

ANNEXURE 9

Traffic Impact Assessment

prepared by

ARC Traffic and Transport



Shoalhaven Starches, Bomaderry
MP 06_0028 Modification Proposal
Traffic Impact Assessment
April 2016

prepared for

Manildra Shoalhaven Starches

prepared by

ARC Traffic + Transport

Introduction

Shoalhaven Starches Pty Ltd (Starches) propose modifications to the approved Shoalhaven Starches Expansion Project (SSEP) including: -

- A reduction in the number of DDG Dryers from 6 to 4;
- A slight modification of the footprint of the 4 DDG Dryers within the SS Site;
- A mill feed silo and structure to feed the DDG Dryers within the SS Site;
- The relocation of cooling towers within the SS Site;
- Two additional Biofilters within the SS Site;
- A forklift maintenance building adjacent to the relocated DDG Dryers within the SS Site;
- A container preparation area and a container storage area adjacent to the relocated DDG Dryers Within the SS Site; and
- Continued use of the existing coal and woodchip storage area located to the west of the DDG Dryers on a temporary basis (Stage 1) until this location is required for container storage purposes. Thereafter, storage of coal and woodchips will be undertaken at an existing coal and woodchip storage area at Hannigans Lane on the north side of Bolong Road within the SS Environmental Farm (Farm Site).

ARC Traffic + Transport (ARC) has been commissioned to examine the access, traffic and parking issues associated with the Modification. This assessment specifically focuses on the potential construction traffic impacts associated with the proposed SS Site infrastructure, and the potential operational traffic impacts associated with the expanded use of the Farm Site storage area. It is noted from the outset that the primary components of the Modification – and specifically the proposed SS Site infrastructure - would not result in any increases in operational vehicle or rail trip generation above levels provided for under the approved SSEP.

This assessment references recent reports prepared by ARC in regard to the operation of the SS Site and the broader local traffic environment. Specifically, ARC has referenced the following past reports: -

- Shoalhaven Starches Bomaderry Proposed Demolition Works – Existing Industrial Building Traffic Impact Assessment 2015 (Demolition TIA)
- Shoalhaven Starches Bomaderry Proposed Starch Dryer No. 5 Relocation Traffic Impact Assessment 2015 (Dryer 5 TIA)
- Shoalhaven Starches, Bomaderry Proposed Packing Plant Modification Traffic Impact Assessment 2015 (PP Mod TIA)

ARC has also referenced the appropriate AustRoads guidelines and Australian Standards.

1 Background

1.1 Manildra Shoalhaven Starches

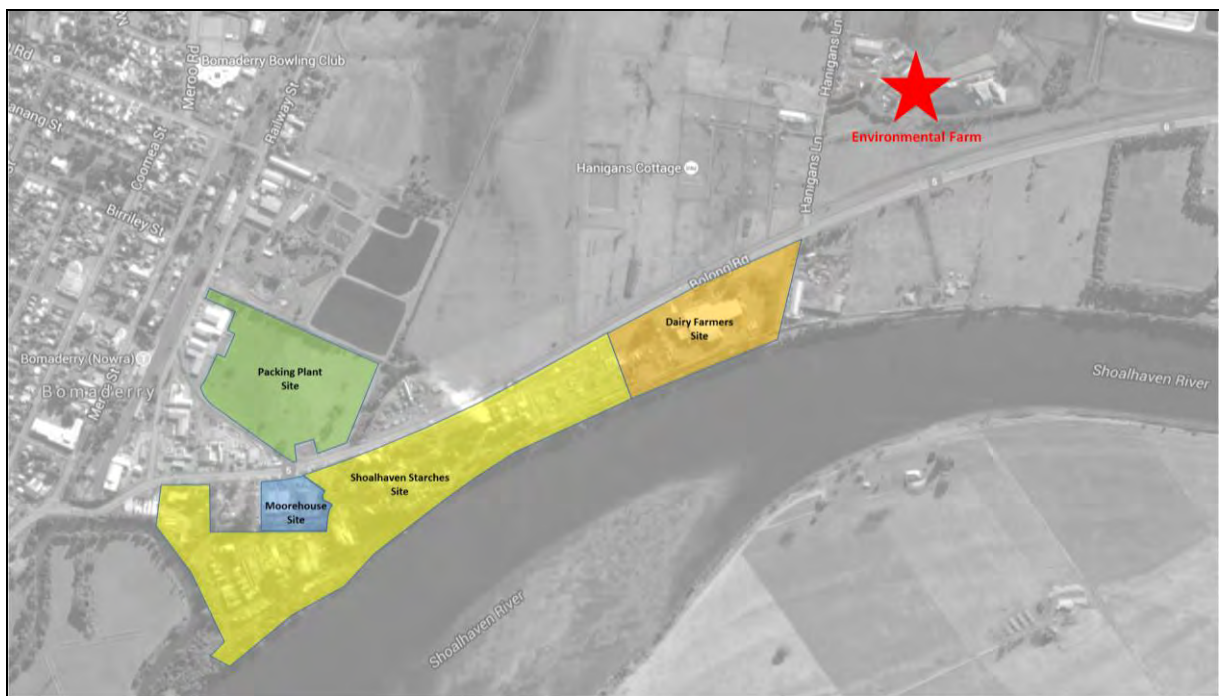
Manildra's Shoalhaven Starches operations occupy a number of distinct 'sites' in Bomaderry; while operations are integrated across all sites, they are differentiated in this assessment for ease of reference.

