

Response to Submissions Letter - Traffic/Vehicle Movements

TO: Ros Dent (Bingo Industries)

CC: Shivesh Singh (Skylife Properties), Anthony Williams (APP)

FROM: Wayne Johnson (TTPP), Santi Botross (TTPP)

DATE: 5 December 2016

TTPP REF: 16222

RE: Proposed Resource Recovery Facility, 20 Hearne Street Mortdale (SSD 7421)
Response to Submissions

In June 2016, APP lodged a State Significant Development (SSD) application for a Resource Recovery Facility located at 20 Hearne Street, Mortdale. The SSD was accompanied by a Traffic Impact Assessment prepared by GTA Consultants (June 2016).

The SSD application was placed on exhibition and referred to relevant government agencies for review and comment. A number of queries have been identified from the submissions pertaining to traffic and vehicle movements associated with the SSD proposal.

Each of the queries raised by the Department of Planning and Environment (DoPE), NSW Environmental Protection Authority (EPA) and Georges River Council are addressed within this letter.

DoPE Item 1:

Provide the predicted spread of vehicle movements to and from the site during a 24 hour operating period including the proportions of light and heavy vehicle movements

The Transport Planning Partnership (TPPP) has conducted a review of the Transport Impact Assessment (TIA) report prepared by GTA Consultants (GTA), dated 29 June 2016, with respect to the distribution of traffic volumes over a 24-hour period. The key findings of the review of the TIA report are as follows:

- The traffic distribution for the proposal in the GTA report is considered over a 16-hour day as opposed to 24 hours. The application for the proposal seeks to increase vehicle loading/ unloading activities over a 24-hour period, 6 days a week. Hence, the distribution of additional traffic generated by the proposal should be considered over 24 hours.
- It was assumed by GTA that additional traffic generated by the proposal is of a linear distribution over a 16-hour operation. That is, 226 additional vehicles over 16 hours which generates around 14 vehicles per hour. Typically, the vehicle distribution of traffic generated by a resource recovery facility, such as the proposal, would not follow a linear relationship. Rather, it would be based on a similar hourly distribution as currently experienced at the site.

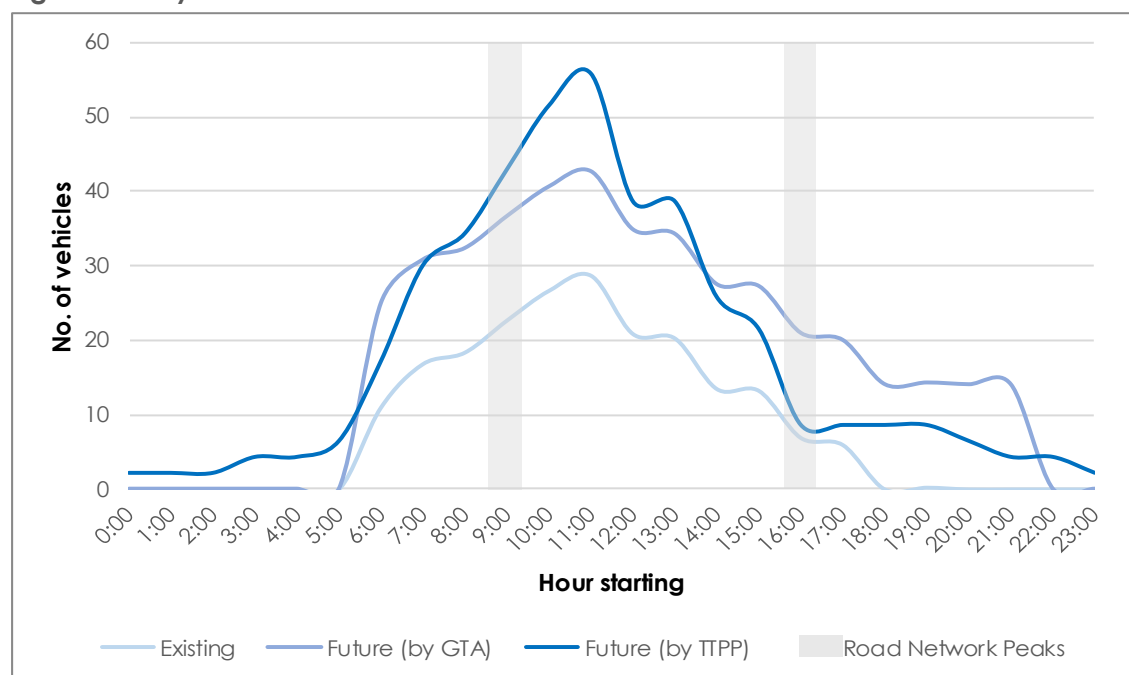
On the latter point, the existing site does not operate over a 24-hour period. Therefore, an appreciation of Bingo's project pipeline must be established to determine the future traffic distribution outside of existing operating times. Discussion of Bingo's project pipeline is provided in further detail in Item 2.

The majority of night-time deliveries will be from major infrastructure contracts which have been already secured by the business operator. These projects predominately consist of road and rail projects, most of which operate on a 24-hour basis and require waste disposal at night. Such disposals will be scheduled with the Mortdale facility as agreed between the operator and its clients.

The 24-hour operation will allow waste to be delivered at a pre-arranged and convenient time to the facility. This operation is expected to be strictly controlled by the operator to ensure minimal impact on the local amenity. As a maximum, this will result in around 2-6 trucks per hour over the night-night period, as shown in Figure 1.

Based on the above, the distribution of future traffic has been revised by TPPP to accord with the application for the 24-hour unloading/loading operations. The existing and future average daily traffic profile of traffic volumes are illustrated in Figure 1. The data inputs used to generate Figure 1 is contained in Attachment A.

Figure 1: Daily Traffic Profiles for Site-Generated Traffic



The proportion of light and heavy vehicles travelling to/from the site over the course of a day is detailed in Section 6.2.1 of the TIA report prepared by GTA. This information has been recapitulated in Table 1.

Table 1: Predicted Vehicle Movement Breakdown

Vehicle Weight Classification	Vehicle Type	Proposed Split (%)	Average Daily No. of Vehicles
Waste Stream			
<5t tare	Light	0%	0
5t to 12.5t tare	Heavy	45%	194
12.5t to 15t tare		40%	172
>15t tare		15%	64
Total		100%	430
Staff and Visitors			
-	Light	100%	12

Source: Traffic Impact Assessment Report, June 2016 (prepared by GTA Consultants)

In summary, a daily average of 430 heavy vehicles will access the site to deliver and remove waste from the site. A small volume of light vehicles will also access the site; a maximum of 10 employees and two visitors at any one time.

As can be seen in Figure 1, the main effects of redistributing the predicted traffic include:

- There are slightly more trucks (around six trucks) on the road network during the AM peak (9:00am-10:00am) and less trucks (around 12 trucks) in the PM peak (4:00pm-5:00pm¹).
- The site's operational peak period (11:00am-12:00pm²) experiences a slightly greater volume of trucks (around 13 trucks).

Of the two outcomes, the latter is expected to generate additional demands on future site operations compared to the GTA assessment.

Incorporating TTPP's revised traffic distribution, changes in the estimated truck volumes would be expected to be absorbed by the road network. The key difference is apparent between 11:00am-12:00pm during which 13 less trucks have been accounted for in the GTA report. In summary, TTPP's assessment of the site's capacity concludes that these 13 trucks can be accommodated onsite.

Herein, concerns raised by authorities are addressed using TTPP's revised traffic distribution (see discussion below). This analysis provides a more realistic representation of the traffic impacts due to the proposal.

¹ The GTA report states the road network PM peak period as 4:30pm-5:30pm. However, the traffic flow data in the report is presented on an hourly basis. TTPP has extracted the data from GTA's report and carried out an assessment on an hourly basis. Hence, this letter reports the road network PM peak period as the hour between 4:00pm and 5:00pm.

² Similarly, the GTA report states the site's operational peak period as 11:30am-12:30pm while this letter reports the site's operational peak period as the hour between 11:00am and 12:00pm.

DoPE Item 2:

Provide details regarding the management of truck and vehicle movements within the site and extending into Hearne Street during peak waste delivery periods to avoid conflicts and ensure the safety and efficiency of the road network is maintained.

