

Interactive

Issue 1 – 2010



Interfleet in central Europe



Rufus Boyd: "...clear association between GDP & mass transit..."



Australia - OSCAR project update

UK – Energy metering for London Midland

Norway – High speed rail assessment

Sweden – IWT⁴ for axle load

David's Message



Welcome to the latest edition of our InterActive newsletter. It showcases a range of engineering, design and consultancy assignments across our various regional offices and the international rail industry.

Of particular note is the augmentation of our central European operations, following our acquisition of the respected German consultancy Die Ingenieurwerkstatt earlier this year. I am also pleased to welcome Rufus Boyd to our UK team; Rufus will be spearheading the development of our strategic business consultancy services and an interesting article by him can be found in the centre spread of this issue.

Inevitably, the global economic crisis has restricted investment headroom for the governments of most countries. However, the majority acknowledge that having adequate transport capacity is an essential pre-requisite to sustained economic recovery. Furthermore, railways with their green credentials, significant carrying capacity and excellent safety record are now being seen to have a key role to play and evidence of this can be seen in the high levels of demand for Interfleet's services around the world.

Even in the UK, where all government department budgets have been significantly cut to address massive national debt, the rail transportation sector has fared better than most. Going forward, the question is more about when rather than if investment decisions will be made in the rail sector.

I hope you enjoy reading the newsletter.

David Rollin
Group Managing Director

Interfleet in central Europe

Interfleet has expanded its central European operations and service offering with the recent acquisition of German consultancy Die Ingenieurwerkstatt GmbH (DI).

Based in Wiesbaden and founded in 1996, DI is one of the leading European consultancies for safety engineering, maintenance optimisation and railway asset management.

Employing over 30 people, its consultants can advise across a range of areas, including procurement projects, franchising, optimisation of operations and maintenance, systems and safety engineering, plus the development and support of software tools.

DI also has a reputation for delivering highly effective seminars on lifecycle management and systems/safety engineering.

David Rollin commented: *"Die Ingenieurwerkstatt has a first class reputation both in Germany and across Europe and is an excellent strategic and cultural addition to*



the group. The acquisition has enhanced our service offering and strengthened our presence and reach in central Europe."

The two companies exhibited together at the 2010 Innotrans exhibition and actions are already underway to integrate and re-brand DI as part of Interfleet's central European operation going into 2011.

OSCAR project update

Interfleet Technology has been providing ongoing support for RailCorp's introduction of 30 four-car state-of-the-art OSCAR trains for use by CityRail in New South Wales.

In March 2009, RailCorp had signed a \$320 million contract extension with UGL Rail for the manufacture of an additional 72 OSCAR carriages, subsequently extended in March 2010 to 74 carriages (18 additional four-car sets, plus two spare cars), forming Stage 3 of the project.

In December 2009 Interfleet received confirmation that its own contract with RailCorp, to provide key members of the technical team including the technical manager, had been extended to include support of Stage 3 service introduction.

Following resolution of key technical and commercial issues all Stage 1 and 2 sets were granted Practical Completion in early June 2010. Leading members of the Interfleet team supported this through reviews of technical documentation and resolution of technical issues with the manufacturer and the maintenance support team.

Due to obsolescence and component availability issues, various design changes had to be made between the first 30 four-car sets and those from Stage 3.

As part of Interfleet's role, interactive reviews of the changes made were carried out with RailCorp stakeholders and UGL Rail staff. Both parties complimented Interfleet on our positive and helpful approach to this activity.



On track testing of the first Stage 3 set commenced in August 2010 and following completion of dynamic type testing, other dynamic system testing, verification, mileage accumulation runs and rectification of any issues identified, Practical Completion of the first Stage 3 set was awarded on 24th September 2010, five weeks ahead of schedule. Six days later the New South Wales Premier Kristina Keneally and Transport Minister John Robertson inspected the new set.

