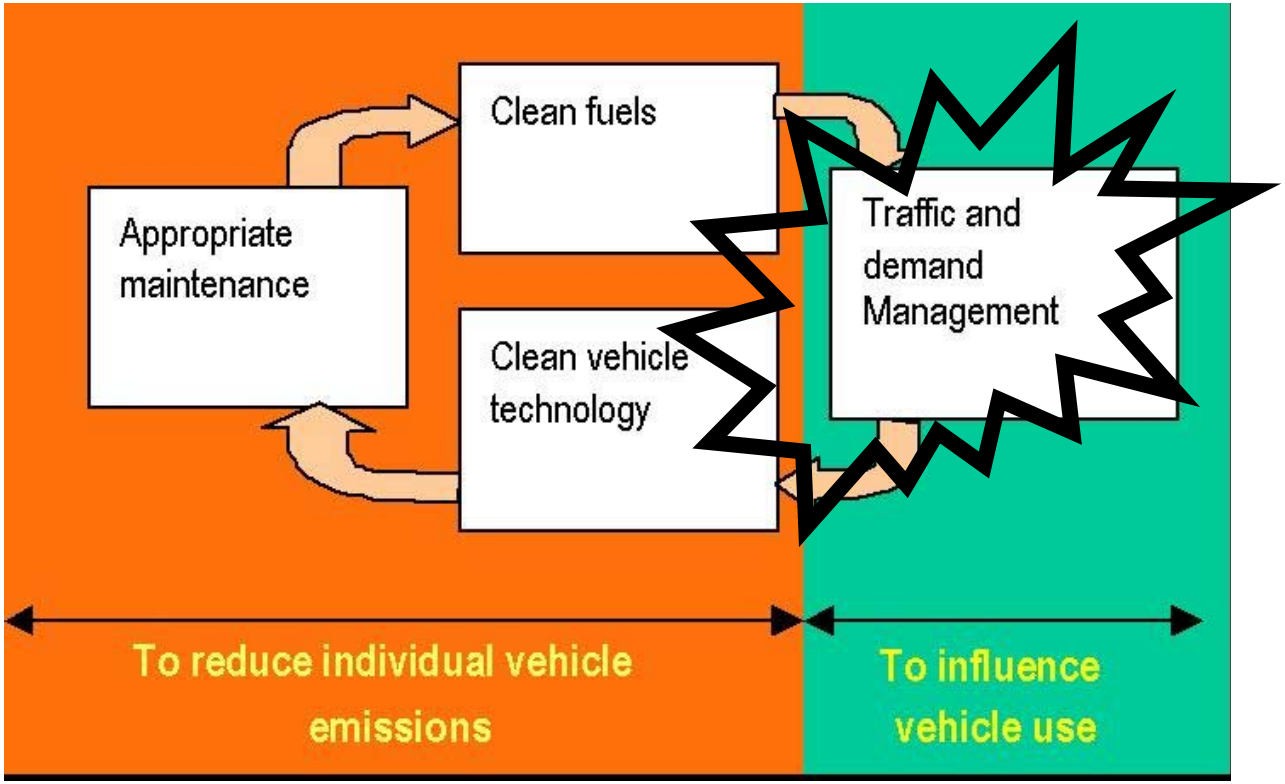
2006 - *5 Second Rule* for Visible Smoke at WOF (MoT, LTNZ)
targeting in-service "gross-emitters" (mainly diesels)

2008 – Vehicle *Exhaust Emissions 2007* Rule (MoT, LTNZ)
banning the removal of catalytic converters

emission: Impossible ltd

Where Have We Come From #4

Won't rising oil prices "manage" car use?



Up to a point but not the whole answer!

emission: Impossible ltd

Demand Milestones

2001 - *School Travel Initiatives* (NSCC, ARC, various schools)
early days of walking school buses & school travel plans

2006 - *Sustainable Travel Progress* (ARTA, stakeholders)
100 schools with Travel Plans at end June 2006
3,000 children at 87 schools part of 180 Walking School Buses
55,000 people at 20 tertiary/workplaces with Travel Plans

2006 - *Ramp Metering* installation in Akl starts (Transit)
improving efficiency or capacity during peak by 15%

