

## **Drury South Business Park**

Peer Review of Integrated Transport Assessment

April 2010

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## EXECUTIVE SUMMARY

This report has provided a review of the Integrated Transport Assessment (ITA) prepared in conjunction with the proposed Drury South Business Park (DSBP). This site is located to the east of the Southern Motorway, between the Drury and Ramarama interchanges. The assessment has been based on a figure of 7,850 employees at the site, although it is stated that, following revisions to the Concept Plan, the site now expected to offer employment for around 6,900 people.

The report has reviewed the development of a SATURN traffic model and has concluded that the base model is suitable for the purpose of assessing the effects of the proposed plan change.

The report has then reviewed the development of the traffic forecasts. These have been driven by land use forecasts provided by the local authorities, leading to changes in levels of background traffic forecast by the Auckland Regional Council's regional model.

We have reviewed the trip predictions for the site itself and while we have raised a number of points of detail regarding certain aspects of these predictions, we accept that the predicted traffic flows fall within the range derived from a variety of means.

The assessment of traffic effects is significantly influenced by the prediction by the regional model that a significant proportion of trips associated with the DSBP will not be "new", but will be diversions of trips that will take place in any case. We are comfortable with the concept of trip diversion and it means that the development is predicted to reduce the number of trips travelling in the peak directions (northbound on the motorway in the weekday AM peak and southbound in the PM peak), with increases in trips predicted in the contrapeak direction.

The ITA sets out a range of measures that are proposed to mitigate the traffic effects, local to the site, and we note that:

- ◆ These measures are generally predicted by the traffic model to allow the local road network to operate satisfactorily
- ◆ New pedestrian and cycle links are proposed between the site and Drury.

We note that the ITA predicts that a fairly small proportion of trips heading to/from the site will be by passenger transport, pedestrians or cyclists. This would appear to be a concern in terms of the consistency of the proposal with the general transport policy objective for high trip generating activities to be focussed in areas where they are supported by the future development of the public transport, walking and cycling networks. However, previous studies have demonstrated that the Auckland region has a shortage of land zoned for business purposes. The majority of the development anticipated within the DSBP is expected to be industrial employment, with the remainder expected to be complementary to this form of employment (such as local retail, rather than destination retail). This form of development can generally be expected to be located away from the main centres and therefore located in areas that will be less conducive to trips by modes other than the private vehicle. As such, a low mode split of trips by passenger transport, walking and cycling is, to a certain extent, to be expected (although measures are proposed within the ITA to encourage the potential for trips by these modes). Furthermore, we note that there are two other key issues in terms of the consistency of the site with transport policy:

- ◆ Development in this location is predicted to lead to a reduction in trip lengths
- ◆ The site is accessible from the strategic road network, with two connections to the Southern Motorway.

As a result, we conclude that the ITA provides a reasonable assessment of the predicted traffic and transport effects associated with the proposed development, provided that the recommendations of the ITA are fed through to the plan change, and the assumptions in the ITA (for example on the land use mix) are enforced through the plan change. However, we note that the more detailed effects will depend on a range of assumptions recommended by the various transport agencies. Relevant issues are:

- ◆ The land use forecasts, outside the DSBP
- ◆ Changes to the road network away from the DSBP, such as the absence of upgrades assumed along the Southern Motorway and along SH22, but the assumption that the Mill Road Route is to be completed by 2026
- ◆ Future improvements to passenger transport, such as the extension of rapid transit services to Drury.

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## 1 INTRODUCTION

This report summarises the main issues associated with our peer review of the Integrated Transport Assessment (ITA) relating to the Drury South Business Park (DSBP). The ITA has been prepared for Stevensons Ltd by Beca Infrastructure Ltd (Beca).

In preparing this report we assume that the reader has read the ITA.

The Model Scoping Report indicated that the model was to be used for the assessments of the DSBP and the Mill Road route study. However, our assessment has focused on the adequacy of the model for the assessment of the Business Park.

It should be noted that we have not reviewed the draft plan change and therefore have not checked that the recommendations of the ITA have been fed through to the plan change.