Interfleet has been an instrumental part of the technical team since the initial design and commissioning phase of the project and has continued to provide technical services to help manage ongoing safety, reliability and warranty work ahead of full hand-over of the fleet to RailCorp's Engineering & Technical Services team. A small Interfleet team will remain until the end of 2012 to support the introduction of all the sets that form Stage 3.

Energy metering for London Midland

Interfleet UK is providing a new energy metering solution for train operator London Midland (LM) that will allow the operator to pay for each train's actual energy consumption whilst monitoring individual train usage at any point on the rail network.

Electricity billing for operators has historically been an estimate based on overall energy usage per train mile; but track access agreements were recently modified as part of Network Rail's Control Period four (CP4) to allow train operators to introduce metered billing based upon on-train metered energy consumption.

Interfleet is responsible for both the turnkey fitment of the FAR Systems energy metering equipment for LM, and for the processing, reporting and analysis of the energy usage data using Interfleet's bespoke energy management solution, Energyx, made available to users via the company's clyx.net extranet.

Additionally, the raw energy data is transferred by Energyx directly to Network Rail's billing bureau service. Operators then pay for the actual amount of energy consumed rather than an estimate.

Michael Grace, UK Business Development Manager at Interfleet commented on the positive impact metering could have on the network, particularly if more operators become metered. He said: "Not only can metering lead to cost savings for the rail operators, it also enables a level of scrutiny which will lead to increased efficiency, reduced energy consumption and therefore energy savings. In many ways this set-up is analogous to the move to household water metering.

Introduction of energy meters and metered billing provides data and incentives to train operators to reduce consumption and therefore costs. It provides future opportunities to ensure the most energy-efficient driving styles; to examine energy usage on specific routes, etc".

Mike Haigh, Programme Director for LM said: "We are delighted to be working with Interfleet on this innovative solution to understanding and reducing our energy bills. We believe LM will be amongst the first UK TOCs to have 100% of its electric train fleet fitted with meters".

Giordano Bellomi, managing director of FAR Systems added: "This is the most significant UK opportunity to date for FAR Systems to demonstrate our equipment and capabilities with a high profile train operator such as London Midland specifically for energy measurement and billing purposes. We are confident our equipment will prove reliable and robust, thus cementing our ongoing commitment in our products and services in an increasingly buoyant energy market looking to optimise on energy consumption and expenditure".



High speed rail assessment in Norway

Jernbaneverket is the Norwegian National Rail Administration, responsible for the management of the national railway network, on behalf of the Ministry of Transport and Communication.

Jernbaneverket is currently evaluating high speed rail services in Norway between the largest cities (Oslo-Trondheim, Oslo- Bergen, Oslo-Kristiansand-Stavanger).

Interfleet's Norway team, working together with Pöyry Infra, will be undertaking the assessment for the area of Technical & Safety. This includes the assessment of rolling stock, standards, requirements, Norwegian climate issues, risk assessment and safety.

Interfleet has extensive international high speed rail experience and for this project we are combining our international competence with our local presence in Norway.



Jernbaneverket

Project management for Pacific National



Interfleet Australia has recently completed a major two year assignment for Australian freight operator Pacific National, managing the delivery of 13 diesel-electric locomotives, 10 electric locomotives and 694 106-tonne coal wagons required to operate coal haulage contracts in Queensland.

Interfleet provided a dedicated team of personnel responsible for all aspects of the rolling stock delivery, from the management of the contracts with each of the three suppliers, through the various testing and commissioning phases, management of the certification and authorisation process and operational service introduction.

In addition to the project management of the rolling stock delivery process, through its international office network, Interfleet was also able to provide onsite inspection and auditing services during the manufacturing phase of the project.

The urban GDP dynamics of mass transit: A case for investment?



Rufus Boyd has recently joined Interfleet UK from the Sydney office; here he will be developing broad-based business strategies and solutions for clients. In this article, Rufus considers the case for Mass Transit investment in cities and the economic impact of such investment.