The primary SS Site and immediately adjacent Dairy Farmers Site (DF Site) are located south of Bolong Road. The Farm Site is located to the east of the SS Site north of Bolong Road off Hannigans Lane. Two other Shoalhaven Starches 'sites' will also potentially be generating additional construction trips during the construction period associated with the Modification, being:-

- The 'Moorehouse Site', where demolition work was recently approved by the DP&E to provide for the (also approved) relocation and construction of Starch Dryer No. 5; and
- The Packing Plant Site (PP Site), a modification for which is currently before the DP&E.

These sites are shown in their local context in **Figure 1.1**.

Figure 1.1 Manildra Sites, Bolong Road Bomaderry



1.2 Previous Site Approvals

1.2.1 Shoalhaven Starches Expansion Project Approval MP06-0228

The SSEP Approval was granted by the Minister for Planning on the 28th January 2009. This approval also encapsulated previous approvals into one overall approval. The SSEP is a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act.

The SSEP provides for an increase in ethanol production at Shoalhaven Starches in a staged manner from 126 million litres per year to 300 million litres per year. To accomplish the increase in ethanol production, the SSEP required a series of plant upgrades and increases in throughput of raw materials, principally flour and grain. The SSEP included the following alterations and additions: -

- The provision of an additional product dryer;
- Additional equipment and storage vessels for the ethanol plant including additional fermenters, additional cooling towers and molecular sieves;
- Upgrades to the Stillage Recovery Plant, including additional DDGS Dryers, Decanters, chemical storage and evaporators. This proposal also included the installation of a DDGS Pellet Plant; and
- The establishment of a new Packing Plant, container loading area and rail spur line on the northern side of Bolong road.

As outlined, the SSEP approval also consolidates all previous approvals (up to that time) into a single Project Approval.

Following the SSEP Approval, Manildra acquired the DF Site, and commenced investigations into relocating the Packing Plant from the approved PP Site north of Bolong Road to the DF Site; as an interim measure during these investigations, approval was provided in 2012 for interim Packing Plant operations at the IPP Site.

More recently, Manildra submitted (additional) modification proposals to the DP&E in regard to the demolition of an industrial building on the Moorehouse Site and for the construction of the No.5 Starch Dryer on the Moorehouse Site. As discussed, these modifications have both been recently approved by the DP&E. In addition, Manildra has submitted a modification application for the construction and operation of a Packing Plant and ancillary infrastructure on the approved PP Site.