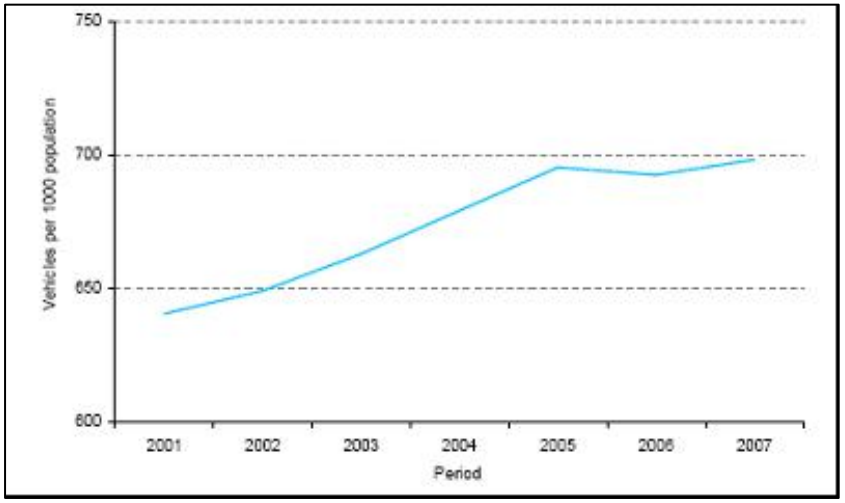
2008 - *Sustainable Travel Progress* (ARTA, stakeholders)
extending the program to more workplaces, schools, communities

2009 - *Ramp Metering* installation in Akl finishes (Transit)
improving efficiency or capacity during peak by 15%