As Britain, the US and Europe consider a balance between deficit reduction and Keynesian pump-priming, so the prospects for transport budgets hang in the balance.

As the often misquoted Keynes remarked; you can “fill old bottles with banknotes and bury them to stimulate employment, but it would be more sensible to build houses and the like”. Now is certainly a good time to explore the role of construction projects in supporting GDP, not just as a stimulus but as a long term supply-side improvement to our economies. I am particularly interested in the development of Mass Transit Systems and their relationship with GDP at city level.

When I was involved in the development of the now sadly aborted Sydney Metro, between 2008 and 2010, I considered the type of correlation that might exist between Metros/Light Rapid Transit (LRT) Systems, and the success of global cities. This was important because of the need to address Sydney-siders (and the Sydney Morning Herald’s) reluctance to embrace a Metro concept.

To this end, Interfleet Australia compared the top 150 cities by GDP¹ with the combined length in kilometres of their Metro and LRT systems. With some preliminary data cleansing (e.g. excluding Tampa’s heritage-style tram) some interesting results emerged (Figure 1). Of the top 50 cities by GDP, only five had no meaningful network in 2009; Detroit, Jakarta, Tampa, Mumbai and Sydney. Of the next 50 cities, 11 had no meaningful network and of the final 50 it was 36. There is a moderate Pearson’s correlation ($r = \sim 0.6$) between GDP and Metro Length which, as shown (Figure 1), might reasonably imply that 36.5% of the variation in GDP can be attributed to the length of Rapid Transit systems.

There are several caveats to the analysis. This is a dynamic environment: Shanghai’s system (and GDP!) is ever-growing and the effects of the global financial crisis are as yet unmeasured; and of course, correlation doesn’t necessarily equal causation. There is also a case for acknowledging the transit alternatives to Metro/Rapid Transit offered in many of the assessed cities.

Some further analysis is certainly required to understand the interplay of other variables such as population density, land values, congestion etc. It is however possible to consider how we might differentiate mass transit provision by city. To visualise this, Network Length was plotted vs. GDP rank order. A logarithmic trend curve for Network Length was applied and

absolute GDP by ranked city (similarly logarithmically shaped) is also shown (Figure 2). By then separating the top 75 and bottom 75 cities with a vertical line, we are able to identify five distinct areas which I have categorised in the table below:

| | Top 75 cities by GDP | Lower 75 Cities by GDP |
|--|--|---|
| Longer Mass Transit System Length (above line) | Dynamic Growth Cities e.g. Shanghai, Beijing, Seoul, Madrid | Self-consciously Sustainable Cities e.g. Cologne, Oslo, Zurich, Munich, Prague |
| Near line | Mature City Networks: Washington DC, Paris, Rome, Warsaw, Vienna, Barcelona; Copenhagen | |
| Shorter or nil Mass Transit System (below line) | Unsustainable Sprawl e.g. Phoenix, Houston, Buenos Aires, Sydney | Impoverished or Developing Cities e.g. Hyderabad, Khartoum, Baghdad, Dhaka |

There are many reasons why cities fall into the categories above, and many respond to the down-sides of their situation with alternative solutions. For example, American cities have tended to rely exclusively on bus ‘mass’ transit; Sydney has an extensive and still expanding heavy rail system; while Johannesburg uses a minibus taxi network. However, these cities’ alternatives look increasingly one-clubbed - if not sub-optimum - solutions to the dynamic challenges of moving people quickly and sustainably between places of residence, employment and leisure. This is why so many metro-less cities are turning to the metro².

Those that are yet to decide will be further stressed by population growth and inward migration – Sydney for example will grow by ~40% in the next 30 years. Cities with mature Metro networks cannot afford to be complacent about these challenges either. London, whose infrastructure benefitted from a post-war flight beyond its boundaries will grow perhaps 20% in the next 30 years.

In the context of a clear association between GDP performance and mass transit network, policy makers should have a clear vision of the type of city they want their citizens to live in when allocating tax or debt dollars.