It is noted that a condition of the SSEP Approval requires the provision of additional staff parking (across the broader SS Site). The DF Site was identified as an appropriate location for this parking, and subsequently a new staff car park on the DF Site – accompanied by significant additional infrastructure at the intersection of Bolong Road and the DF Site access road (DF 1) – was approved. It is noted that while much of this intersection and internal infrastructure is now in place at the DF Site, the car park itself has not been constructed.

Finally, the Farm Site has evolved over time in accordance with appropriate approvals. With specific reference to the Modification, the existing coal and woodchip storage area on the Farm Site provides (minor) capacity for occasions when the SS Site (on-site) stockpile is depleted. With the SS Site stockpile being replenished throughout the week (Monday to Friday), the Farm Site stockpile capacity is generally utilised only on weekends, with a small heavy vehicle (tip truck) looping between the SS Site and Farm Site.

With regard to key access, traffic and parking issues, this generally summarises all Shoalhaven Starches proposals/approvals relating to the SS Site and DF Site to date.

1.2.2 DF Site Meat Processing Plant & SS Site Access Review

In 2014, a Meat Processing Plant (the Meat Plant) at the DF Site, which utilises the existing on-site buildings generally occupying the eastern portion of the DF Site, was approved by Council. It is noted that the background traffic analysis of the Meat Plant identified a number of access issues relating to the broader SSEP Approval at the DF Site, and specifically the fact that a number of the required infrastructure upgrades (under the SSEP Approval) had not been completed.

This was largely as a result of the fact that the approved staff car park had not be built, and as such the infrastructure required to support the additional movements to/from the staff car park at the intersection of Bolong Road & DF 1 were not [at that time] warranted.

Notwithstanding – and further also to a review of general access at the adjacent SS Site Eastern Access Point (SS AP 1) in consultation with Council – ARC prepared an Access Review as a general supplement to the DF Meat TIA, detailing the infrastructure and management measures required to provide compliance with the SSEP Approval, and subsequently to appropriately accommodate the traffic demands of the Meat Plant proposal at the intersection of Bolong Road & DF1, and DF Site internal movements. As stated above, the infrastructure works recommended in the Access Review and the DF Meat TIA – and moreover conditioned upgrades required under the earlier DF Site approvals - have either been completed, or have been approved by Council [based on final engineering/design plans] to construction.

ARC notes that the Meat Plant has been approved, and is currently operational.

1.3 Access

1.3.1 Bolong Road & SS Site Western Access Point (AP 3)

This intersection will be used by vehicles associated with the construction of the SS Site infrastructure proposed under the Modification, with AP 3 providing internal access to all proposed construction locations; and by vehicle trips associated with the expanded operation of the Farm Site storage area proposed under the Modification.

This intersection will also be used by additional construction vehicle trips associated with the Moorehouse Site demolition and Starch Dryer construction approvals, trips which could potentially be generated at the same time as construction of the SS Site infrastructure proposed under the Modification is undertaken.

1.3.2 Bolong Road & Railway Street

This intersection would be used by vehicle trips associated with the construction of the SS Site infrastructure proposed under the Modification, and by vehicle trips associated with the expanded operation of the Farm Site storage area proposed under the Modification. This intersection will also be used by additional construction vehicle trips associated with the Moorehouse Site demolition and Starch Dryer construction approvals, and (further to approval) Packing Plant construction trips; as stated, these trips could potentially be generated at the same time as construction of the SS Site infrastructure proposed under the Modification is undertaken.

1.3.3 Bolong Road & Hannigans Lane, Hannigans Lane & Farm Site

These intersections would be used by all vehicles associated with the expanded operation of the Farm Site storage area proposed under the Modification. However – and with reference to Section 2 below – the Modification is expected to generate no vehicle trips to these intersections during weekday peak periods, but rather (only very minor flows) to non-peak periods only. Given the low turning movements at these intersections and increasingly reduced through flows in Bolong Road even during peak periods, there is no information to suggest that the Modification would impact the performance of these intersections.