## 2 DOCUMENTS REVIEWED

We have reviewed the following:

- ◆ The Model Scoping Report, dated March 2009
- ◆ The ITA Scoping Report, dated 30 July 2009
- ◆ The Traffic Model Validation Report, dated 18 March 2010
- ◆ SATURN traffic model files for the base (2006) model and the future (2026) models without and with the development
- ◆ The ITA, dated 12 April 2010.

## 3 BASE TRAFFIC MODEL

The model has been through a couple of iterations and we now conclude that:

- ◆ The model is satisfactorily validated against existing traffic flows (focusing primarily on the modelled flows crossing various screenlines). The screenline validation requirements of the Economic Evaluation Manual (EEM) have been met “in most cases” (this being a term used in the EEM)
- ◆ The model is reasonably validated against existing journey times. There are a number of cases where the validation is outside the target set, but the validation achieved is sufficient along the main routes of particular significance to the plan change
- ◆ A particular issue raised during our review related to the validation of journey times along the Southern Motorway and as a result Beca have explored the existing congestion on the motorway in greater detail. We had initially raised several points of detail, relating to issues such as the assumed profile over the various linked time periods and whether arrival or demand flows had been used in the specification of the counts used for matrix estimation. However we consider that these issues have fallen away as a result of discussion on the key issue of the journey time validation
- ◆ We accept that journey times along the motorway can be quite variable in the peak periods, making validation difficult to achieve without a substantial data collection exercise
- ◆ The satisfactory traffic flow validation has been achieved through matrix estimation. This has led to some reasonably significant changes in the trip distribution and some modest differences in the trip length distribution, but these changes do not appear to be overly substantial

- ◆ We debated with Beca the merits of coding speed flow curves on all links. It is not an approach that we have tended to follow ourselves, but we recognise that a reviewer should not seek to impose his/her own style on a consultant. In fact we note that the consultant's approach is to be commended, as it adds a layer of complexity to the model, which covers rural and semi rural as well as urban areas.

## 4 FUTURE TRAFFIC MODEL

Future models have been developed for the years 2016 and 2026. Our review has focussed mainly on the 2026 models.

Our review has noted that the consultant has taken advice from the various transport agencies regarding future land use changes and future transport network assumptions. There are a number of points that arise from these assumptions:

- ◆ The local authorities have provided estimates of future land uses that are higher than the assumptions used for the Regional Land Transport Strategy and have asked that these higher estimates are used for the ITA. We note that it is not uncommon for local assumptions to be used in preference to "standard assumptions" that have been accepted for more regional assessments
- ◆ On the other hand, the authorities have been fairly conservative in specifying which transport improvements should be used in the assessment. The reason is generally that the assessment should not include uncommitted works (such as improvements to the Southern Motorway)
- ◆ The result of the above two points is that quite significant congestion is predicted in the future base models
- ◆ We originally commented that some network improvements should be assumed at some locations, but we accept that consultant's response that these are generally in locations that are quite some distance from Drury South, or in locations where the consultant has been told specifically not to include improvements by the relevant agency.

The changes in background traffic demands between the 2006 base year and the 2016 and 2026 forecast years have been derived from the regional (ART) model. This is standard practice.

We have discussed a few issues with Beca on the detailed coding of the future SATURN models, as follows:

- ◆ The most significant issue was a substantial queue on the Southern Motorway, northbound in the AM peak, north of the Papakura on ramp. A substantial queue is to be expected at this location, given the future land use and transport assumptions, but the queue was not blocking back correctly in the model. The issue arose not due to an error by Beca but due to a "bug" in the SATURN software, as the problem encountered (with around 3,000 vehicles queuing on a very short link) was in theory not possible. Beca have discussed the issue with the developers of SATURN and have satisfactorily overcome the issue through subtle revisions to the coding of the network
- ◆ The changes to the speed flow curves that have been incorporated in the base models have dampened down the future congestion in some areas.

## 5 TRIP PREDICTIONS FOR THE DSBP

The ITA is based on the DSBP providing employment for around 7,850 people, upon completion (around 2025-2030). However, the ITA states that refinement of the Concept Plan means that the Business Park is now expected to accommodate around 6,900 people. As such, the assessment of effects is conservative, overestimating the effects by about 12%.

