



**Pacific Highway Upgrade
Brunswick Heads to Yelgun
Community Liaison Group Meeting No. 5
3 August 2005**

Attendees:

Brett Lee (BSC)
Pauline Millington
Malcolm Murray
Kathy Norley-Farmer
Robert Rosen
Sue Stirton
Tony Stupka
Jack Taylor
Greg Milham
Colin Tarbox
Barry Hutton
Patricia Warren
Frank Mills

David Bannigan (SMEC)

Will MacDonald (Abi)
Mark Sabolch (Abi)
Terry Paxton (Abi)
Wendy Dooley (Abi)
Sean Pacey (Abi)

Peter Borrelli (RTA)
David Purdy (RTA)

Bill Gardyne (EMR)

Apologies: R Kooyman, P Wallbridge (Abi), Ron Holmes (RTA), Susan Scott (RTA)

1.0	Welcome
1.1	Comments from previous notes: Terry Paxton (TP) noted that comments had been received from Robert Rosen and Matthew Lambourne and would be encapsulated in the previous notes. Clarification was also made in relation to the rest area. The outstanding item yet to be resolved was not the layout of the rest area itself, but the layout of the proposed new local road around the rest area.

2.0	Outstanding actions from previous meeting
2.1	<p>New Riverside Crescent connection site inspection</p> <p>As requested at the previous meeting, project team members undertook an inspection of the area for the new access from the existing roundabout to Riverside Crescent with a local resident specifically to look at drainage issues in the area. Surveyors had undertaken some more detailed survey work in the area to confirm the suitability of the drainage plans.</p>
2.2	<p>Sensitivity testing of hydrology model</p> <p>Sensitivity testing was to be undertaken for the flood plain modeling in the Marshalls Creek / Billinudgel area using recent actual data from the catchment. David Bannigan from SMEC will present the outcomes of that work later in tonights meeting. (See section 5).</p>
3.0	<p>Update on works</p> <p>Abigroup Construction Manager Will MacDonald advised that with all required construction approvals from the various agencies having now been obtained, clearing and construction had now started in earnest. The project team has started on a number of fronts.</p> <p>Will presented a series of photos and explained some of the machinery involved in the clearing process. This included a shimmer - an excavator with a grinding rotary drum attached. Utilising the shimmer, the project team has been able to reduce the time and need for bulldozers in many areas.</p> <p>During the clearing process, local seed was also being collected for reuse in the project landscaping as locally collected endemic seed is known to be generally more successful than seed collected and used from outside the project area. Seed collection had actually been occurring since February 2005 and would be an ongoing exercise as the project has a significant revegetation component.</p> <p>Water quality testing was also being undertaken to establish typical background water quality parameters including pH levels etc in local drains, creek lines and streams.</p> <p>Will also explained that now the project was now beginning to 'open up', and that the local community would see larger earthmoving equipment arriving in the coming weeks. An 80 tonne excavator is now on site and soon the piling rigs would be operational on the temporary platforms in the Brunswick River and also at Marshalls Creek Overflow and Marshalls Creek.</p> <p>Will indicated the project team was pleased with the way the extended construction hours were operating and that Abigroup would continue with the 7am to 3pm construction hours on a Saturday. To this end the extended construction hours would be advertised in the local press rather than letterbox dropping residences every week. A member of the CLG suggested that the project team look at notifications via the local radio stations as well. The project team also indicated that once a proposed advertisement was approved</p>