1.3.4 Other SS Site & DF Site Access Points

A number of other SS Site and DF Site access points are provided to Bolong Road, including the Central Access Point (AP 2); Eastern Access Point (AP 1); Car Park Access Point (AP 4); and the Dairy Farmers Access Point (DF 1). In addition, the DP&E has recently approved the use of (what has been termed) Packing Plant Site Access Point 1 (PP 1), which would provide access to a temporary car park (for staff relocated from the Moorehouse Site during the approved demolition and Starch Dryer construction works) and then be retrofitted to provide a left in ingress only access point to the future Packing Plant in accordance with the SSEP approval.

With reference to Section 2 below, the construction of the SS Site infrastructure proposed under the Modification would generate few if any trips east of AP 3, while the additional trips generated by the expanded operation of the Farm Site storage area proposed under the Modification would be minimal; occur outside of weekday peak periods; and constitute additional Bolong Road through flows only. As such, it is the opinion of ARC that the Modification would have no significant impact on the operation of these other SS Site, DF Site and PP Site intersections, and specifically no impact on the efficiency/delay of turning movements at these other access intersections.

1.4 Assessment Traffic Flows

Further to the commission of traffic surveys over many years, and in consultation with Council, ARC has over time developed base peak period traffic flows for the key intersections along Bolong Road that reflect 120th Highest Hour (or 'recreational peak') conditions. In recent assessments consideration has also been given the redistribution of trips from Bolong Road (the 'Sandtrack') to the upgraded Princes Highway, a redistribution that is currently well advanced further to the opening of the Gerringong Bypass section of the Princes Highway.

As discussed, the potential also exists for construction to commence (further to an approval) on the SS Site infrastructure proposed under the Modification at the same time as construction is occurring on other approved and proposed works at the SS Site and PP Site respectively, and specifically at the same time as construction works at the Moorehouse Site (Starch Dryer) and at the Packing Plant (currently before the DP&E) are being undertaken.

The PP Mod TIA provides details of the future peak hour traffic flows in the local road network during the construction of the Packing Plant, and importantly a forecast scenario where Packing Plant construction works were occurring at the same time as the Starch Dryer construction works. Given that the potential exists that these construction projects could continue through the (likely initial) stages of the construction of the SS Site infrastructure proposed under the Modification, these flows (per Figure 2.2.3.1 and Figure 2.2.3.2 of the PP Mod TIA) have been adopted as base flows for the assessment of the Modification, and specifically for the assessment of the intersections of Bolong Road with Railway Street and with AP 3, the only intersections where there is any significant potential for traffic impacts associated with the Modification.

1.5 Existing Traffic Operations

Section 2.4 of the PP Mod TIA reports SIDRA modelling of the future performance of the key intersections of Bolong Road with Railway Street and with AP 3 further to the introduction of construction trips associated with both the Starch Dryer and Packing Plant construction. Specifically, Table 2.4.1 of the PP Mod TIA reports that both intersection will operate well, with the intersection of Bolong Road & Railway Street reporting a Level of Service B and A in the AM and PM peak period respectively, and the intersection of Bolong Road & AP 3 reporting a Level of Service A in both peak periods. At both intersections during both peak periods, significant spare capacity is available.

1.6 Rail Operations

Shoalhaven Starches uses rail for the majority of transport operations, including incoming raw materials and outgoing product. This has very significant benefits in reducing vehicle trip generation, and specifically heavy vehicle trip generation; it is estimated that existing rail movements equate to the generation of some 100 heavy vehicle trips per day.

The Modification will not result in any increase in rail movements over those provided for under the SSEP approval.

2 The Modification Proposal

2.1 The Proposal

As stated in the Introduction, Manildra proposes to undertake modifications to the approved SSEP including: -

- A reduction in the number of DDG Dryers from 6 to 4;
- A slight modification of the footprint of the 4 DDG Dryers within the SS Site;
- A mill feed silo and structure to feed the DDG Dryers within the SS Site;
- The relocation of cooling towers within the SS Site;
- Two additional Biofilters within the SS Site;
- A forklift maintenance building adjacent to the relocated DDG Dryers within the SS Site;
- A container preparation area and a container storage area adjacent to the relocated DDG Dryers Within the SS Site;
- and
- Continued use of the existing coal and woodchip storage area located to the west of the DDG Dryers on a temporary basis (Stage 1) until this location is required for container storage purposes. Thereafter, storage of coal and woodchips will be undertaken at an existing coal and woodchip storage area within the Farm Site.