The management of traffic operations on site will be achieved through the scheduling of waste deliveries, enforcement of site safety protocols, provision for vehicle storage within the site and supervision of all operations. Each of these aspects is discussed in further details below.

Waste Delivery Schedule

Waste deliveries to the site undertaken by Bingo fleet are scheduled with Bingo prior to the waste leaving its point of origin. Currently, Bingo utilises a live logging system which allows customers to log a request via telephone or via a mobile application (app) that is exclusive to Bingo. Although public deliveries (ie. non-Bingo trucks) are not required to book-in ahead of time, they will be encouraged to do so.

All requests are centrally managed by the Customer Service and Allocations Team at Head Office. The role of the Allocations Team is to determine a suitable vehicle to collect the waste and the Bingo facility that is best suited to accept the delivery. The Allocations Team determines these details based on the information provided by the customer at the time of request.

The Allocations Team is also responsible for coordinating the timing of waste pick-up and delivery. The Bingo fleet are tracked via GPS through the Bingo mobile app. Hence, trucks can be diverted to other nearby Bingo facilities if required.

Waste to be transported to the site will mostly comprise of construction materials and household clean-up generated from various major infrastructure projects and (to a lesser extent) local residents. Notable projects that have been secured in Bingo's 10-year project pipeline include, but are not limited to:

Project	Estimated Completion Date
NorthConnex	2019
Sydney CBD and SE Light Rail	2019
Revitalise Newcastle	2019
WestConnex	2023
Parramatta Light Rail	2023
Sydney Metro	2024
Western Sydney Infrastructure Plan	2025
Future Focused Schools	2025
Gateway to the South	2025
Inland Rail – Melbourne to Brisbane	2026

Source: Bingo Industries

Many of these project construction sites are currently operating over a 24-hour, 6-day period and Bingo has secured a significant volume of material from these and similar projects. As such, to be able to provide waste services its clients with the waste services they require, the SSD application seeks to match these hours of operation.

After sorting and processing, the product materials are stockpiled within the bay areas and transported off-site. All recovered materials are transported off-site for reuse, recycling or further recovery. Larger trucks, such as 19m semi-trailers and truck-and-dogs, will remove this waste off-site. Where possible, waste removal will be scheduled to take place outside of peak hours to minimise conflicts between inbound and outbound trucks.

Safety Protocols Enforcement

All persons entering the site are to be informed of the site-specific protocols and are expected to follow all protocols. Site protocols are to be distributed to all clients prior to entry at the site. An information signage is to be located at the site entry which will provide general instructions to heavy vehicle drivers. Visitors at the site are to complete a site induction/ training upon arrival during their first visit to the site, and are to be supervised by site personnel at all times. Bingo staff are to undertake necessary induction and training to adequately carry-out their job tasks.

Site protocols must be understood and followed by all personnel who enter the site to maintain the safe operating standards onsite. NSW Road Rules apply on site in conjunction with the practices specific to the Mortdale site. These practices have been prepared by Bingo and are contained Attachment B.

Vehicle Stacking

A vehicle stacking plan has been prepared for the site which allows for the storage of queued trucks onsite. Vehicle stacking is permitted within designated spaces on the lower and upper decks. Stacking on the lower and upper decks is to be managed by the Traffic Controller stationed on each of the respective decks.

A total of 28 stacking spaces are provided across both decks that can satisfactorily accommodate a mixture of vehicle types, ranging from vans/utes to 19m semi-trailers. As summarised in Attachment A, there are 56 trucks entering the future site during the busiest period, that is, between 11:00am and 12:00pm.

For the purpose of analysing the stacking capacity onsite a percentage split of vehicle types similar to that currently experienced in the peak hour has been applied to the 28 spaces such that, at any one time, the site can accommodate:

Number of stacking spaces	Approximate split (%)
2 spaces for articulated trucks (ie. 19m semi-trailer)	7%
26 spaces for MRVs	93%

On Wednesday 28 September, TTPP staff attended a site inspection at the Bingo resource recovery facility in Auburn during its peak operation. TTPP observed that the average duration of a truck being onsite is 10 minutes, that is, between the time of entry and exit. Seven trucks were observed stacking within this site; these comprised one truck-and-dog with the remaining as MRVs.

The Auburn facility implements similar waste delivery scheduling, safety protocols and vehicle stacking operations as explained above. The future resource recovery at Mortdale is expected to operate similarly, therefore, the Auburn facility is considered a suitable comparable site.

At the Mortdale waste transfer facility, there are 28 stacking spaces. Therefore, it is expected that the time between entry and exit for one truck would be greater in comparison to that at Auburn due to the increased number of vehicles in the stacking circulation. At Mortdale, it is estimated that a truck is to be onsite for a duration of around 25 minutes between entry and exit, which has been assessed on the basis:

- upgraded sorting and processing machinery will be implemented onsite
- a pre-determined schedule of waste deliveries for Bingo trucks and outbound waste loads is compiled daily
- the presence of site Traffic Controllers/Officers and enforcement of driver protocols will enhance vehicle operations onsite
- limiting distribution of waste product materials by large trucks to outside of peak.

Based on a rate of 25 minutes per vehicle, each stacking space could accommodate 2.4 vehicles in one hour (60 minutes/ 25 minutes). Therefore, in one hour there would be a turn-over of 67 vehicles (2.4 vehicles x 28 spaces), which would be able to adequately store the anticipated 56 trucks during the peak hour.

Based on typical future operations, the site has capacity to stack more vehicles than the expected volume in the worst-case scenario, that is for 11 more trucks. Queuing of heavy vehicles will be managed within the site and are not expected to queue back onto Hearne Street.

Site Supervision

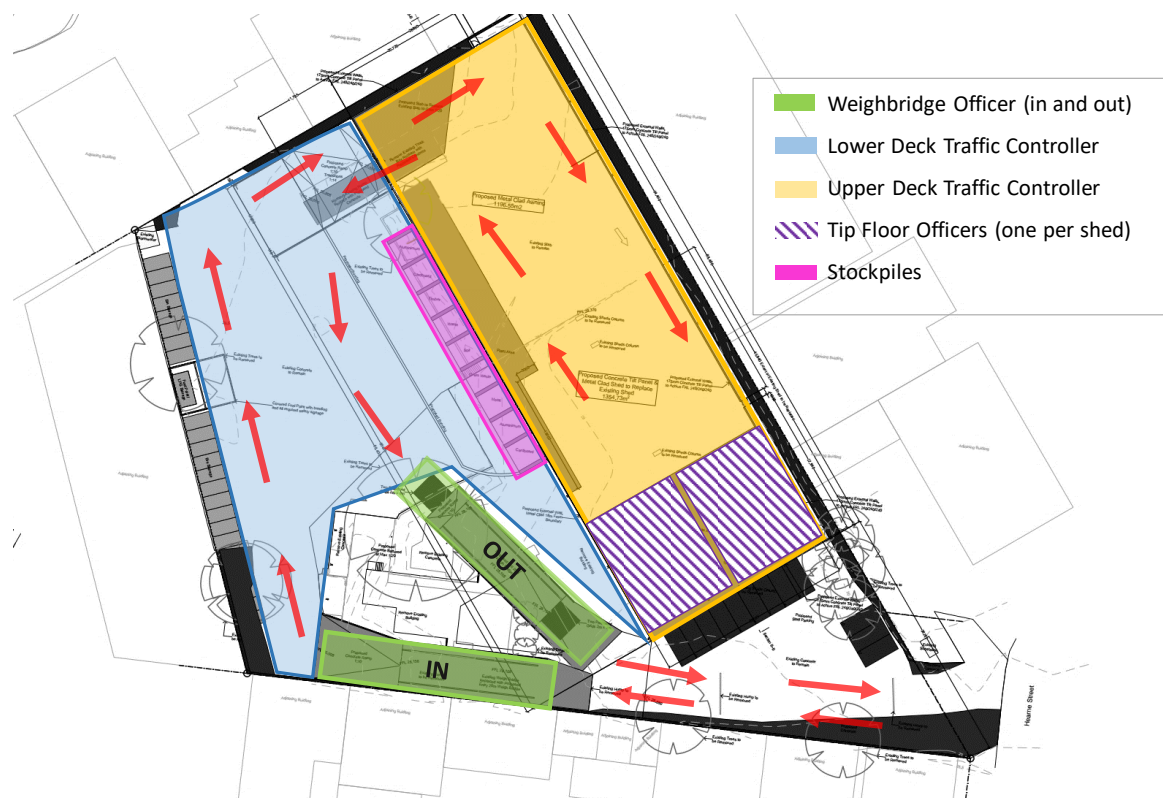
Site personnel are to be situated at various stations within the site to ensure the smooth operation of waste unloading/ loading at all times through the day and night. Site personnel are to be continually present onsite to provide direction to truck drivers and supervision of vehicle operations.