The ITA states that the overall employee figures and the employee mix assumptions are based on the Economic Assessment undertaken by Market Economics. We note that the land use assumptions seem particularly precise when the development is at a very imprecise stage. Presumably the developer will wish to allow the market to determine the final land use mix, but controls will be required within the plan change to ensure that a desirable mix of development eventuates, both in terms of ensuring complementary land uses (eg retail to serve the local employees, rather than new destination out of town retail) to maximise the potential for internal trips and to ensure that unexpected (and undesirable) outcomes (such as traffic/transport effects that are greater than those anticipated by the ITA) do not eventuate.

The consultant has undertaken significant work on the issue of trip generation. We have raised a number of points of detail regarding the methodology and some of the assumptions (such as the percentage of trips assumed for car pooling) but we can confirm that we are satisfied with the overall magnitude of the trip predictions, as they give total vehicle flows that are within the range indicated by a range of methods.

Section 5.2.2 of the ITA indicates that 3,200 of the 8,400 vehicle trips in the AM peak period will be removed from other zones due to the predicted re-distribution effects. This equates with 38% of all AM peak trips. We note that this is a prediction from ART (ie it is not an assumption by the project team) but it has a significant impact on the predicted effects of the development, and it is therefore worthy of further comment:

- ◆ We are comfortable with the concept that not all trips relating to the DSBP will be “new” but that many will be diversions of trips that will already be taking place. Indeed this is an argument we supported in our review of the proposed plan changes and the shift of the Metropolitan Urban Limit at Massey North and in our assessment of the effects of the proposed Knowledge Economy Zone at Silverdale North
- ◆ Beca have indicated that the predicted redistribution of trips predicted by the ART model is consistent with the gravity modelling undertaken using the previous Papakura District model.

We have discussed with Beca the assumption that 10% of trips will be internal to the site. The only time period in doubt is maybe the weekday AM peak, when a relatively low percentage of multi purpose trips is likely. However, on reflection, a figure of 10% is not excessive.

## 6 ASSESSMENT OF EFFECTS

### 6.1 Traffic Assessment

#### 6.1.1 General

The assessment of the traffic effects of the development depend to a significant degree on the issues referred to above, namely the base traffic model, the land use inputs to the regional model, the changes in background demands resulting from those land use changes and the trip predictions for the DSBP itself. Changes have been made to the predicted distribution of trips heading to/from the DSBP, compared with that indicated by the regional model, with a greater proportion of trips assumed to head to/from the south. We concur with this change.

We have undertaken some checks on the total number of additional trips in the model as a result of the DSBP in the 2026 models, by comparing flows crossing a cordon around Drury and note the following:

- ◆ We were able to reach a reasonable level of correlation between the expected increase in total flows in the AM peak (as derived from the total flows set out in Table 4.5 of the ITA, with corrections for internal traffic and diverted traffic) and the modelled increase in flows
- ◆ We were not able to reach a similar level of correlation in the PM peak, and the modelled increase seems to be around 240 vehicles light in the major outbound direction (out of an expected net increase in traffic of around 1570 vehicles/hour).

Beca were able to demonstrate that the correct totals (ie the totals from Table 4.13 of the ITA) have been included within the trip matrices in the PM peak, so the differences may be explained by complex reassignment/diversion of traffic. The 38% diversion figure given in the ITA only relates to the AM peak and it may be that a higher level of diversion of around 45% is implicitly predicted by the ART model in the PM peak.

#### 6.1.2 Traffic Effects

The ITA sets out the demand flows and the arrival flows for the scenarios without and with the DSBP. Both sets of flows are required as there are shortcomings in either set, namely:

- ◆ The use of only arrival flows would hide potential effects, where queuing is predicted, as the arrival flows could appear the same for the two scenarios
- ◆ The use of demand flows only could given an unrealistic impression, as flows on a particular route (such as the Southern Motorway) will not reach the demand flows in a single hour, as queues will be held up.

We note that traffic model is based on passenger car units (PCUs), whereas figure in the ITA have been converted to vehicles, as this represents a more recognisable unit for the layperson. .

As noted above, the assessment of traffic effects is significantly influenced by the level of diversion predicted by the ART model. It means that improvements in travel times are predicted on the motorway in the peak directions (northbound in the AM peak and southbound in the PM peak).