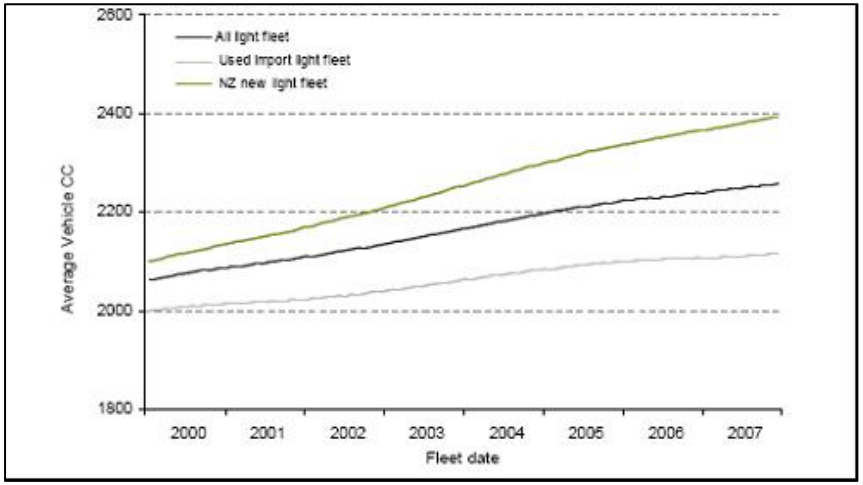
emission: Impossible ltd

Current Trends: Downside 1

Vehicle ownership
increasing



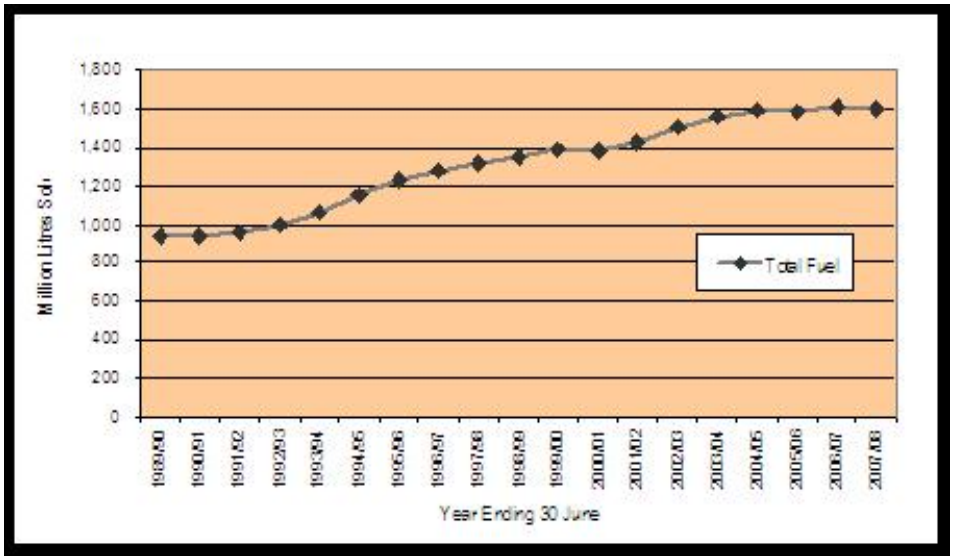
Engine size increasing



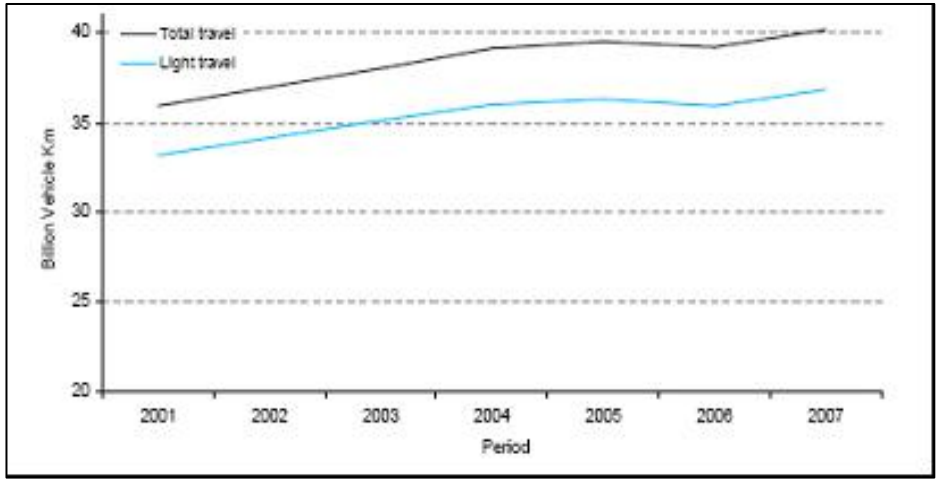
emission: Impossible ltd

Current Trends: Downside 2

Fuel use increasing but ... stabilising?