	<p>it would like to make it available at community focal points such as the stores at Billinudgel and North Ocean Shores.</p> <p>Another CLG member noted some that some very large trees were still standing along the alignment along the Brunswick Heads Bypass. Will explained that these trees had been identified for preservation and that the alignment had actually been designed by the RTA further to the west to allow the preservation of these trees. The trees also had added value in that they were part of the highway crossing strategy for arboreal species such as glider possums.</p> <p>As far as the program was concerned the project was close to being on target to deliver the project in the estimated timeframe.</p>
<p>4.0</p>	<p>Presentation on Brunswick River Bridge</p> <p>Abigroup Construction Manager, Will MacDonald provided the group with a presentation on the Brunswick River bridge, a major and challenging component of the project. Will explained there were actually three bridges across the river, each of two lanes. The most easterly bridge will be the local service road bridge with north and southbound lanes for local traffic plus a shared pedestrian / cycle path; the middle bridge providing the southbound lanes for the highway and the westerly bridge structure providing the two northbound lanes for the highway.</p> <p>It was noted that the balanced arched cantilevered bridge was a bit more expensive but is a more elegant style of bridge that facilitates longer spans between piers. In this case it allows an 85m main span over the river with only two piers and a significant navigational clearance. This allows the construction of the bridge with far less impact on the river because construction work will be largely above the river - not in the river.</p> <p>This bridge type is not common in Australia but is much more common on motorways in Asia because it allows the motorway to be constructed over developed areas with minimal impacts on those areas below.</p> <p>The construction process has now commenced with site preparation and this has involved: -</p> <ul style="list-style-type: none"> • Installing a silt curtain in the river around the work area; • Translocating seagrass; • Laying down a geo-textile fabric on the bed of the river; and • Constructing a temporary platform of clean rock to provide access to begin the piling process. <p>Once the preparation work is completed and the platform is suitable for the piling rigs, driving of pile casings and then pile boring will commence. For the Brunswick River piers 2.2m diameter steel casings will be driven and then the centre of the casing will be bored out. Special attention will be paid at this point to the material to be removed to accommodate the piles. The material is constantly monitored for its acid sulfate potential and will be removed and treated away from the river area to neutralize any acidity. Once treated, it can then be safely used in fill anywhere on the job.</p>

Once the steel pile casings are in place, and the pile has been bored, steel reinforcing will be installed and the concrete piles poured. The piles provide the basic anchoring mechanism for the three blade piers on either side of the river that will support the bridges. There are significant environmental advantages in terms of flow and sedimentation of the river as a result of the reduced number of piers achieved by using this style of bridge.

On completion of the piers, a 'pier table' (first deck section) will be constructed on top of each using falsework (or supporting formwork). Deck construction commences from the headstock - working out in both directions equally before meeting in the middle of the river and landing on the abutments at each side.

This deck construction process is achieved using traveling forms, in this case imported from a project in Taiwan. The critical consideration is balancing the structure on either side of the headstock. Additional strength is gained by incorporating tensioned spun wire cables – or tendons - into the growing structure. The deck itself actually has a void inside to house a range of services that cross the river at this point.

The final segment of the bridge is the critical part as, like an arch this is what transfers the loads and provides the key to locking the structure together.

Will also mentioned that webcams have been installed and once the project website is up and running, regular updates of photographs will allow people to watch the construction process and progress of the bridge structures at the Brunswick River.

Discussion Points

Q Are you going to have security around the bridge works?

A Yes.

Q Will the bridge surface be level or curved?

A There will be about a 4% grade with an over vertical curve but it will not be all that noticeable when driving.

Q How wide is the bridge?

A About 12m on the service road.

Q How long will the bridge construction last?

A We would like to complete all three bridge structures by Christmas 2006.

Q Do the bridges support each other in any way?

A No, they are independent.

Q At a later meeting could we consider bikeways for the whole job?

BSC Council is currently doing a bike plan and is looking at the highway construction and how it ties in. We are probably three to four months away from being done.

RTA Yes, it would however, be appropriate for a presentation of the pedestrian / cycleway strategy for the project.