Upon entry to the site, truck drivers will be instructed by the Weighbridge Officer to complete a weigh-in. The Weighbridge Officer will visually inspect the waste then radio the Site Traffic Controller located on lower deck and upper deck to advise them of the truck and material in load. The driver will then proceed to the vehicle stacking area on the lower deck where they are supervised by a Traffic Controller.

As vehicles circulate through the site, drivers will progress to the upper deck where a second Traffic Controller will manage vehicle flows at the tipping shed. A Tip Floor Officer will be positioned in each of the tipping sheds to manage drivers as they reverse onto the tip floor to unload waste. Unloaded trucks will then proceed to the outbound weighbridge where the Weighbridge Officer will collect final details and authorise the truck to exit the site.

The respective areas of administration of each site personnel are illustrated in Figure 2.

Figure 2: Areas of Site Supervision



The main communication device for site personnel is via a hand-held two-way radio. Whilst onsite, truck drivers will receive instructions via the radio within their vehicles which they will be required to tune-in to upon entry to the site. Signage is posted at the site entry to indicate the radio channel to drivers of entering vehicles.

Cooperation and clear communication between site personnel and drivers will be key in managing the internal site circulation, and therefore, the overall efficiency of the site. In turn, this will ensure the safety of drivers and pedestrians within the site as well as the surrounding road network.

DoPE Item 3:

Provide a plan showing the potential stacking of vehicles within the site, including proposed traffic controls to be implemented to avoid queuing within Hearne Street.

TTPP has prepared plans showing the heavy vehicle stacking arrangement and traffic controls onsite. The stacking plan demonstrates adequate queuing space for trucks within the boundary of the site while the traffic control plan indicates the general location of signage to regulate safe movement throughout the site.

The vehicle stacking plan and traffic control plan are contained in Attachment C and Attachment D, respectively.

DoPE Item 4:

Provide a detailed design of the proposed accessway having regard to the swept path of the largest vehicles entering and exiting the site and potential conflicts resulting from the vehicle movements.

TTPP has undertaken an analysis of the vehicle swept path for trucks accessing the site via Hearne Street on the northern approach. As part of the proposal, the site access driveway is to be widened from 7.4m to 16.2m. The proposed design is confirmed by the detailed survey undertaken by Spatial Technologies (dated 23/09/2016) for the site access and road fronting the site. The driveway widening will involve the removal of five trees and concrete pavement of the pre-existing garden on the south side of the site entrance.

A swept path assessment for trucks accessing the site have been carried out for the following heavy vehicles and have been provided in Attachment E:

- MRVs (up to 8.8m)
- 19m semi-trailer
- 19.6m truck-and-dog combination.

The analysis indicates that inbound and outbound movements undertaken by MRVs can occur concurrently (Figure 1 in Attachment E). Two-way movements by an MRV with a semi-trailer or truck-and-dog can also occur concurrently (Figure 2 to Figure 5 in Attachment E). Two-way movements by larger trucks cannot occur simultaneously. However, it is highly unlikely that two larger-sized vehicles would be undertaking these manoeuvres at the same time. The likelihood of this scenario occurring is further reduced through Bingo's scheduling capabilities, which would prevent two larger vehicles accessing the site simultaneously.

In the rare occurrence of two large vehicles needing to use the accessway at the same time, the vehicle on approach to the site would be required to stand clear around 30m of the site driveway to allow for the exiting vehicle to leave the site. Given the low-speed road environment on Hearne Street driver visibility to large trucks exiting the site would be sufficient for oncoming vehicles to allow a 30m gap ahead.

DoPE Item 5:

Provide more detailed justification regarding the breakdown of types of vehicles accessing the site. In particular, what are the specific operation or waste stream changes which will result in the use of a greater amount of heavy vehicles (>12 t load).

As explained in response to Item 2, Bingo's 10-year project pipeline includes several infrastructure projects which generate significant volumes of construction waste. Thus, the predicated waste streams would largely comprise construction and demolition waste. These types of waste are denser than other forms of waste and, therefore, require fewer vehicle movements to transport the equivalent amount of waste.

A breakdown of the projected waste streams at the Mortdale site is provided in Table 2.

Table 2: Projected Waste Streams at Mortdale

Material	Volume (t/annum)	Percentage
Wood waste	3,000	1%
Non-chemical manufacturing waste	3,000	1%
Asphalt waste	1,500	05%
Soils	60,000	20%
Paper and cardboard	1,500	0.5%
Household waste (municipal clean up)	1,500	0.5%
Office and packaging waste	3,00	1%
Building and demolition waste	225,000	75%
VENM	1,500	0.5%
Total	300,000	100%

Source: Bingo Industries


The estimated building and demolition waste volumes to be generated from some of the projects in Bingo's pipeline are summarised below:

Project	Estimated Waste Volume (million tonnes)	Project Duration (years)
NorthConnex	1.5	3
Sydney CBD and SE Light Rail	1.0	3
Revitalise Newcastle	0.5	3
WestConnex	5.5	3
Parramatta Light Rail	0.75	7
Sydney Metro	8.0	7
Western Sydney Infrastructure Plan	1.0	8
Future Focused Schools	TBD	8 (planned)
Gateway to the South	0.5	8
Inland Rail – Melbourne to Brisbane	TBD	9 (planned)

Source: Bingo Industries

Typical Bingo fleet that would be used in the collection of construction waste are classified as medium rigid vehicles up to 8.8m in length. The most common MRVs used for the collection and delivery of construction waste to the transfer facility is summarised in Table 3.

Table 3: Bingo MRV Fleet

Truck Type	Total Weight (tonnes)	Dimensions (w x h x l)	Figure
Single Axle Marrel	15	2.7 x 3.0 x 7.6	
Double Axle Marrel	22.5	3.0 x 3.0 x 8.3	
Hook Truck	27.5	2.7 x 3.3 x 8.6	

Source: Bingo Industries

After the waste is processed at the site, the product materials are transported off-site to other facilities for further reuse, recycling or further recovery. Waste is to be transported off-site by 19m semi-trailers and 19.6m truck-and-dog combinations. These larger trucks are required to remove the product materials to ensure sorting, processing and stockpiling activities can run efficiently at the site.

DoPE Item 6:

Confirm the anticipated total and daily peak traffic volumes during construction. This information should include the number of heavy vehicle as a proportion of anticipated construction traffic.

The construction phase of the future facility is estimated to extend for eight months beginning in June 2017. During this phase, materials will be transported to and from the site by heavy vehicles. Estimated traffic volumes associated with construction have been extracted from the Construction Waste Management Plan, prepared by Dewcape, and are summarised in Table 4.

Table 4: Traffic Volumes During Construction Phase

Construction Phase (2017/2018)	Duration (days)	Approx. Vehicle Movements (In + Out)		Daily Average	
		Trucks	Cars	Vehicle Movements	% Proportion of Trucks
Preliminary work (June – July)	12	2	80	7	2%
Demolition (July – Aug)	28	80	373	17	18%
Structure (July – Nov)	66	150	1,320	23	10%
Roofing and Façade (Sep – Oct)	25	60	333	16	15%
Internal Services Fitout (Nov – Feb)	54	22	1,080	21	2%

Source: Construction Waste Management Plan, November 2016 (prepared by Dewcape)

Construction of new building structures constitutes the period with the highest rate of daily traffic volumes. On average, there are 23 vehicle movements per day whereby 2-3 of these movements will be undertaken by heavy vehicles (around 10%).