And as a matter of interest this is dawning on some sceptics quicker than you might think:

“It is time for the NSW government to come clean with voters and admit that the metro is a pointless waste of their money.” (Sydney Morning Herald - Feb 18 2010)

“The problem with the CBD Metro was not the suitability of metro rail for Sydney...Carefully designed metro rail could serve Sydney’s inner suburbs and help relieve the congestion caused by today’s excessive reliance on cars” (Sydney Morning Herald - September 14 2010)

¹ Source - <http://www.citymayors.com/statistics/richest-cities-2005.html>

² Urbanrail.net and metrobits.org are both good sites for following the progress of metro development

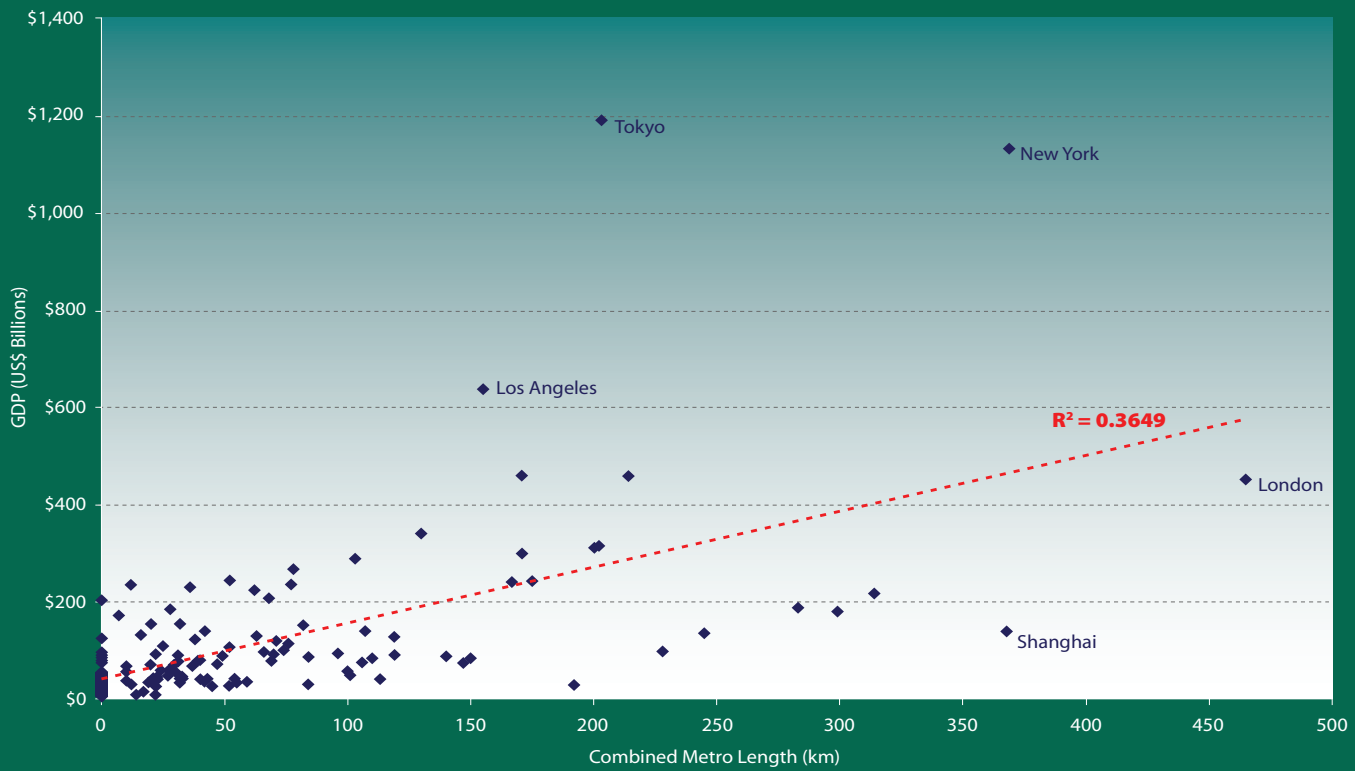


Figure 1: Correlation between GDP and Rapid Transit System Length

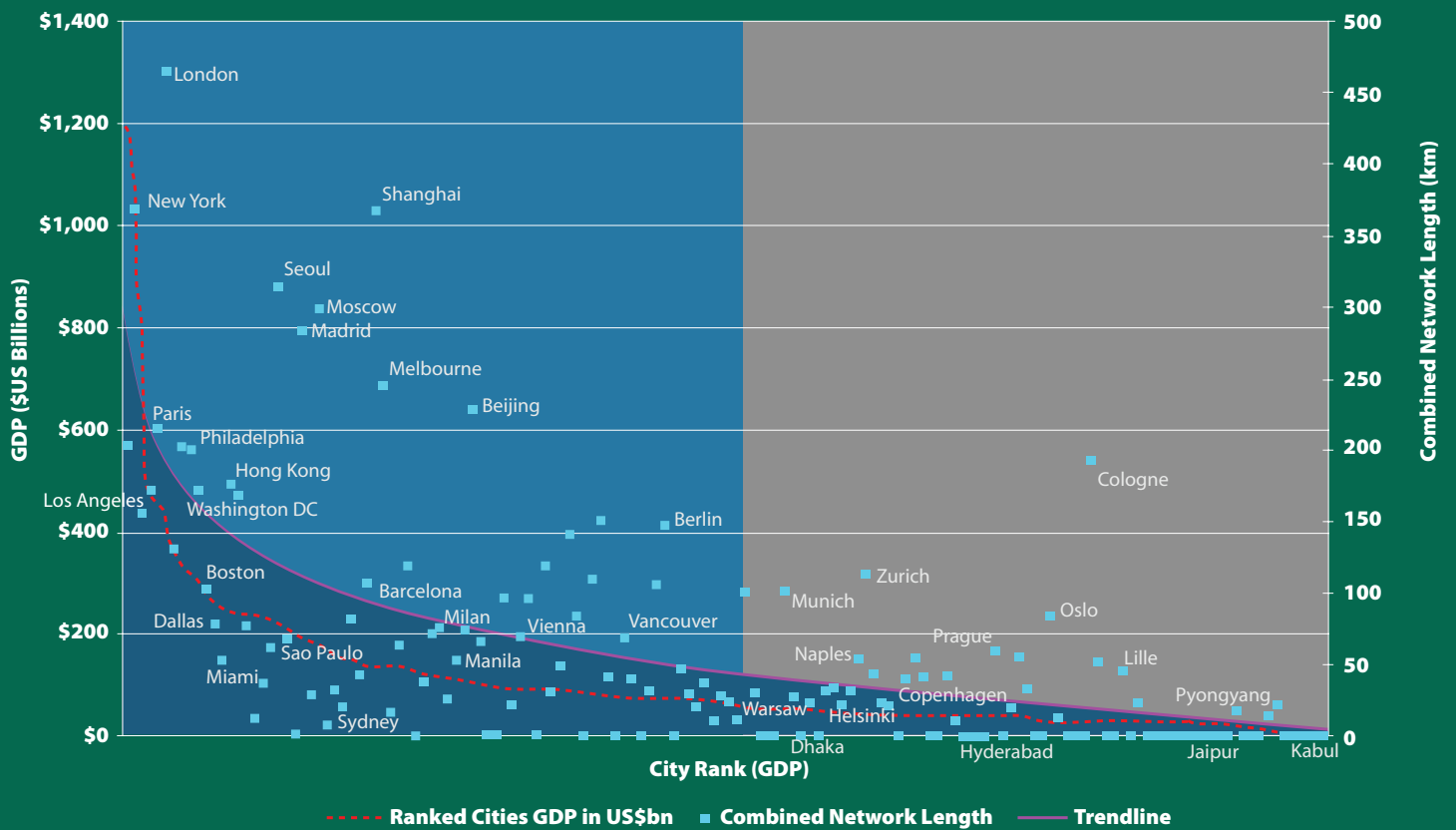


Figure 2: Categorising Cities Based on GDP and Rapid Transit Systems

New head of sustainability & environmental management



Andrew Grainger has recently joined Interfleet UK from specialist environmental consultancy ERM, where he led delivery of transport and railway projects relating to sustainability and the environment.