	<p>Q Who will be monitoring for Acid Sulfate Soils (ASS) on the bridgeworks?</p> <p>A Abigroup will do the monitoring. We also have separate crews looking at ASS during the boring. In the 20m to 30m of boring we estimate the risk is likely to be in a two metre layer closer to the river bed level.</p> <p>Q Exactly how will the drilling be done? Two metres is a big hole.</p> <p>A The technology is getting better and there are now piling rigs with enough torque to drill big diameter holes to a reasonable depth. As it goes down it's like a coring bucket and right down to the bottom there's a cleaning bucket. At the bottom of the pile in the hard rock socket we will probably be only going about 100mm /hr into the bedrock.</p> <p>Q Could we start collecting photos for putting up in Fins?</p> <p>A Yes, we will have lots of photos from the webcam but we should also be starting to think about what might be included in an opening ceremony. For example, we could consider a silver serve banquet on the old bridge as a community fund-raiser for some special project/s - perhaps in the southern foreshore area. There is also a time capsule option and some memorials along the route. This is the opportunity to start thinking and discussing such opportunities with communities. On top of this, we have to consider the naming of the bridges. It has already been suggested from the community consultation that the local service road bridge bears an indigenous name and the others a name that captures some European history. RTA is currently finalising this now.</p>
<p>5.0</p>	<p>Sensitivity testing on flood monitoring.</p> <p>David Bannigan of SMEC, who had given a presentation on the Marshalls Creek floodplain hydrology at the previous CLG meeting, returned to present the outcomes of the additional sensitivity testing undertaken. David indicated he had taken the key concern presented at the last CLG – that the rainfall run-off using ARR design storms did not really represent the true potential rainfall in that catchment – and run the model using actual data from this catchment.</p> <p>David indicated the recorded record of flood flows at Durrumbul were actually reflected in the modeled flows using ARR design storms and so there were no real discrepancies with the Brunswick River flood plain. David also indicated by SMEC's assessment, based on fitting a flood frequency distribution to available record of Marshalls Creek flood heights, the recent 2005 flood constituted a 1:500 year flood event in the Marshalls Ck catchment.</p> <p>It was noted that the recorded flood heights were scattered about the fitted flood frequency curve line and that with respect to the fitted line any line could have been used to fit the data. David stated that the fitted line was derived using the accepted statistical procedure for Australian flow data which is to fit a curve called a Log Pearson III distribution.</p>

David showed the flood peak on July 1 and together with the tidal data was able to demonstrate at what point the incoming and outgoing tides affected the flood heights as the flood flow subsided. Using data which had been collected from known flood height locations around Billinudgel e.g. the General Store, sewage pump station, Balemo Drive etc, SMEC modeled the 2005 flood, using a more detailed model to represent the various flow paths through the industrial estate, including the channel adjacent to the railway line, the Wilfred Street channel and overland flows down Mogo Place and Wilfred Street. Generally the observed heights were within 70mm of the modeled heights, around the industrial estate, and this was considered to be a 'good fit' in terms of modeling accuracy.

Next step was to run the flood event through the newly calibrated model and see what effect the proposed highway upgrade would have.

2005 Flood Calibration Billinudgel Area

Location	Observed	Modelled
Balemo Dr, Ocean Shores Sign	3.60	3.60
Marshalls Ck, Pacific Hwy, upstream	3.85	3.78
Wilfred St, Sewer Pump	4.2	4.14
Smash Repairs	4.27	4.21
General Store	4.49	4.48

The model fit is on average within 40 mm at the 5 locations with a maximum error of 7 mm. This is considered a good fit.

Event Modelling, Pre/Post Upgrade

Event	Highway downstream	Highway upstream	Wilfred St at Highway Channel	General Store
1987	3.12/3.12	3.30/3.31	3.59/3.60	4.08/4.09
2005	3.59/3.59	3.78/3.81	4.00/4.02	4.48/4.49
Probable Maximum Flood	4.78/4.78	5.00/5.05	4.98/5.04	5.11/5.15

Maximum Impacts

- ◆ 1987 Flood ("100 yr flood") – 0.01m
- ◆ 2005 Flood ("500 yr flood") – 0.03m
- ◆ Probable Maximum Flood – 0.06m

Conclusions

- ◆ As requested, SMEC examined locally derived 1 in 100 year flood data and entered that data into the model.
- ◆ The flood model shows that the design at Marshalls Creek will meet the Environmental approval requirements for the project, based on actual catchment data i.e. no significant increase in flood levels upstream and downstream as a result of the highway upgrade project.