During the construction phase the waste transfer facility will cease operations and recommence post completion of the works. Traffic generated by the site during this period will comprise only construction traffic. Hence, the average daily traffic volumes are expected to reduce from 204 (existing facility) to, at least, 23 vehicles (busiest period in construction phase). This generates a reduction of roughly 181 vehicles per day.

Overall, traffic volumes associated with construction of the future facility are considered not to have a significant impact on the surrounding road network.

DoPE Item 7:

Confirm the number of construction staff and parking arrangements during construction.

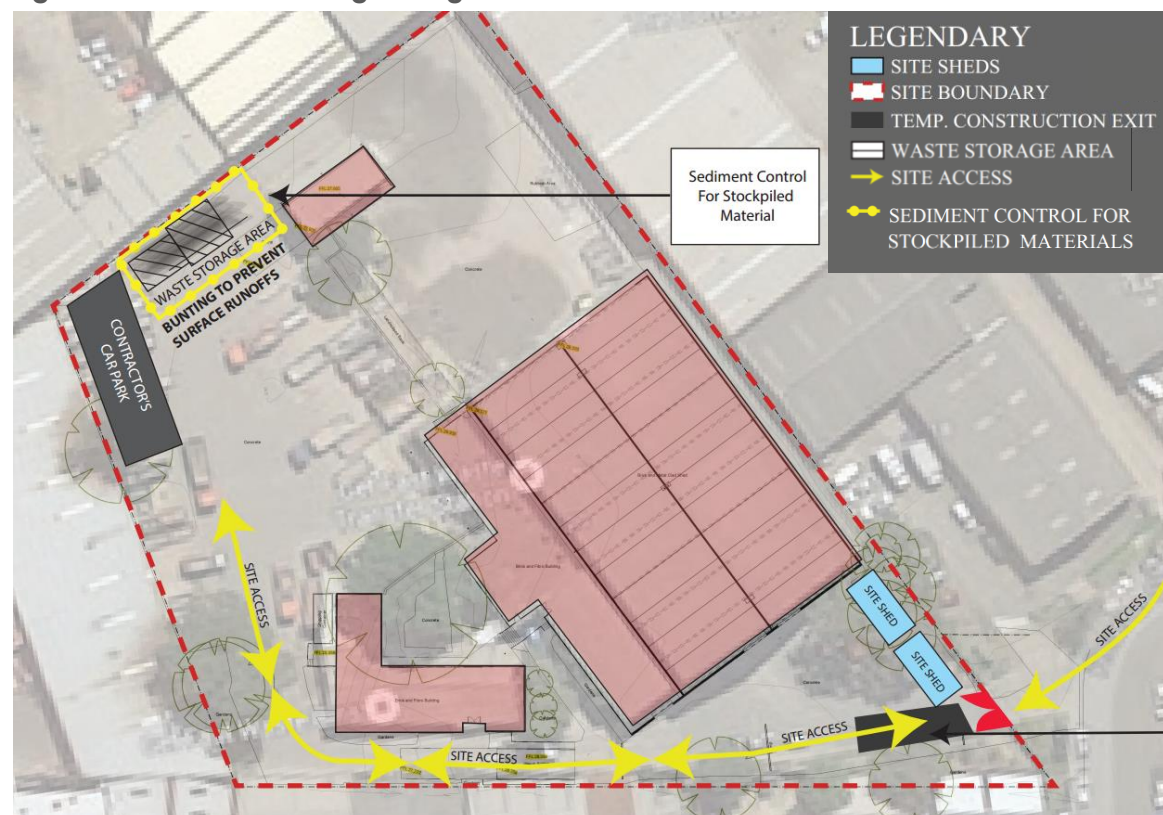
During the demolition and construction phase there will be between 40 – 60 staff onsite.

Off-street car parking will be located along the western boundary of the site where there will be the provision of 20 spaces. In order to manage the limited availability of onsite parking staff will be encouraged to car-pool and travel by public transport to site. The site is within walking distance of bus stops on Hearne Street as well as Mortdale Railway Station.

Demolition/ construction workers will be informed of onsite parking arrangements during staff inductions to ensure workers can plan their journey to work early in the project timeline. On-street parking by workers will be discouraged and will be reiterated at site inductions/briefings.

A site plan showing the location of off-street car parking during demolition and construction is provided in Figure 3.

Figure 3: Onsite Car Parking Arrangement



Source: Construction Waste Management Plan, November 2016 (prepared by Dewcape)

EPA Item 8:

The assessment stated that 25 heavy vehicles were counted over 15 minutes during attended monitoring on Boundary Road, and assumed that 15 minutes was representative of a whole day. It is unlikely that is the case.

It is unclear where the TIA report makes reference to the movement of 25 heavy vehicles over a 15-minute period. Nonetheless, the EPA has raised a concern about the actual traffic volumes along Boundary Road. Thus, TTPP has carried out an assessment of the traffic movements along this route and impact, if any, on the roadway capacity. The investigation has been undertaken during the key peak periods of the surrounding road network and site operation.

A tube counter was located on Boundary Road, between Treloar Avenue and Wattle Street, to capture existing traffic volumes over a 24-hour period for one week in September 2016. The traffic movements on Boundary Road during each of the key peak periods are summarised in Table 5.

Table 5: Existing Traffic Flows on Boundary Road

Peak Period	Traffic Flows on Boundary Road	
	Northbound (veh/hr)	Southbound (veh/hr)
AM peak period on Boundary Road	703	658
PM peak period on Boundary Road	742	794
Mortdale site operation	682	637

Source: Matrix

Boundary Road is a divided roadway. Therefore, assessment of the roadway capacity must consider traffic flows in the northbound and southbound directions separately. Table 5 presents the traffic volumes on Boundary Road during the peak hour for each direction, namely:

- In the morning period, there are:
 - 703 vehicles travelling northbound between 7:00am-8:00am
 - 658 vehicles travelling southbound between 8:00am-9:00am
- In the afternoon period, there are:
 - 742 vehicles travelling northbound between 3:00pm-4:00pm
 - 794 vehicles travelling southbound between 5:00pm-6:00pm
- During the site's operational peak of 11:00am-12:00pm, there are:
 - 682 vehicles travelling northbound
 - 637 vehicles travelling southbound.

For a divided two-way road with an adjacent parking lane in each direction, RMS' *Guide to Traffic Generating Developments* prescribes an operational capacity threshold of 900 passenger car units (pcu) per hour per lane.

Future traffic flows along Boundary Road have been estimated by summing the anticipated additional traffic and existing peak hour flows. To convert the volume of additional trucks into a passenger car unit of measure, a multiplication factor of two has been applied to the additional heavy vehicles. This factor is based on the average length of a truck being approximately double the length of a passenger car.

The estimated future volumes along Boundary Road for each of the directional peak periods (as stated above) have been summarised Table 6.

Table 6: Future Traffic Flows on Boundary Road

Peak Hour	Traffic Flows on Boundary Road	
	Northbound (veh/hr)	Southbound (veh/hr)
AM peak period on Boundary Road	729	690
PM peak period on Boundary Road	760	800
Mortdale site operation	736	691

The estimated future traffic flows along Boundary Road in each peak period remain below the RMS's threshold of 900 pcu per hour per lane. Therefore, the traffic flows along Boundary Road are considered acceptable with the future operations of the proposed site.

The tube count data along Boundary Road has been included in Attachment F.

Georges River Council Item 9:

The increase in the number of heavy vehicle movements is summarised in Section 6.8 of the EIS and indicates that all heavy vehicles (with vehicle lengths of up to 19m stated) can enter and exit the site in a forward direction. Swept path diagrams for the full range of required movements must be provided to demonstrate this claim.

All vehicle circulation through the site will be undertaken in a forward direction. As detailed in Item 4, MRVs and semi-trailers will access the site to unload waste at the tip shed located on the upper deck. Once the waste is processed and sorted it is removed off-site by a semi-trailer or truck-and-dog; loading of these trucks will take place at the stockpiles on the lower deck.

Swept paths of the internal truck circulation and unloading/loading activities are contained in Attachment G. The swept paths show the largest vehicle undertaking this movement, namely a 19m semi-trailer, as it is the most restrictive vehicle type to enter the upper deck. MRVs are shorter in length and have a smaller turning circle. Therefore, MRVs can adequately undertake the same movements within the same space.