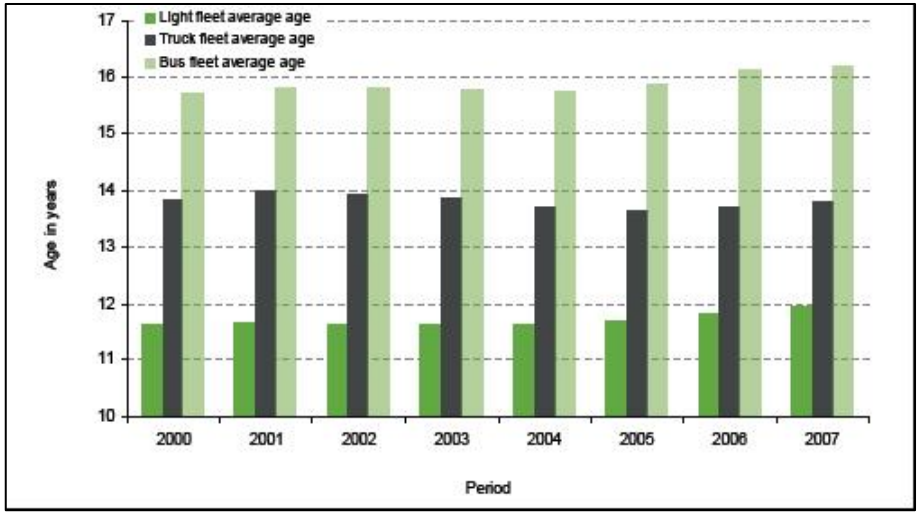


Overall travel increasing

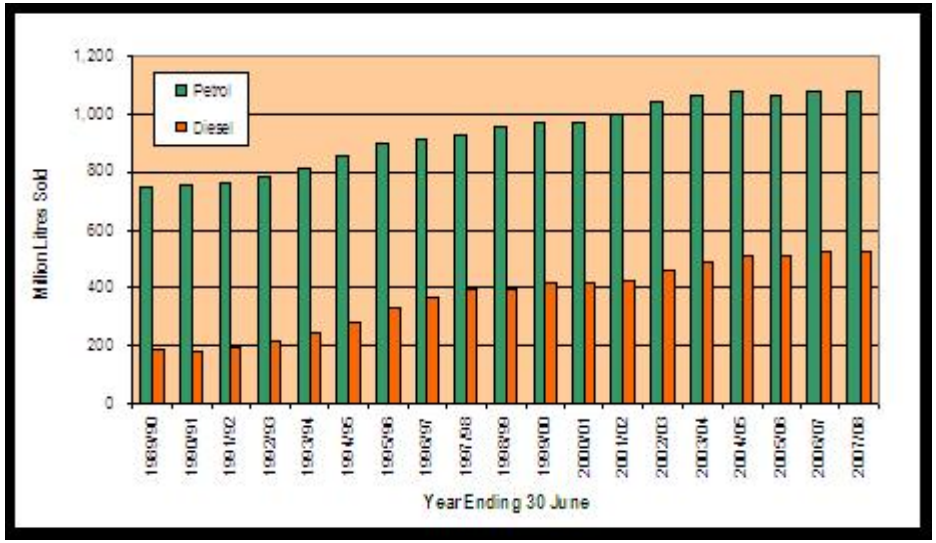


Current Trends: Downside 3

Vehicle age increasing

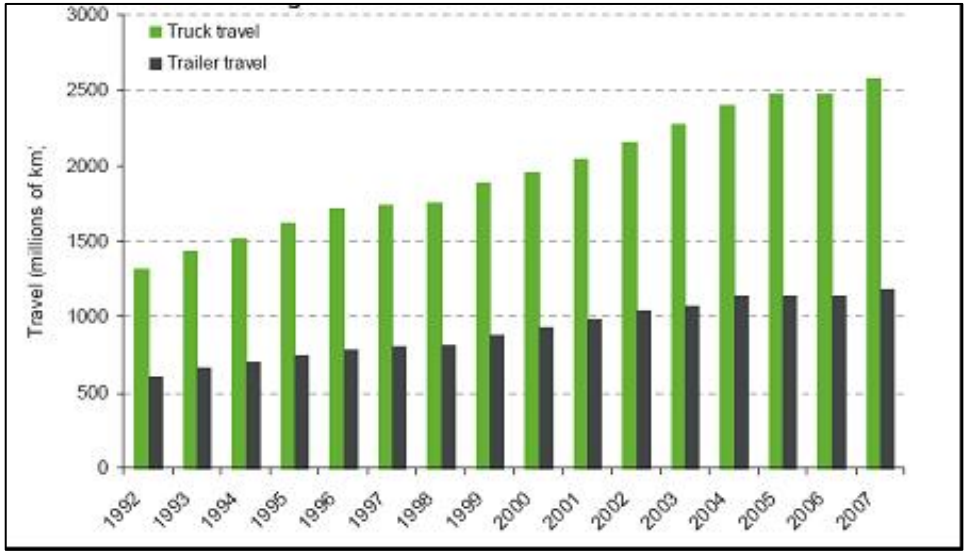


Diesel use increasing



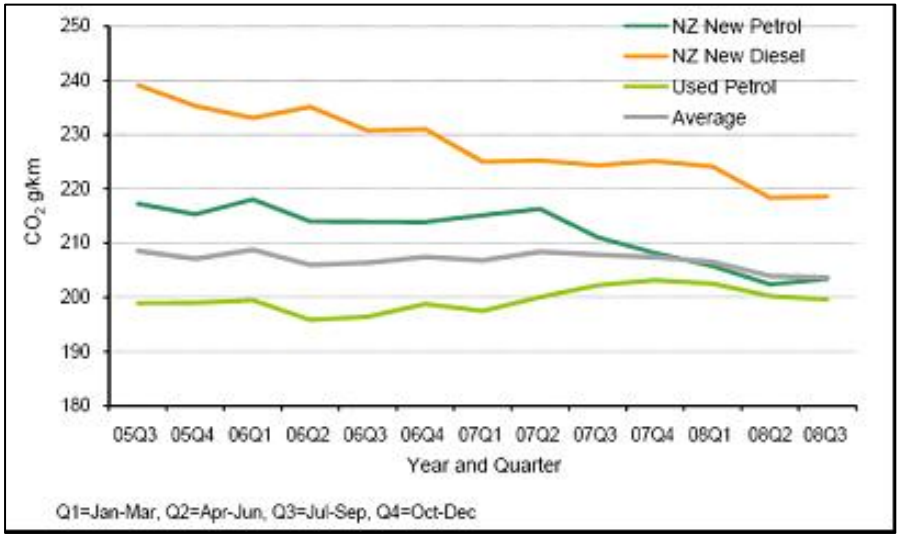