Discussion

Modelling and Design

Q What would it take for a movement from the project team to accept the 2005 flood as the 1:100 year flood?

RTA We can see on the “Event Modelling, Pre/post Upgrade” slide (see above), that there’s not a real difference in the level in the vicinity of the bridges. The highway is not the driving constraint with what’s happening in Billinudgel.

C Forget about the intensity of the event, it doesn’t matter whether it’s 1:100 year, 1:1000 year or whatever. Historically look at the 1987 figures, downstream no effect, upstream 10mm. In the 2005 event there is no effect downstream, and upstream only 30mm. We’re confident as we’ve run it through the range of events the highway upgrade project is not making a difference to flood levels in Billinudgel. Abi believes we have it right.

Q So have Abi made any changes as a result of the modeling and sensitivity testing?

A The final detail hasn’t been locked down before the flood so even though it was a terrible event for everyone involved, it has enabled us to use the recent figures in the design modeling. As a result we have tweaked the design, getting the final position, final length, size of culverts, pipe-work etc in order. It is more than just Marshalls Creek or a specific drain - it is a whole of floodplain approach, and a total drainage design solution which is used in the road design.

Q How can we predict to so far out as our records are so short? We are not able to analyse the old floods, yet we’re referring to this as a “once in 100 year” flood.

A You are right in that respect so we have to work on assumptions based on the best information we have.

Q What is Council’s assessment of the level of the most recent flood?

A From Council’s point of view, we are not commenting on what this flood was because we haven’t factored in all the figures yet. Our draft report is expected next week but will not really be able to compare it to the SMEC report for the highway because we are looking at different things and have therefore approached it quite differently. We have looked at all the flood heights in the area (at 50 different locations), as a basis for future flood plain modelling.

Q Will climate change be taken into consideration?

A	Data is always being re-analyzed but it is an expensive exercise and again, you are introducing another unknown into the equation.
Q	When SMEC did all the calculations, did they consult the Bureau of Meteorology and if so do they measure in the same way (rainfall being 1:100 year event etc.)?
A	Yes SMEC contacted the Bureau to ask whether there has been any update to the design rainfall data in the Brunswick Heads / Oceans Shores area since data was published in ARR. The Bureau replied that there has been no update. The ARR data is based on storm measurements collected by the Bureau from sites all around Australia. The gauge network dates back to the late 1800's in some areas for daily rainfall records, while for storm patterns shorter than 1 day the network generally dates back to the 1950's and 60's. The Bureau design storm data is based on the available records from 7500 daily read stations with records longer than 30 years and about 600 sub daily read stations with records longer than 6 years. This data was statistically combined by the Bureau and adjusted for regional influences including terrain and local weather mechanisms). The Bureau of Meteorology derived the design rainfall data which is published in the latest edition of Australian Rainfall and Runoff and which was used previously to estimate the 100 year flood flow. The design data is based on measurements from a network of rain gauges scattered around Australia. SMEC compared stream flows derived from this data against recorded stream flows and found that the Bureau data appears to underestimate design flows at Marshalls Creek, based on the Billinudgel gauge record. For this reason we have assessed the impact of the Highway Upgrade for the 1987 and 2005 floods which have higher discharges in Marshalls Creek than the ARR derived 100 year flood.
EI Dorado Industrial Estate	
Q	Why haven't any levels around the EI Dorado Estate been taken into consideration?
BSC	We obtained information from all across the area. We did extensive advertising asking people to come forward with information.
A	We had no reported heights from that area but in the end, our focus is on the impact of the highway.
Q	Between the highway and the industrial estate there is a 20m x 5m deep drain and according to the cross-section it's being reduced by two-thirds. Where is the water going to go? It now crosses the highway when the drain is full but the highway will be 400mm higher so it can't go across that.
A	We are putting culverts under the highway and diverting some of the water that currently goes into that drain. There won't be any water flowing from the east to the west in the 100 year flood. Although decreasing the size of the drain, the same quantity of water isn't going through the drain, ie., it's catchment area has been substantially reduced.