Loading of waste removal vehicles will occur outside of the site's operational peak times to minimise turning movement conflicts with trucks while queued on the lower deck. These activities will take place during the early hours of the morning, evening and night time.

It is noted that the software used to carry out the swept path analysis, AutoTURN, is unable to reverse a truck-and-dog since the combination has two articulation points. Thus, this movement is not shown in Attachment G. During a site inspection of the Bingo waste transfer facility at Auburn, TTPP staff observed a truck-and-dog successfully reversing onsite. Based on TTPP staff's observations, this movement is considered as achievable within the site layout at Mortdale.

In summary, assessment of vehicle swept paths have been addressed throughout this letter as follows:

Swept path	Attachment Ref.
Vehicle stacking with outbound swept path	Attachment D
Driveway access ingress/egress	Attachment E
Internal circulation with loading/unloading swept paths	Attachment G

Georges River Council Item 10:

On the basis of 204 existing daily movements provided and the processing operating times of 6am to 10pm it is assumed that the existing hourly traffic generation over the new proposed hours of operation would be 13 movements per hour (on average) across the 16 hour daily processing operation of the use. Heavy vehicle movements are identified as reaching the daily peak between 11:30am and 12:30pm.

In relation to these figures, Council notes that limited queuing is provided for on site. How, then, does the proposal aim to prevent extensive heavy vehicle queuing on the street, especially during the midday peak identified?

Item 10 has been addressed in Items 1 and 2 where details of TTPP's revised daily profile estimation and vehicle stacking plan have been discussed, respectively.

To summarise Items 1 and 2, around 56 trucks are estimated to access the site during its peak operation period yet the onsite stacking arrangement can accommodate 67 trucks in this hour. The stacking capacity exceeds the anticipated traffic volumes during peak operations. Thus, heavy vehicles queuing is not expected to extend onto Hearne Street.

Georges River Council Item 11:

On the raw numbers stated, 362 movements (two way) will be associated with inbound waste with 68 (outbound) movements transporting outbound waste. Council expresses strong concerns that the operation of the proposal with the heavy vehicle movements suggested will result in excessive queuing on Hearne Street and will therefore result in a negative impact on traffic flow in Hearne Street.

Waste removal trucks will be loaded on the lower deck, adjacent to the waste stockpiles. These activities can take place at any time over the course of a 24-hour period, however, would most likely be scheduled to occur outside of peak operation times. These time periods include the later afternoon, night time and early morning.

This period has been nominated for waste removal activities as it would typically coincide with end-of-day waste sorting and processing. It is also the period that avoids swept path conflicts between waste delivery and waste collection trucks on the lower deck. Once loaded, trucks will depart to either a waste transfer facility or an off-site truck depot. The destination of the truck is dependent on whether the receiving facility can receive the waste at the time.

As stated in the TIA report prepared by GTA, 68 trucks are estimated to transport waste from the Mortdale site to other waste processing facilities per day. These trucks would be booked-in ahead of time and scheduled by the Sales Team at Head Office. The Sales and Allocations Team would work collaboratively to ensure the internal co-operation of delivery and removal trucks, and avoid queues protruding into Hearne Street.

Attachment G contains the full set of swept path plans of waste delivery and waste collection vehicles.

ATTACHMENT A

Site Generated Traffic Volumes

20 Hearne Street, Mortdale Resource Recovery Facility

Starting Hour	Existing		Future (by GTA)		Future (by TTPP)	
	Volume	Percentage	Volume	Percentage	Volume	Percentage
00:00	0	0.0%	0	0.0%	2	0.5%
01:00	0	0.0%	0	0.0%	2	0.5%
02:00	0	0.0%	0	0.0%	2	0.5%
03:00	0	0.0%	0	0.0%	4	1.0%
04:00	0	0.0%	0	0.0%	4	1.0%
05:00	0	0.0%	0	0.0%	6	1.5%
06:00	11	5.4%	25	5.8%	17	4.0%
07:00	17	8.2%	31	7.2%	30	7.0%
08:00	18	9.0%	32	7.4%	34	8.0%
09:00 ^a	22	11.1%	37	8.6%	43	10.0%
10:00	27	13.0%	41	9.5%	52	12.0%
11:00 ^b	29	14.0%	43	10.0%	56	13.0%
12:00	21	10.2%	35	8.1%	39	9.0%
13:00	20	9.9%	34	7.9%	39	9.0%
14:00	13	6.6%	28	6.5%	26	6.0%
15:00	13	6.5%	27	6.3%	22	5.0%
16:00 ^c	7	3.4%	21	4.9%	9	2.0%
17:00	6	2.9%	20	4.7%	9	2.0%
18:00	0	0.0%	14	3.3%	9	2.0%
19:00	0	0.1%	14	3.3%	9	2.0%
20:00	0	0.0%	14	3.3%	6	1.5%
21:00	0	0.0%	14	3.3%	4	1.0%
22:00	0	0.0%	0	0.0%	4	1.0%
23:00	0	0.0%	0	0.0%	2	0.5%
Total	204	100%	430	100%	430	100%

Notes:

a Road network AM peak hour

b Operational peak hour at Mortdale Resource Recovery Facility

c Road network PM peak hour

ATTACHMENT B

Site Protocols, as enforced by Bingo

SITE ACCESS, VEHICLE MOVEMENTS AND TRAFFIC CONTROL:

- All vehicles must enter the site from the northern approach on Hearne Street, making a right-turn in/ left—turn out of the site
- All vehicles entering the site must proceed with caution in a forward direction
- All inbound vehicles are to give way to outbound vehicles
- All outbound vehicles must exit via the weighbridge as required.
- All outbound vehicles must exit the site in a forward direction.
- Drivers are not to exceed a speed limit is 5 km/h
- Queueing on weighbridge is not permitted
- Two way radios to be tuned to site channel and driver to follow any instructions by site staff issued over the radio
- The instructions of the Traffic Controller, Site Supervisor, or delegates are to be followed at all times
- A driver is responsible for ensuring all beacons and reversing alarms are operational at all times
- All site signage is to be complied with at all times
- Where traffic aids such as mirrors and speed humps are provided they are to be used with caution
- Two way arrows on traffic management plans indicate reversing vehicles or single lane. No passing is allowed in these areas until instructed by site staff. One vehicle is to proceed at a time.

SCHEDULING:

- Large vehicles (19m semi-trailer and truck-and-dogs) are to call site prior to departing their origin to ensure the site can accommodate them on arrival.
- Where a time has been allocated for a vehicle to enter the site, the time must be adhered to.
- Enforcement of load-out times (i.e. trucks scheduled for certain times controlled by the site) to avoid more than two trucks (with trailers) on site at a time.
- Drivers are to adhere as close as possible to scheduled arrival times and to be aware that vehicles will be turned away if they do not adhere to these times.
- The daily schedule is determined by the outbound waste volumes for the day
- Where possible, load-out times should be avoided during the peak period within the site and surrounding road network.

WASTE MANAGEMENT:

- Unloading and untarping are to take place in the designated areas on site.
- Under no circumstances is untarping / tarping to occur outside the site boundary.

SITE PLANT:

- Site mobile plant and equipment have right of way at all times.
- There is a vehicle and pedestrian exclusion zone of 3m around all mobile equipment.

PEDESTRIANS:

- All pedestrians in all areas are to wear high visibility clothing (this area excludes the car park)
- Pedestrians DO NOT have right of way over vehicles
- Pedestrians include drivers outside their vehicles and site staff
- Pedestrians are not to enter any area where mobile equipment is in operation
- Visitors are not permitted on site unless under the supervision of the Site Supervisor
- All two or three wheeled vehicles are prohibited on site except within the car park
- All pedestrians and vehicles are to remain clear of reversing vehicles.