Andrew has a wealth of knowledge and experience that enables him to balance

technical, operational and sustainability & environmental impacts and requirements, such as minimising energy use, climate change mitigation and adaptation.

Andrew is responsible for developing Interfleet's sustainability and environmental offering for our clients.

IWT⁴ for increasing axle load

VALE are one of the world's largest producers of Iron Ore, and with the current heavy demand for iron ore VALE has focused on increasing the capacity of its EFC heavy haul line, a mine to port operation with the mine close to the Amazon and the port near Sao Paulo in the north of Brazil.

Vale's aim is to increase the capacity of each ore wagon by 20 tonnes, resulting in an axle load of over 37 metric tons. A cornerstone in achieving this is the measurement of wheel rail forces. Measuring leads to understanding the impact of the increased axle load on the infrastructure, which allows for optimisation of the total rail system.

Interfleet's latest Instrumented Wheelset Technology (IWT⁴) is a natural choice as it is able to directly measure vertical, lateral, and longitudinal forces, while using the ore wagon's standard wheelset. Furthermore the instrumentation process does not involve

any destructive modification of the wheelset; meaning that the fatigue life of the wheelset is preserved. This removes any need for additional ultrasonic inspection of the wheelset, which is important when considering the high axle load for this application.

Two IWT⁴ wheelsets were manufactured at Interfleet's laboratory in Sweden and shipped to Sao Paulo together with a state of the art data acquisition and evaluation system. A customised evaluation and reporting system was developed for Vale. This system provides exception reporting linked to positions on the network, and allows the operator to analyse and display data via a user friendly interface.

At the beginning of 2010 Interfleet engineers travelled to Sao Paulo to commission the system and train Vale staff in its operation and to date Vale are using the system as a key tool for implementation of their capacity upgrade.



Interfleet steams ahead in the ERTMS arena

ERTMS is a rapidly growing area both in Sweden and in Europe as more and more train lines are now equipped for the new signalling system, which in turn drives the need for installation on locomotives and railcars.

Interfleet Technology AB has now been awarded three assignments in the field of ERTMS, acting as Notified Body for the installation of onboard systems. The Swedish office began operations as a Notified Body in 2006. We have also undertaken assignments in which we lead projects in the ERTMS area.

Strategic study for European Railway Agency

Interfleet Technology UK has been awarded a contract from the European Railway Agency (ERA) to investigate the link between historic accident rate reduction and underlying changes. The European Railway Agency is responsible for developing and improving safety and interoperability on the European rail network.

Rail operational safety has been steadily improving over the last 25 years, but the underlying reasons for this improvement are not clear. Interfleet will study the essential factors to explain this observed historical trend in railway safety over this period, and the overall effect of these factors will be investigated, together with their possible contribution to future levels of railway safety. The output will assist the ERA in establishing a new set of Common Safety Targets, as part of the further development of European railway safety policy.

Whilst there is much data available on railway safety, such information is not easily comparable, comprehensive or reliable, making it difficult to use in the identification of the value of factors impacting on railway safety. There are well known causes of railway accidents and recognised factors which have a direct impact on railway safety, but there is no study that puts these factors together and estimates their relative impact in the development of improved safety.

Continuing to strengthen our excellent team

Interfleet Australia has appointed Dr Kanni Short to the Melbourne office as a senior risk engineer. She has strong operations and risk management skills and an in-depth knowledge of safety and risk management systems within the rail and petrochemical industries in Australia.

