

Dear Commissioners

Someone in our Community pointed out to us, that the transcript of your meeting with the RMS is now available on your web site. They asked us to read it and pleaded with us to send you our observations on that meeting.

Here it goes - not in any particular order.

## Point of correction:

### **We have our own mesoscopic model – but have never released any of our modelling results**

#### **Background**

For almost thirty years, we have run our company (Transport Modelling) specialising in the numeric and analytical aspects of the land use – transport interface.

As Nell stated in her speech, we have worked for the ACT, NSW and QLD State Governments on their strategic models. We have also worked for Local Governments as well as for almost all medium and large sized companies in Australia and New Zealand. We have used most of the common transport modelling software platforms in Australia and New Zealand.

On our own computers we have the Canberra and Brisbane Strategic models. We also have the Sydney model for private research purposes. The Sydney auto network was purchased from the RMS. The public transport network and the auto and public transport travel demands, as well as the freight movements, were freely available from what was then known as the Transport Data Centre (TDC).

**Given this background, it should be a no surprise that we have our own mesoscopic model of our backyard.**

A community member, who is a retired Logistics Operations Manager (together with his friends who move boxes) lead us in a study to “make Moorebank Intermodal work”. We learned that the local industry view of freight movements is significantly different from the freight movement database that we downloaded from the NSW Government web site. It is from this work, that we have a good understanding of traffic issues faced by the NSW Government.

Page 40 of Nell’s second book contains an image of our model as a silent message to other modellers.

**Point of correction:** we have never used any of our modelling results in any meeting.

It is important to emphasise that all our references to modelling work only refer to the modelling work found in the Moorebank Environmental Impact Statements (EIS) documents. All we have done is use simple English to explain those modelled results.

It is therefore incorrect to make any references to our modelling results - in any way - what so ever.

Nell went into special time explaining that trips that should be included in the EIS modelling work. Karen Jones acknowledged that those trips were not included in the transport models. Clearly, Karen Jones agreed that those trips should have been included in the modelling work.

#### **Our published work**

The only plots that we have generated from our own models are found on Pages 10, 11 and 21 of Nell’s first book. Please note that the NSW Transport Data Centre (TDC) Modelling Manager,

personally rang Paul up, to ask how those plots had generated. He was satisfied when he could reproduce those results.

These plots were reproduced in Nell's second book, pages 24, 26.

Nell's second book, also contains other plots (pages 51, and 52). These plots were extracted from the Freight Movements data. Similar plots are found in the MICL EIS – using circles instead of vertical bars.

## Observation – B triples

We appreciate the dilemma that Mr Langford faces: existing current NSW Government Policy when he is fully aware of industry expectations.

During Mr Hunt's visit at our home, his chief modeller, made two simplistic points to our community representative:

- since 45% of the Port Botany containers end up in Wetherill Park, the truck distance travelled from Moorebank is significantly shorter than from Port Botany, and
- there will be significant economic advantages if B-triples were used, rather than B-doubles

When such a simplistic explanation is given to a member of public in our home, we imagine that the very same explanation would have been given to politicians and senior public servants. However, obviously it was not given to Mr Langford.

In considering the application of B-triples routes, it is important to appreciate that B-triples cannot stop at traffic lights. If by chance, two B-triples were stopped at a traffic lights, the impact would be disastrous from a traffic engineering point of view.

In our study for the Riverina Intermodal Freight & Logistics (RiFL) Hub in Wagga Wagga, we carried out a special study on B-double and B-triple movements in-and-out the RiFL Hub. This detailed work was required for their road design engineers. The engineers needed the "full" and "empty" truck numbers for their calculations.

After our Temora Bypass study, a special meeting was held with the RMS Wagga Wagga, to discuss the B-triple movements around Temora, because they were planning to undertake trials to reach the RiFL Hub from Western NSW.

Conclusion: it is clear that industry is desiring to move towards the use of B-triples.

Mr Langford did indicate that the intersections would be designed to allow for "bigger vehicles".

## Observation - weaving movement on the M5 Bridge

In Paul's 5-minute speech to Planning and Advisory Commission 2, he tried to explain, that both the SIMTA and MICL weaving calculations were wrong – even though RMS modellers approved those calculations.

It was clear from the EIS documentation, that SIMTA, MICL and RMS used the Highway Capacity Manual 2000 (HCM 2000) for the weaving calculations.

**What should be known, is, that the HCM 2000 calculations were so bad, that the RTA developed its own procedure to calculate the weave movement.**

Sadly, for the EIS documents, those RTA procedures were not used – not even by the RMS modellers themselves.

**Even more surprising, was the fact that SIMTA, MICL and the RMS did not use the updated HCM 2010, which by that stage was 5 years old.** This fact was also highlighted by the NSW Government Independent reviewer.