UNLOADING/ LOADING OF WASTE

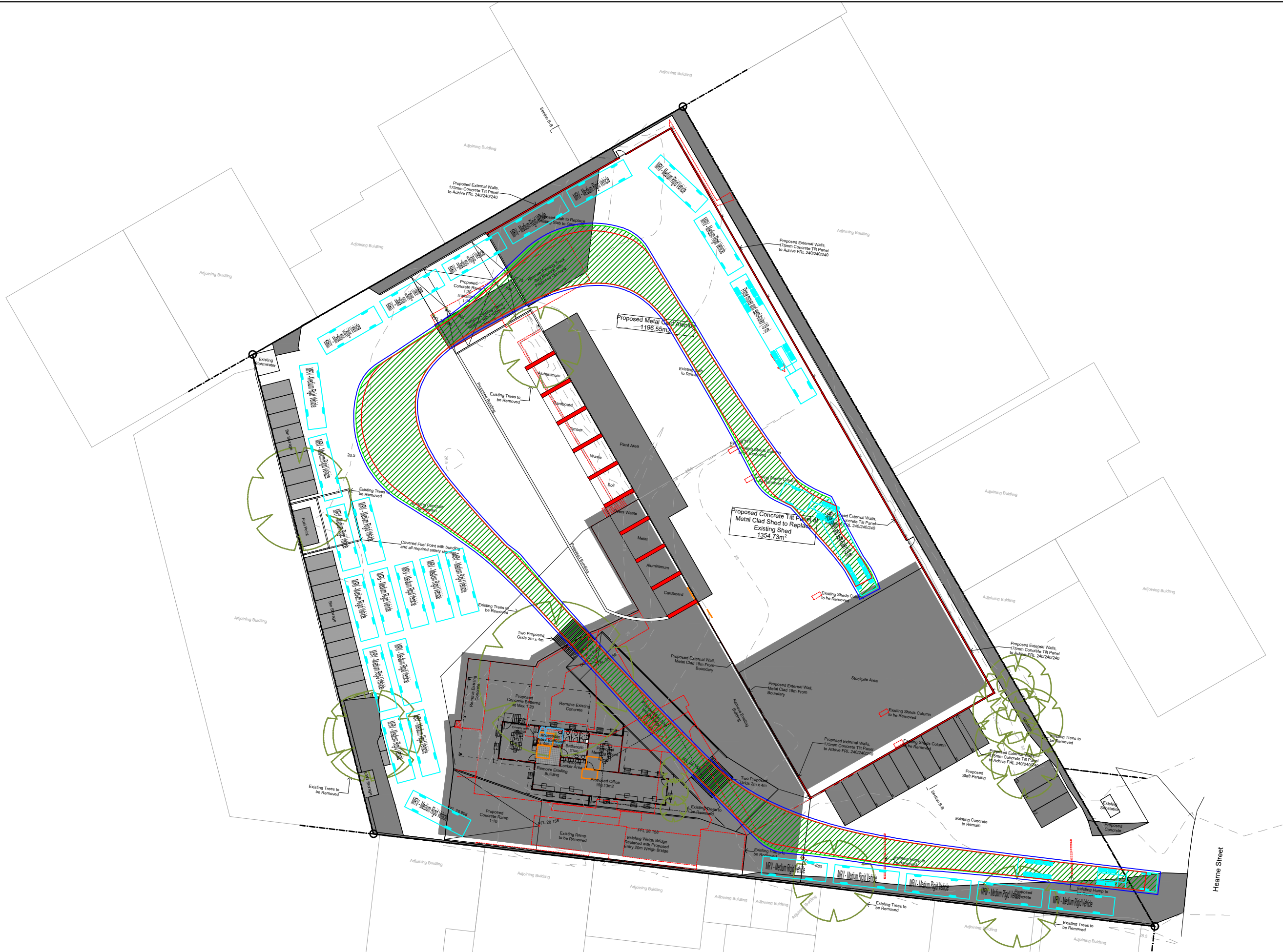
- Truck weighs in – drivers are to provide all required details to the Weighbridge Officer either by radio or at the weighbridge office window.
- Trucks proceed to vehicle stacking area on the lower deck to untarp. Drivers are to stop in spaces as allocated by the site Traffic Controller.
- Driver is instructed by the Traffic Controller on the lower deck (via radio) to proceed to upper deck
- Driver waits for instructions from Traffic Controller on upper deck (via radio) to proceed to the tipping shed. Trucks are to reverse into the tipping shed
- While trucks unload, the waste is visually inspected by Tip Floor staff and reloaded (if unaccepted) or otherwise pushed up to stockpile
- Priority is given to larger trucks and/or trucks departing tipping shed
- Truck proceeds to outbound weighbridge for weigh-out, where Weighbridge Officer completes transaction with final required details and truck departs site.

LARGE TRUCKS

- Trucks larger than an MRV are only permitted access to the site when a booking has been made through the Allocations Team or Site Supervisor prior to arrival
- Drivers are to follow the instructions of site personnel when loading waste from the stockpiles located on the lower deck or bay areas.

ATTACHMENT C

Vehicle Stacking Plan



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	10/11/16

The Transport Planning Partnership

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE		
TITLE	VEHICLE STACKING PLAN AND 19.0m SEMI-TRAILER OUTBOUND SWEEP PATH		

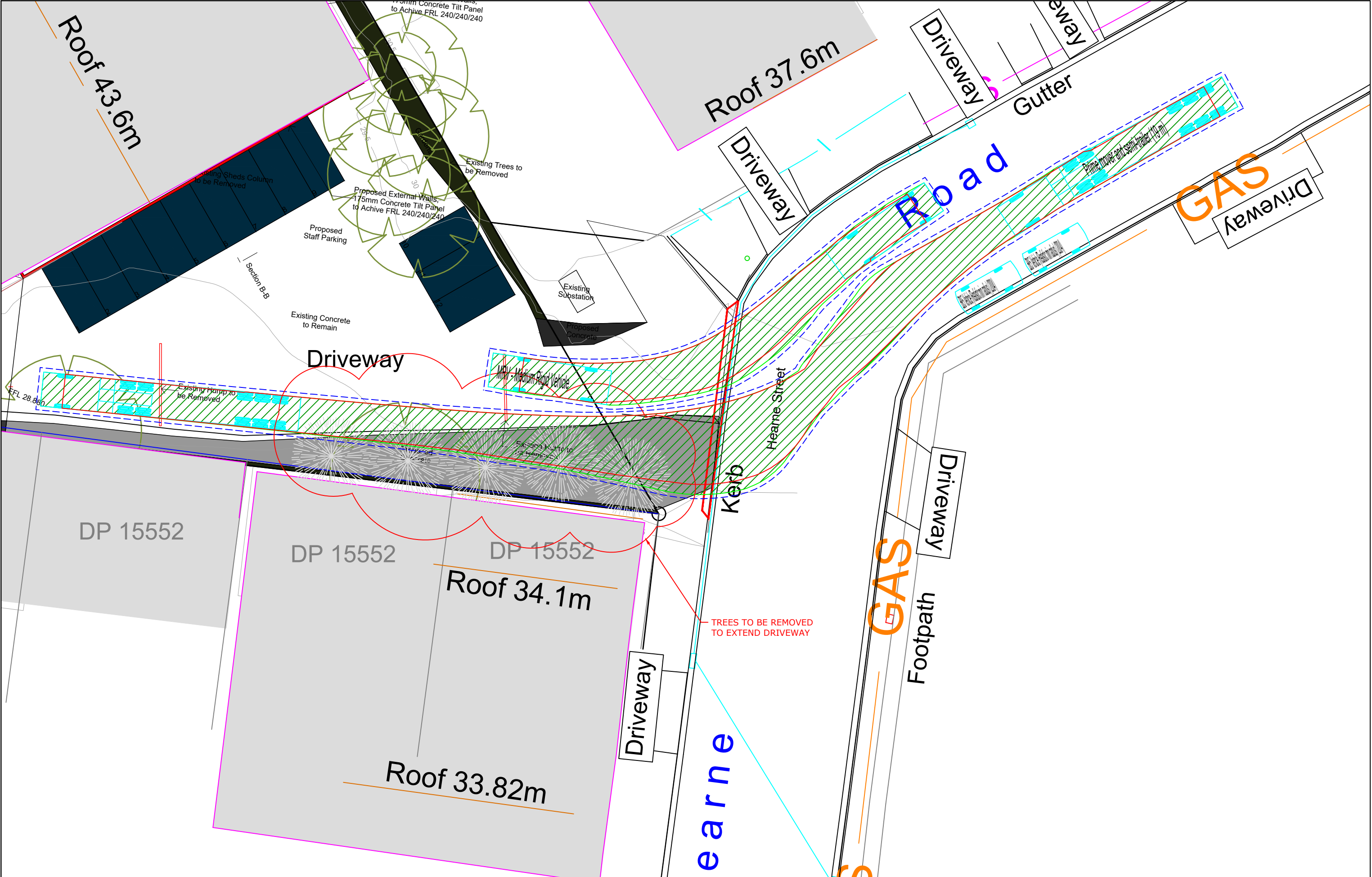
DWG No.			FIGURE 1
DATE STAMP			
10 NOVEMEBR 2016			
PROJECT No.	SCALE	REV.	
16222	1:500 (A3)	A	