Current Trends: Downside 4

Heavy duty & motorcycle travel increasing faster than other modes

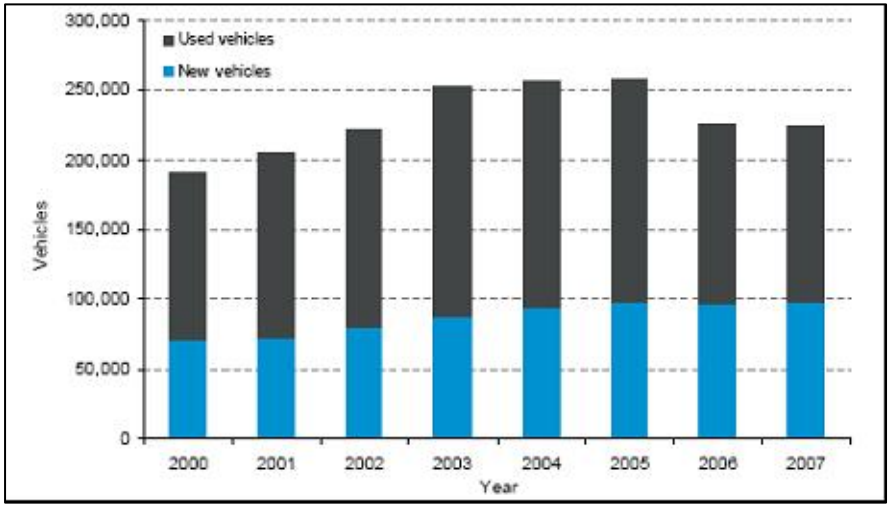


Current Trends: Upside 1

Fuel economy improving
... slowly



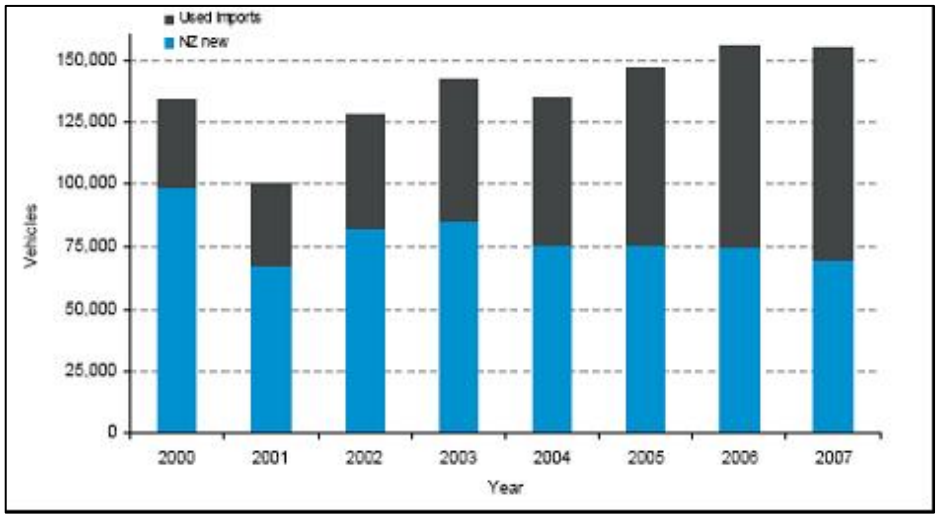
No of vehicles entering
fleet decreasing