Also joining the Melbourne office, CH Liew is a professional mechanical engineer with more than twenty-five years experience in the rail transit industry. He has broad experience in systems engineering, commissioning, commercial and procurement administration, project management and control.

Divya Vikas has recently joined Interfleet's India office as a Principal Consultant. He has a wide range of industry experience, having previously worked on international metro projects, as the Chief Design Engineer at a rail coach manufacturer and for Indian Railways.

Steinar Høisæter is an electrical engineer (MSc) with more than 15 years' of experience in the railway industry. He has experience in the fields of project management, engineering and commissioning and has joined the Norwegian team.



Dr. Kanni Short



CH Liew



Divya Vikas



Steinar Høisæter

First assignment in Baltic states

The Latvian Railways, Pasazieru Vilciens (PV), are in the process of procuring 41 EMU/DMUs.

The procurement also includes maintenance of the vehicles over a period of 30 years. Interfleet Technology AB has been contracted to scrutinize the invitation to prequalification and the specification for the vehicles and maintenance in the tender document.

Interfleet AB's task was to recommend any changes required to the tender documentation developed by PV.



Independent safety assessment in Sweden



Interfleet Sweden has as Independent Safety Assessor (ISA) examined the vehicles now operating on the Bothnia Line with the new signal safety system ERTMS.

The ISA's role is to examine the safety of the system and give a recommendation for a safety clearance of the vehicle, so they

can go into commercial service.

The vehicles Interfleet has recommended for approval are the Regina train the King rode in during the inauguration of the line, and also two Rc6 locomotives.

The Bothnia line is the first ERTMS track in Sweden with passenger traffic.

Interfleet sponsors Transport Opinion Survey (TOPS)



Interfleet Australia is proud to sponsor the Transport Opinion Survey (TOPS), a new initiative by the University of Sydney's Institute of Transport and Logistics Studies (ITLS). The survey was launched in March and is a quarterly index gauging Australians' confidence in transport.

The results of TOPS showed more than half of the 1,000 adults surveyed said improving public transport was Australia's highest transport priority, with only 20% saying better roads should be the top priority.

Professor David Hensher, Director of the Institute of Transport and Logistics Studies, said Australians' support for private sector involvement in public transport remains high, with more residents in all states supporting more private sector involvement rather than less.

Australians remain confident about transport in Australia in five years time, with 47% of respondents believing transport in Australia will be better five years down the track, similar to the previous quarter.

Interfleet's Regional Director Brian Hastings commented: "One of the most striking figures in this latest Transport Opinion Survey is that one in four Australians nominated either transport (8%) or infrastructure (17%) as one of the two highest priority issues in Australia today. The

large increase in infrastructure, up from 10% last quarter, sends a clear message to policy makers that more transport and infrastructure investment is high on the public agenda."

The quarterly TOPS, the first survey to measure transport opinions on a regular basis, is a reliable indicator of Australians' ongoing confidence about transport in their local area and transport in Australia.

The March, June and September 2010 quarterly reports can be found at:

<http://sydney.edu.au/business/itls/tops>

Our international offices

Interfleet Technology Ltd

Derby • Edinburgh • London
www.interfleet.co.uk

Interfleet Technology NZ Ltd

Wellington • Auckland
www.interfleet.co.nz

Interfleet Technology Pty Ltd

Adelaide • Brisbane • Melbourne • Sydney
www.interfleet.com.au

Interfleet Technology GmbH

Wiesbaden
www.interfleet.de

Interfleet Technology Inc

Burlington, Canada • Philadelphia, USA
www.interfleetca.com
www.interfleetus.com

Interfleet Technology (India) Private Ltd

Mumbai
www.interfleet.in

Interfleet Technology AS

Oslo
www.interfleet.no

Interfleet Technology AB

Solna • Malmö • Helsingborg
Gothenburg • Lenhovda • Västerås
Ånge • Luleå
www.interfleet.se

Interfleet Technology A/S

www.interfleet.dk