ATTACHMENT D

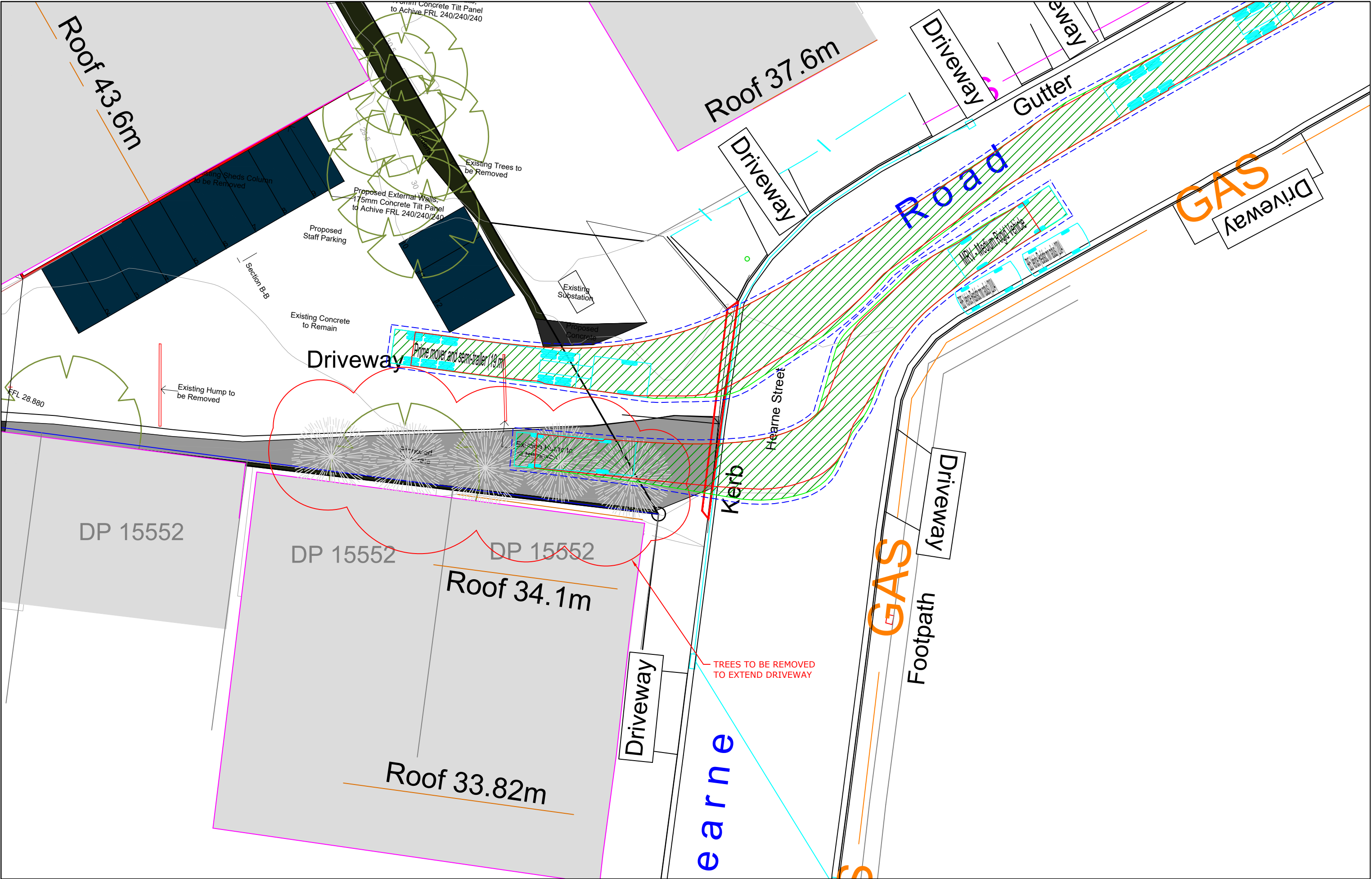
Traffic Control Plan

ATTACHMENT E

Driveway Access Swept Path Analysis



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE	<div><div>The Transport Planning Partnership</div><div>Suite 402, 22 Alchison Street St. Leonards NSW 2045 Tel: 02 8437 7800 Email: info@tpp.net.au</div></div>	PROJECT			BINGO, MORTDALE			DWG No. FIGURE 2		
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	16/11/16		TITLE			19.0m SEMI-TRAILER AND 8.8m MRV - SWEPT PATH			DATE STAMP 16 NOVEMBER 2016		
													PROJECT No. 16222		
													SCALE 1:250 (A3)		
													REV. A		



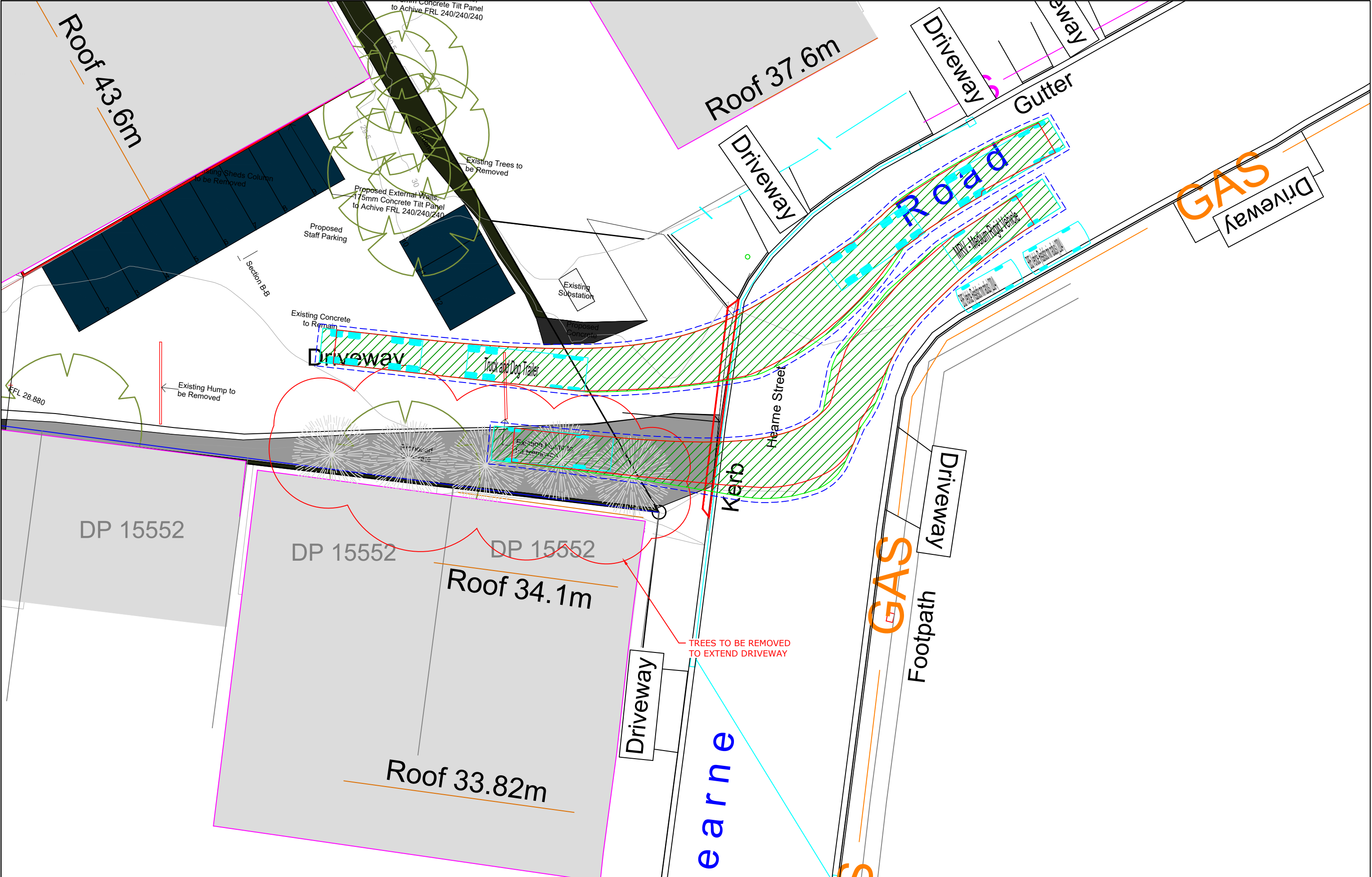
REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	16/11/16