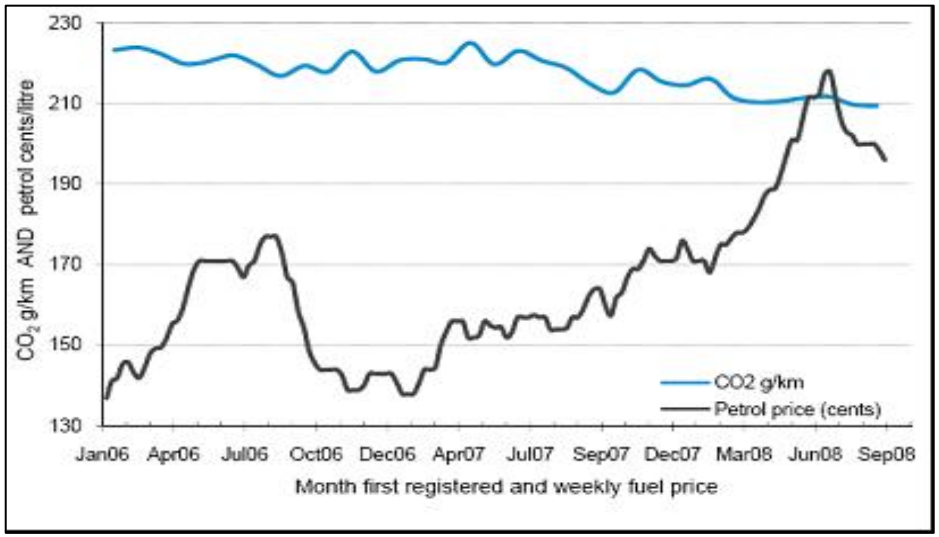
emission: impossible ltd

Current Trends: Upside 2

Scrappage rates are increasing

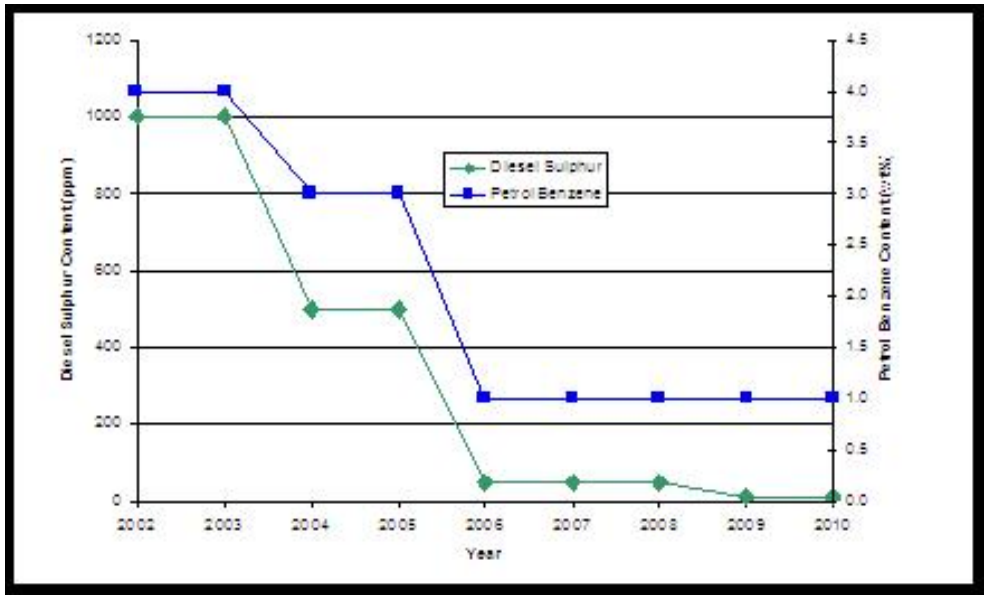


Rising fuel prices are having an effect



Current Trends: Upside 3

Fuel quality improving



But also

Exhaust emissions standards improving

Noise standards & objective testing being introduced

Access to public transport options improving

Current Reduction Targets for Akl

To meet PM_{10} National Environmental Standard by 2013:

Transport emissions down ~58% (over 2005)

MANDATORY

To meet CO_2 Kyoto Protocol Obligation by 2012:

Transport emissions down ~75% (over 2007)

VOLUNTARY

emission: Impossible ltd

Will Current Actions be Enough?

Most likely *YES* to meet Auckland *Air Quality* targets by 2013

Most likely *NO* to meet Auckland *Greenhouse* targets by 2012

emission: Impossible ltd

Challenges Facing Sustainable Transport in Future

1. *Managing landuse conflicts* as more people exposed
2. Auckland's *population growth* in terms of numbers and composition
3. *Managing the tension* between demand for economic growth and degradation of our environment
4. Future *oil price* rises

Particularly <u>beyond</u> 2012

emission: impossible ltd

Finally, Technology Will Assist But

Will Need Policy Options Also ...

emission: Impossible ltd