Full details of each of the components of the Modification are provided within the broader Environment Assessment that this TIA accompanies.

Importantly from an access, traffic and parking perspective, once operational the SS Site infrastructure proposed under the Modification would not result in any increase in production from the broader SS Site over that which has been the subject of past approvals, nor an increase in either vehicle traffic or rail trips over SSEP approved levels. The only potential for short term traffic impacts associated with the SS Site infrastructure proposed under the Modification would be during the construction period.

The proposed expanded use of the existing Farm Site storage area proposed under the Modification would result in the generation of additional trips to the local road network once operational. However – and as detailed in Section 2.3 below – these trips would be minimal and not be generated to weekday peak periods.

The potential traffic impacts associated with all components of the Modification are examined in further detail below.

2.2 SS Site Infrastructure Construction Traffic

The construction of all the SS Site infrastructure proposed under the Modification will be undertaken in a single construction period, noting that there no construction requirements in regard to the expanded use of the Farm Site storage area.

It is estimated that the construction of the SS Site infrastructure components will occur over (a total of) approximately 6 months.

2.2.1 Access

All access to the construction sites within the SS Site will be via AP 3 (arrival and departure trips); the majority of these trips – and all heavy vehicle trips – would be generated to/from Bolong Road west of AP 3. Within the SS Site, internal access roads provide immediate access to each of the individual construction sites, and are (already) designed to accommodate the maximum sized construction vehicles proposed for the construction works.

2.2.2 Construction Trip Generation

2.2.2.1 Heavy Vehicle Trips

It is estimated that an average of 2 heavy vehicles – or 4 heavy vehicle trips – would be generated per day throughout the construction period. In the peak periods, it is estimated that no more than 2 heavy vehicle trips could be generated in a single hour, being 1 arrival trip and 1 departure trip.

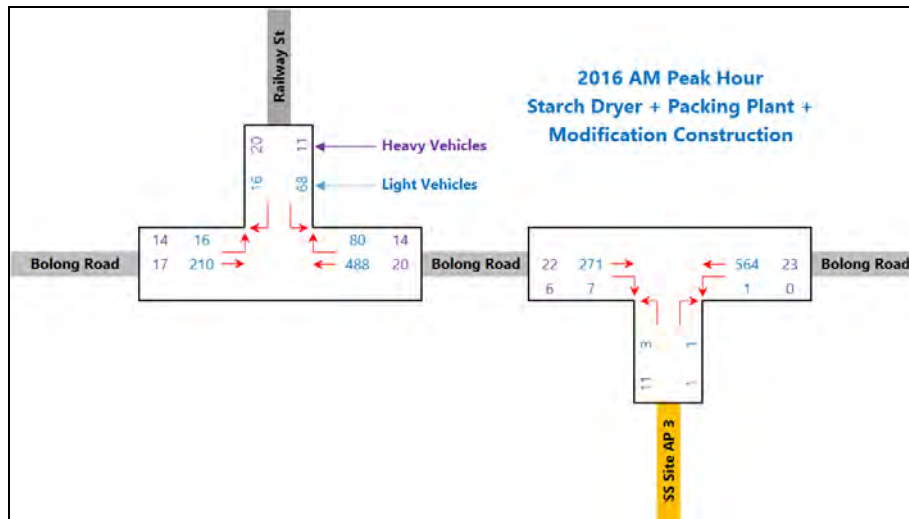
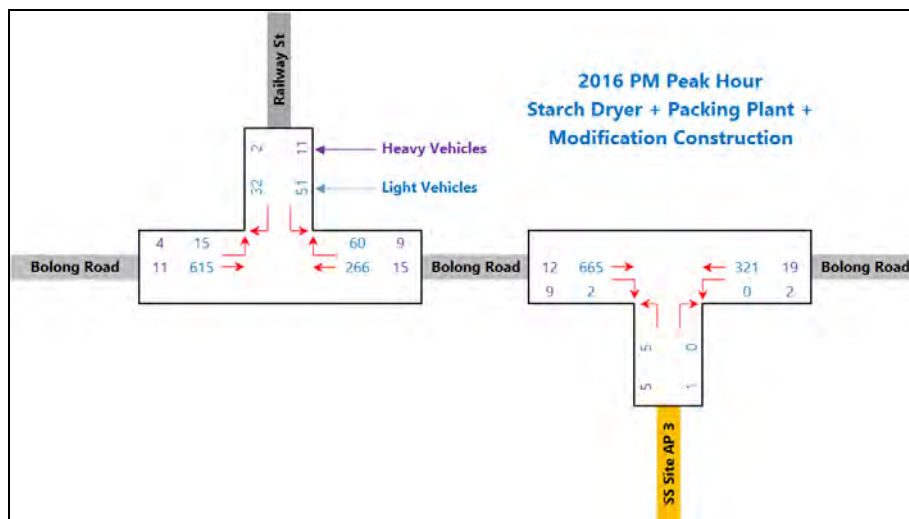
2.2.2.2 Construction Staff Vehicle Trips