Interesting background: Many years ago, Paul listened to a Highway Design Engineer, who used the M5 Bridge in his example. From memory, the Engineer indicated that this M5 Bridge has -- the shortest distance between the on-ramp and off-ramp for a 100 km/hr roadway -- in the world.

Therefore, we are keen to see the RMS solution to this weaving movement.

## Observation – quality of the RMS mesoscopic model

If the RMS mesoscopic model was indeed:

- “par excellence” – at least one paper would have been published in an international publication
- “excellent” – at least one paper would have been presented at the Australian Transport Research Forum (ATRF)
- “good” – at least one paper would have been presented at the Australian Institute of Traffic Planning and Management (AITPM) seminar

None of the above publications has happened.

Instead, it has been only been released to Liverpool City Council, under strict conditions.

Under these conditions, the RMS model should be considered not fit for purpose.

Mr Langford knows that we have a model. The RMS modelled results would be of no surprise to us. However, if the numbers are very different from our numbers, we certainly would investigate those differences – which may be on our own model.

## Mr Langford’s dilemma

**We understand that Mr Langford is in the middle of a difficult situation.**

On the one hand he has to deliver Moorebank Intermodal, and on the other hand he faces different headwinds. Not in any order.

### Science is not on his side

#### Occupancy

- The Flow - Occupancy diagram has the same shape as a Flow - Density diagram. (Flow – density diagram was discussed on pages 51 and p2 of Paul’s speech). The Flow – Occupancy diagram is identical to the Flow – Density diagram. The difference is that “occupancy” is expressed as a percentage, whereas “density” is an actual number. Occupancy is simple network attribute to understand for non-traffic engineers.
- Occupancy of 100% is equal to “Jam density” (where the red arrow meets the X-axis, or in plain English – all the bitumen is occupied by cars).
- Maximum flow occurs when the occupancy is between 25% (plus – or – minus depending on the traffic make-up of large and small vehicles).

All traffic engineering solutions assume uncongested traffic flow conditions (flows on the green line). This implies that occupancy is (significantly) less than 25%.

**My mesoscopic model shows the occupancy of Lane 1 is about 85%, and for Lane 4 about 60%.**

Our high occupancy in our mesoscopic is not the only warning about the congested network. Here are other modelled results.

- In Paul's speech, he spent time showing that **MICL's** future traffic modelling with SIDRA, 20% of the traffic could not turn right. SIDRA removes that traffic so that it can continue with the calculations. On page 64 of Paul's speech document, the yellow line represents all the vehicles that could not get through that particular intersection
- The **SIMTA** modelling showed that the network capacity was inadequate is on pages 65 and 66

The **NSW Freight and Ports Strategy**, page 122 states:

- Travel demand on the section of the M5 Motorway between the Hume Highway at Casula and Moorebank Ave is expected to exceed capacity as early as 2016
- By 2026 growth in background traffic will result in peak spreading and traffic conditions similar to the existing peak period in the Liverpool area and on the M5, persisting for most of the day
- Key intersections providing access to the Moorebank intermodal precinct will exceed capacity with volumes, especially of turning vehicles, resulting in extensive delays, with queueing sufficient to disrupt through movement

Summary, our modelling, MICL, SIMTA and Transport for NSW all show that there are congestion issues.

In Nell's second book, 34 network improvements identified in the literature review (pages 12 and 12). In her speech, she showed a slide of the geographic locations of those network improvements. All that information has been extracted from public documents and they should not be a surprise to anyone.

### Other NSW Government modeller's opinions

In the early EIS documents, the SIMTA and MICL modellers made it very clear that their modelling showed that the Moorebank Intermodal was not going to work.

- When we discussed this issue with senior modellers within the NSW Bureau of Freight Statistics, their response was brutal: "we can land people on the moon, we can fix Moorebank".

Clearly, those modellers were looking at road network solutions and construction budgets that Mr Langford has not had the time to think about.

### Current talk about network improvements

Adding an additional lane to the M5 Bridge, only completes what the M5 Widening project "forgot" to do – add the widening lane to the M5 Bridge.

Community discussions with the then Mayor of Liverpool, indicated that the Cambridge Av upgrade would be a toll road. This would imply that the people in Campbelltown, who now have a "free ride", will have to pay a toll to travel over the same (but improved) road.

Neither network improvement will make a significant impact to the overall congestion. Mr Langston needs to think about budgets that land people on the moon to fix Moorebank up.

### The AIMSUN software

Mr Langford uses the AIMSUN mesoscopic software, which is known for “losing” vehicles when there is congestion in the network (just as SIDRA ignores traffic that cannot travel through the intersection).