	<p>C If you're reducing the area by two-thirds shouldn't you put another drain under Wilfred St?</p> <p>A There is already a drain under Wilfred Street (but it is not working efficiently now because it is silted up), and another across the highway to divert water to the east of the highway. The capacity of the drain is sufficient for the volume of water making its way into that drain. There is also a culvert under the highway between Wilfred Street and the hill at the moment.</p> <p>C The catchment area on the eastern side of road is minimal. Most of the water comes from El Dorado and goes to the front drain.</p> <p>C Simply do not believe the modeling. Believe Abi and SMEC have decided what the outcome would be before doing the modeling.</p> <p>RTA What do you want us to do?</p> <p>A Work out the amount of volume behind El Dorado, the size of the opening that RTA is closing and the amount of water flowing down that drain and then reduce the capacity by two-thirds.</p> <p>A That's effectively what we have just done but instead of having a drain full of rubbish, trees and leaves, we're intending to deliver a functional drain as part of the overall drainage solution.</p> <p>RTA Let's be clear that the business is in a flood area. We adjusted our modeling, after taking on board the new figures from the recent flood. We are within the tolerance levels set for the planning approval of the project. The modeling and study work has shown that it doesn't make any difference what "name" or rating you give the event.</p> <p>Action: Provide raw data to GM so he can have the results independently verified. RTA and Abigroup to have a further meeting with GM.</p> <p>Ongoing Responsibility</p> <p>Q Just say your model doesn't work out, are you prepared to change the drain as it's not under the highway?</p> <p>RTA Our responsibility is only the highway, not El Dorado or anywhere else.</p> <p>Q If the model is meant to be adequate and proves that it's not, will you come back and alter the road's performance like Crabbes Creek?</p> <p>RTA We would come back and doing further analysis and modeling and make adjustments as may be necessary.</p>
<p>6.0</p>	<p>General Business</p> <p>Memorial Crosses</p> <p>Q What eventuated after removing crosses?</p> <p>A Thanks to the assistance of some CLG members we were able to locate the families associated with the crosses. They have been returned to one of the families and are going to be refurbished and probably reinstated in a safe location at the end of the construction. It has turned out well for the parties involved and they are pleased we</p>

	<p>made the effort.</p> <p>Weed Control</p> <p>Q How is the RTA going to prevent weed invasion into threatened habitats during road construction?</p> <p>A A Weed Management Strategy is now in place. A botanist rated the areas from one to five (one = no weed infestation, five = quite weed infested). The topsoil from the best areas will be reused for revegetation purposes. There are areas north of Brunswick River and the edge of the nature reserve with poor topsoil. The strategy is to bury that weed infested topsoil during earthworks, under the road footprint. The good topsoil will be used in the batters in the revegetation work. Then we will come back and do weed management doing the revegetation and maintenance program.</p> <p>Ospreys</p> <p>Q How are the ospreys?</p> <p>A We have been advised they are nesting on the south side of the river. There is also apparently another breeding pair upstream.</p> <p>C We recently counted six in the area.</p> <p>Yelgun “Local Road”</p> <p>Q Is the interchange layout at Yelgun still up in the air?</p> <p>RTA It is getting closer but due to the flood issue, the priorities moved. Really we are in exactly the same situation as we were at the last meeting.</p> <p>Q Are you going to tell us beforehand?</p> <p>RTA You will be advised as soon as it has been resolved.</p>
<p>7.0</p>	<p>Next Meeting - 7 September</p> <p>Billinudgel landscaping discussions.</p>

Attachment : SMEC Presentation