It is estimated that up to 20 construction staff could be on-site at any one time during the construction period. As with previous construction projects at the SS Site, specialist construction staff are expected to arrive in group transport (small shuttle buses and the like), though some construction staff will arrive in private vehicles. In total, it is estimated that construction staff could generate up to 4 vehicle trips per hour in the peak periods, which would primarily be arrival trips in the AM peak hour and primarily departure trips in the PM peak hour.

2.2.3 Construction Traffic Flows

With reference to sections above – and using the forecast traffic flows provided in the PP Mod TIA (i.e. including both Starch Dryer and Packing Plant construction trips) - total traffic flows at the key intersections during the construction of the SS Site infrastructure components of the Modification are shown in the following figures:-

- Figure 2.2.3.1 AM Peak Hour Construction Trip Totals
- Figure 2.2.3.2 PM Peak Hour Construction Trip Totals

Figure 2.2.3.2 AM Peak Hour Construction Trip Totals**Figure 2.2.3.2 PM Peak Hour Construction Trip Totals**

2.3 Farm Site Storage Area Operational Traffic

The only component of the Modification which would generate additional operational traffic would be the expanded use of the coal and woodchip storage area at the Farm Site. It is noted that while the Modification provides for this expanded use, it is forecast that additional trip generation (associated within this expanded use) would be unlikely for some years.

Notwithstanding, the Modification provides for the expanded use of the future Farm Site storage area specifically to provide a stockpile of materials for weekend boiler operations at the SS Site. At present, heavy vehicles deliver coal and woodchips directly to the SS Site (via AP 3) on weekdays only, with an on-site stockpile built up over the week sufficient to store enough coal and woodchip to meet demands over the weekend.

The Modification provides for a (future potential) scenario where this stockpile is instead provided on the Farm Site, allowing (potentially) the future use of the SS Site stockpile area for other purposes.

2.3.1 Access

The expanded use of the Farm Site storage area proposed under the Modification would result in 1 - 2 heavy vehicles per weekday currently generated to the SS Site (to deliver to the SS Site stockpile) to instead be generated to the Farm Site via the intersections of Bolong Road & Hannigans Lane; and Hannigans Lane & Farm Site. On weekends, smaller heavy vehicles (or likely a single tip truck) would loop between AP 3 and the Farm Site, collecting materials from the Farm Site and delivering them to the SS Site via AP 3.

2.3.2 Operational Trip Generation

2.3.2.1 Heavy Vehicle Trips

As suggested above, once expanded stockpiling occurs at the Farm Site, the delivery of materials to the Farm Site is expected to generate an average of 1 - 2 additional heavy vehicle loads per weekday day (or up to 4 heavy vehicle trips per weekday); it is noted again that these trips would replace trips currently generated directly to the SS Site via AP 3. On weekends, approximately 10 smaller (tip truck) heavy vehicle loads of materials would be required each day (Saturday and Sunday) at the SS Site, generating 20 heavy vehicle trips looping between the SS Site (AP 3) and the Farm Site. These trips would generally be spread across the day as demand requires.