The effects elsewhere are driven by the assumptions regarding the changes to the networks:

- ◆ Significant increases in peak demands are predicted on Runciman Road. These appear to be a result of excessive demands for SH22. No upgrades have been included in the model along SH22, as was instructed by the transport agencies, although an upgrade was previously proposed by Transit New Zealand
- ◆ The effects of the development differ significantly between the 2016 and the 2026 models. This is due, to a reasonable extent, to the assumed provision of the Mill Road Route by 2026.

Section 5.2.8 of the ITA sets out a summary of the traffic mitigation measures proposed in the vicinity of the site. These measures are generally predicted by the model to allow the local road network to operate satisfactorily. However, we note the following points:

- ◆ The 2016 scenario (or the scenario prior to the completion of the Mill Road Route) appears to be very dependant on the route between the site and the Southern Motorway Interchange at Drury, via Quarry Road and Great South Road
- ◆ The maximum predicted flows on the Quarry Road overbridge are around 1,200 vehicles/hour, eastbound in the AM peak. At this level of flow the road will be “busy”, but it should continue to operate within capacity
- ◆ Traffic heading to/from the site via Quarry Road will then use Great South Road to reach SH22 and onto the motorway and heavy flows are predicted on this section of Great South Road. Works are proposed at the key intersections (SH22/Great South Road and Great South Road/Quarry Road) but not along the section of Great South Road between these intersections and problems are predicted along this link with the 2026 scenario, northbound in the PM peak. It appears from select link plots provided by Beca that the model is assigning some traffic from Pukekohe to Drury via Great South Road, when that traffic should probably be using SH22. This traffic would probably revert back to SH22 if the signal settings in the model at the SH22/Great South Road intersection were reoptimised with greater time for Sh22 traffic
- ◆ A small proportion of traffic is predicted to head between the DSBP and the north via the upgraded Ramarama interchange, to avoid the predicted heavy flows between the site and the Drury interchange. Indeed it is worth noting that this alternative connection to the Southern Motorway offers a measure of network resilience and it reduces the extent to which the DSBP depends on the Quarry Road/Great South Road route
- ◆ The 2026 scenario seems quite dependant on Fitzgerald Road (north of Fielding Road) as the main connection between DSBP and the Mill Road route. The difference between the existing flow and the forecast flow is substantial (from 4,100 vehicles/day to 14,800 vehicles/day, two way), although it should be recognized that the majority of the increase is predicted with the 2026 do minimum scenario. This means that the increase is mainly a result of the completion of the Mill Road Route. Safety upgrade works are proposed to this route in the ITA, but these are described as low cost works. Clearly the character of this route is expected to change significantly in the future
- ◆ Works are proposed in order to reduce the effects of the development on key routes in the vicinity of the site, including the closure of existing routes and the provision of new local links
- ◆ The SATURN traffic model indicates that the three closely spaced signalized intersections proposed at the Ramarama Interchange are predicted to operate satisfactorily, but this model does not accurately reflect the potential interaction between these signals. This is acknowledged in the ITA and the operation of these signals has been assessed separately through a small microsimulation model.

## 6.2 Passenger Transport

Section 4.5 of the ITA indicates that the mode share for passenger transport is expected to be very low. However, the regional modelling results reported at Section 5.2.2 of the ITA note that 1,100 passenger transport trips are predicted in the two hour AM peak period, compared with 8,400 vehicle trips. This implies a significant passenger transport mode split.

In response, Beca have noted that the regional (ART) model is quite coarse in this area, with the Drury model zone relating to the town centre and the proposed business park. Also, the model relies on the future extension of the Rapid Transit Network to Drury, which is not committed at this stage. As a result, they consider that the mode split derived from the ART model is less appropriate than the assessment undertaken specifically for the DSBP.

The regional modelling is also suggesting a reduction of 3,800 passenger transport trips elsewhere in the region, leading to an overall net reduction in the use of passenger transport. At face value this is of concern. However, we note that the redistribution of employment predicted by the ART model has not been examined in detail. As above, it is likely that the regional model is too coarse to accurately assess the precise redistribution effects, eg whether this is likely to be from centres or from locations not well served by passenger transport. It is quite probable that the latter should be the case, if the Drury South Business Park is intended to provide for a range of "lower order" industrial uses, which presumably tend to be located in areas with lower land prices, away from the main centres.