#### AIMSUN software

This “losing-vehicles feature” of AIMSUN should be considered dangerous – and not something desirable because it produces “better” results.

It certainly would not be a good look, if a reviewer were to ask: “where have those lost vehicles gone?”, and the answer is “we do not know”.

Because, those lost vehicles will have an impact on the traffic stream.

Clearly, without that additional traffic, the network will flow much more smoothly and give “better” results.

### The AIMSUN modellers

Only one EIS document referred to the RMS model. It described “yellow box” intersection (troublesome intersections) located in typical residential areas, where there no major roads exist.

In my comments to that EIS, I expressed concern that “yellow box” intersections were found in residential areas. I would have expected “yellow box” intersections to be along busy roadways.

#### Background

These “yellow box” intersections could be due to the immature AIMSUN software (simple bugs in the software), or poor or inexperienced mesoscopic modelling skills.

### The RMS AIMSUN model reviews

The fact that SIMTA, MICL and RMS reviewed the model is not exactly a high point – because all three organisations desire “good” results.

Mr Langford indicated that the RMS had its model independently reviewed. Our understanding is that the reviewer was not a modeller, or indeed a traffic engineer with modelling experience.

Note that the NSW Government reviewer indicated that he was not given access to the AMSUN model. If the RMS model was good, intuitively, the reviewer would have been able to make some comments on that.

We note here that Mr Langford’s description of the RMS model. Intuitively, if a scientific approach was taken, the RMS modelled area would cover the 34 network improvements that have been identified. This is not the case. Why did the RMS decide on such a small network?

### Published network recommendations

The published network improvements should be viewed in the following light.

- Pages 51 and 52 of Paul’ speech covers congested networks.
- He made a special point about the uncongested traffic flows on the green line.
- Transport Modelling, SIMTA, MICL, TfNSW all show that the traffic flow is in the congested region (Red line).

### **Our concern**

If network improvements along Moorebank Av are based on the uncongested traffic flow conditions (flows on the green line) and we all know that the network operates on congested traffic conditions (flows on the red line), then we should really double check the modelling – because we may be wasting many millions of dollars based on this wrong assumption.

### Paul's qualifications and our position on Moorebank Intermodal

#### Qualifications

This RMS site details last year's Request of Information to build a new Sydney Mesoscopic model.

<https://tenders.nsw.gov.au/rms/?event=public.rft.showArchived&RFTUID=C2FF80C1-FC8C-3B51-2501655F77CD62FC>

INRO, a software development house, with a more mature mesoscopic software package and a larger world market share of the mesoscopic market than AIMSUN, made a bid for this modelling work. Here is the link to their document:

[http://www.transportmodelling.com.au/intermodal/Sydney\\_Metropolitan\\_Traffic\\_Model\\_\(MTM\)\\_may302018.pdf](http://www.transportmodelling.com.au/intermodal/Sydney_Metropolitan_Traffic_Model_(MTM)_may302018.pdf)

INRO approached Paul to join their team. INRO's description of Paul is found on Page 12. Quoted here for ease of reference:

#### **Paul van den Bos, MTM Subarea Task Manager (Transport Modelling)**

**Years of experience: 35 Qualifications: MSc (Transportation and Highway Engineering), University of NSW B.Eng (Civil), University of NSW B.Eng (Civil), PNG University of Technology**

**Availability | Mobilization: 80% | 1-week**

**Profile: A traffic engineer with exceptional modelling skills that are well renowned and he is hands down the most experienced Dynameq user in Australia and is in the top of the class internationally.**

INRO obviously thought very carefully about these words, because they knew that there are several Dynameq modellers within the RMS and possibly other Dynameq modellers on the review panel. INRO clearly did not want to insult anyone.

#### Position on Moorebank Intermodal

Simply:

**If it has to be done, it better be done properly**

#### **Premier's Chief of Staff**

When we met the, then NSW Premier's Mr Mike Baird's Chief of Staff, we offered to work together with

- Frank Milthorpe - at that time Modelling Manager at the TDC, who has personally nursed the Sydney Strategic Travel Model for more than 20 years
- Marwan Daizly, who works within the RMS, and has modelled every major road transport infrastructure in Sydney over the last 25 years

My wife and I suggested that, together, we could model Moorebank Intermodal properly.

**Mr Ian Hunt, at that time CEO MICL**

We made a similar offer to Ian Hunt that we should get involved with his team, at the early stages.

**Liverpool City Council**

We made a similar offer to Liverpool Council traffic engineering staff.

## Conclusion

Given this background, we strongly believe that the NSW Government is not as open and transparent as it claims to be on the Moorebank issue.

Yours faithfully

Narelle and Paul van den Bos