2.3.2.2 Staff Vehicle Trips

The expanded Farm Site operations would not generate any additional operational staff vehicle trips.

2.3.3 Operational Traffic Flows & Impacts

With reference to sections above, the expanded operations of the Farm Site storage area proposed under the Modification would generate no additional vehicle trips to the key weekday peak periods, and only a very minor number of vehicle trips on weekends, perhaps 1- 2 trips in any single (weekend) hour. As such, it is the opinion of ARC that the additional vehicle trips associated with the expanded operation of the Farm Site storage area would have no significant impact on the operation of local intersections, being generated to periods where access point/local road turning flows are very low, and where the key Bolong Road traffic flow is steadily being reduced further to the upgrade of the Princes Highway.

2.4 Traffic Impacts

Further to the above, the only potential for any significant impact arising from the Modification will be during the construction of the SS Site infrastructure proposed under the Modification. ARC has assessed the key intersections of Bolong Road with Railway Street and AP 3 (referencing the future total flows reported in Section 2.2.3 above) using SIDRA, and have determined that both intersections will retain good operations, with Levels of Service unchanged from those reported in the PP Mod TIA (i.e. including both Starch Dryer and Packing Plant construction trips) and significant spare capacity retained.

More broadly, it is the opinion of ARC that the Modification would have little if any impact on the local road network, given that the key SS Site infrastructure proposed under the Modification will not result in an increase vehicle or rail trips above those levels provided for in the SSEP approval; and that the operational trip generation of the expanded Farm Site storage area proposed under the Modification would be very minor, and generated outside of weekday peak periods.

2.5 Construction Management

Notwithstanding the findings above, it remains that the case that the construction of the SS Site infrastructure proposed under the Modification will need to be governed by an appropriate set of management procedures. In relation to access, traffic and parking requirements during the construction works, ARC recommends the following initiatives, which essentially mirror the Construction Traffic Management Plan (CTMP) requirements of past SS Site projects: -

- All parking for construction staff and construction heavy vehicles must be contained within an appropriately secure on-site environment so as not to impact or be impacted by existing SS Site operations; or on the off-site traffic environment.
- While it is not anticipated that Restricted Access Vehicles (RAVs) will be required as part of the construction task, it is nonetheless the case that any such vehicles would be required to utilise the existing approved RAV route between AP 3 and the Princes Highway via Bolong Road; access for such vehicles via the Cambewarra Road bridge is not acceptable.
- Construction work hours are generally between 6:00am/7:00am and 5:00pm/6:00pm Monday to Friday, with an earlier finish time on Saturdays and no work on Sundays. Construction hours are most often established to minimise amenity impacts on neighbouring residential areas, and will require finalisation further to consultation with Council.

3 Conclusions

Following a detailed and independent assessment of the access, traffic and parking characteristics of the proposed Modification, ARC has concluded that the Modification – and specifically the construction traffic associated with the SS Site infrastructure proposed under the Modification; and the operational traffic associated with the expanded use of the Farm Site storage area proposed under the Modification - would have no significant impacts on the local traffic environment. In summary: -

- The Modification will not result in production increases above those provided for in the SSEP, nor as a result increases in SS Site vehicle or rail trips above those provided for in the SSEP.
- Construction vehicle trips would be generated over a short period, and minimised through the provision of group transport for staff. Even coinciding with periods of construction at other Shoalhaven Starches sites, the construction works would have no significant impact on the operation of the local road network or on the performance of key intersections.
- The potential future generation of a small number of addition trips associated with the expanded use of the existing Farm Site storage area would similarly have no significant impact on the operation of the local road network or on the performance of key intersections, with trips generated outside of weekday peak periods during a time when through flows in Bolong Road are being significantly reduced further to the Princes Highway upgrades.
- All construction staff parking will be provided in appropriately designated and secure parking areas adjacent to the construction areas.
- An appropriate set of construction traffic management strategies will be put in place through the construction period.