## 6.3 Pedestrian and Cycle Links

Given the location of the site, the proportion of pedestrian and cycle trips for journeys to work can be expected to be low.

There are no pedestrian/cycle facilities on the Quarry Road overbridge and the bridge will therefore be quite a hostile place for vulnerable road users. However, the ITA is proposing that other pedestrian/cycle connections are provided between the DSBP and Drury, in order to maximise the potential for walk/cycle trips between the site and the local township and the future rail station. This seems sensible.

Also, the ITA states that pedestrian and cycle facilities are proposed throughout the DSBP. These will be required to maximise the potential for local trips within the site to be made by modes other than the car.

## 6.4 Staging of works

The ITA sets out proposed staging of the proposed transport works. Generally these seem appropriate and the triggers proposed seem sensible and justifiable. The initial works proposed include improvements to the route between the Drury Interchange and the site via Great South Road and Quarry Road, while the measures described as mitigation works are to be triggered by a particular level of flow that equates with a particular level of service, or before a certain amount of development is completed and occupied.

The projects to influence travel are to be provided prior to the completion and operation of around 25 hectares, although the ITA acknowledges that this is not based on any scientific rationale. We consider that it is desirable to provide the proposed pedestrian/cycle connection between DSBP and Drury at an early stage, in order to facilitate travel by modes other than private vehicles at the outset. Given the ITA states that the development is to include some 225 hectares of industrial activity, the threshold suggested means that the facility will indeed be provided before 10% of the development is occupied.

## 7 CONCLUSIONS

This report has provided a review of the Integrated Transport Assessment (ITA) prepared in conjunction with the proposed Drury South Business Park (DSBP). This site is located to the east of the Southern Motorway, between the Drury and Ramarama interchanges. The assessment has been based on a figure of 7,850 employees at the site, although it is stated that, following revisions to the Concept Plan, the site now expected to offer employment for around 6,900 people.

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- ◆ Development in this location is predicted to lead to a reduction in trip lengths
- ◆ The site is accessible from the strategic road network, with two connections to the Southern Motorway.

As a result, we conclude that the ITA provides a reasonable assessment of the predicted traffic and transport effects associated with the proposed development, provided that the recommendations of the ITA are fed through to the plan change, and the assumptions in the ITA (for example on the land use mix) are enforced through the plan change. However, we note that the more detailed effects will depend on a range of assumptions recommended by the various transport agencies. Relevant issues are:

- ◆ The land use forecasts, outside the DSBP
- ◆ Changes to the road network away from the DSBP, such as the absence of upgrades assumed along the Southern Motorway and along SH22, but the assumption that the Mill Road Route is to be completed by 2026
- ◆ Future improvements to passenger transport, such as the extension of rapid transit services to Drury.



TRANSPORTATION SPECIALISTS

25 February 2011

Mr J Philips  
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Dear Joe

## **DRURY SOUTH BUSINESS PARK**

Following your email dated 3 February, I have reviewed the revised Integrated Transport Assessment (dated 17 December 2010) relating to the above proposal.

Your email noted that the changes from the previous (April 2010) version of the report are quite modest, including updated references to the new council (and therefore also to the former councils), updated references to documents that have been published recently, plus a few other minor changes in responses to comments from the former Papakura District Council. As a result, the conclusions of the ITA have not changed and the comments in my previous review therefore still stand. I have a few minor comments, which should not be seen as sufficient grounds for preparing a further new version of the ITA:

- ◆ The ITA refers to the draft Auckland Transport Plan. In fact this document was finalised in 2009
- ◆ The ITA could have added references to ARTA's Regional Public Transport Plan (2010).

Also, on reflection, I note that the ITA (both the April 2010 and December 2010 versions) does not give much detail on the anticipated operation of the SH1 Drury interchange, which will inevitably be of interest to the New Zealand Transport Agency. I acknowledge that further details could be provided under separate cover, if and when required.

I trust this letter provides an adequate review of the revised ITA.

Yours sincerely

Ian Clark  
DIRECTOR

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