**The Transport
Planning Partnership**

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE		
TITLE	19.0m SEMI-TRAILER AND 8.8m MRV - SWEEP PATH		

DWG No. FIGURE 3		
DATE STAMP 16 NOVEMBER 2016		
PROJECT No. 16222	SCALE 1:250 (A3)	REV. A



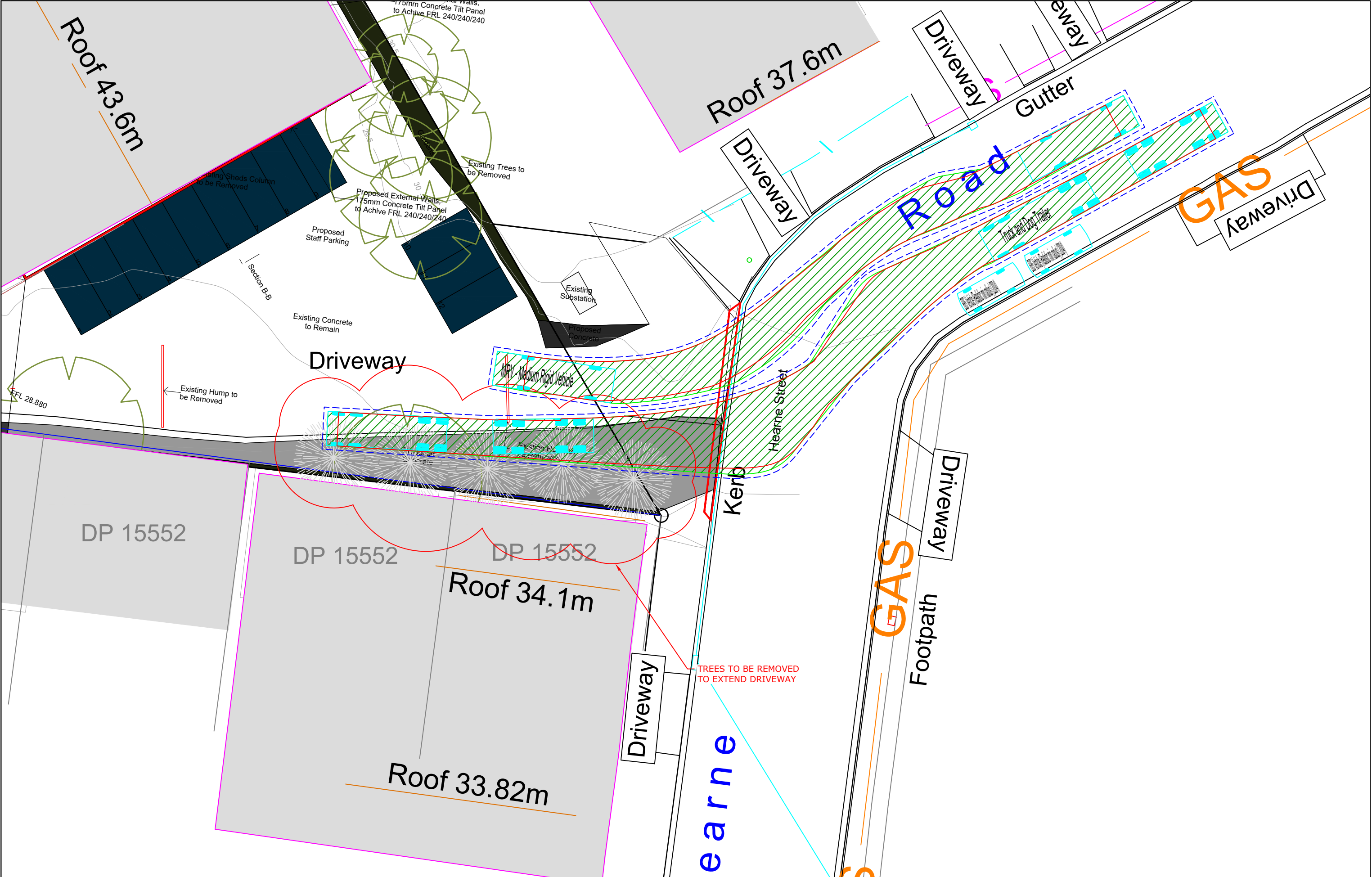
REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	16/11/16

The Transport
Planning Partnership

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE	
TITLE	19.6m TRUCK AND DOG AND 8.8m MRV - SWEEP PATH	

DWG No. FIGURE 4		
DATE STAMP 16 NOVEMBER 2016		
PROJECT No. 16222	SCALE 1:250 (A3)	REV. A



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	16/11/16

The Transport
Planning Partnership

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE		
TITLE	19.6m TRUCK AND DOG AND 8.8m MRV - SWEEP PATH		

DWG No. FIGURE 5		
DATE STAMP 16 NOVEMBER 2016		
PROJECT No. 16222	SCALE 1:250 (A3)	REV. A

ATTACHMENT F

Boundary Road Tube Count Data

Job No	N2679	Menu
Client	TTPP	
Site	Boundary Rd - btw Treloar Ave and Wattle St	
Location	Mortdale	
Site No	1	
Start Date	19-Sep-16	
Description	Volume Summary	
Direction	NB	



Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon 19-Sep	Tue 20-Sep	Wed 21-Sep	Thu 22-Sep	Fri 23-Sep	Sat 24-Sep	Sun 25-Sep		
AM Peak	633	689	703	686	673	682	501		
PM Peak	716	657	714	742	658	594	483	9109	8432
0:00	22	22	31	22	35	103	109	26	49
1:00	15	12	26	12	31	58	59	19	30
2:00	8	19	13	15	18	35	44	15	22
3:00	27	26	28	25	19	38	24	25	27
4:00	64	65	60	59	63	40	25	62	54
5:00	210	249	230	256	245	97	48	238	191
6:00	448	496	502	551	521	211	71	504	400
7:00	629	650	703	686	628	382	145	659	546
8:00	633	689	676	647	625	498	241	654	573
9:00	606	589	643	644	673	611	423	631	598
10:00	560	551	565	569	621	682	501	573	578
11:00	557	585	553	583	593	682	448	574	572
12:00	550	548	558	545	590	594	483	558	553
13:00	535	527	560	578	600	559	411	560	539
14:00	596	581	610	623	581	562	375	598	561
15:00	716	657	714	742	658	538	394	697	631
16:00	615	613	657	609	611	432	388	621	561
17:00	552	566	563	544	579	404	358	561	509
18:00	481	430	529	504	503	397	280	489	446
19:00	320	364	389	381	376	332	251	366	345
20:00	211	226	257	244	243	216	196	236	228
21:00	193	198	238	226	202	197	133	211	198
22:00	99	136	149	143	241	172	93	154	148
23:00	35	34	52	64	198	107	33	77	75
Total	8682	8833	9306	9272	9454	7947	5533	9109	8432

7-19	7030	6986	7331	7274	7262	6341	4447	7177	6667
6-22	8202	8270	8717	8676	8604	7297	5098	8494	7838
6-24	8336	8440	8918	8883	9043	7576	5224	8724	8060
0-24	8682	8833	9306	9272	9454	7947	5533	9109	8432

Job No	N2679	Menu
Client	TTPP	
Site	Boundary Rd - btw Treloar Ave and Wattle St	
Location	Mortdale	
Site No	1	
Start Date	19-Sep-16	
Description	Volume Summary	
Direction	SB	

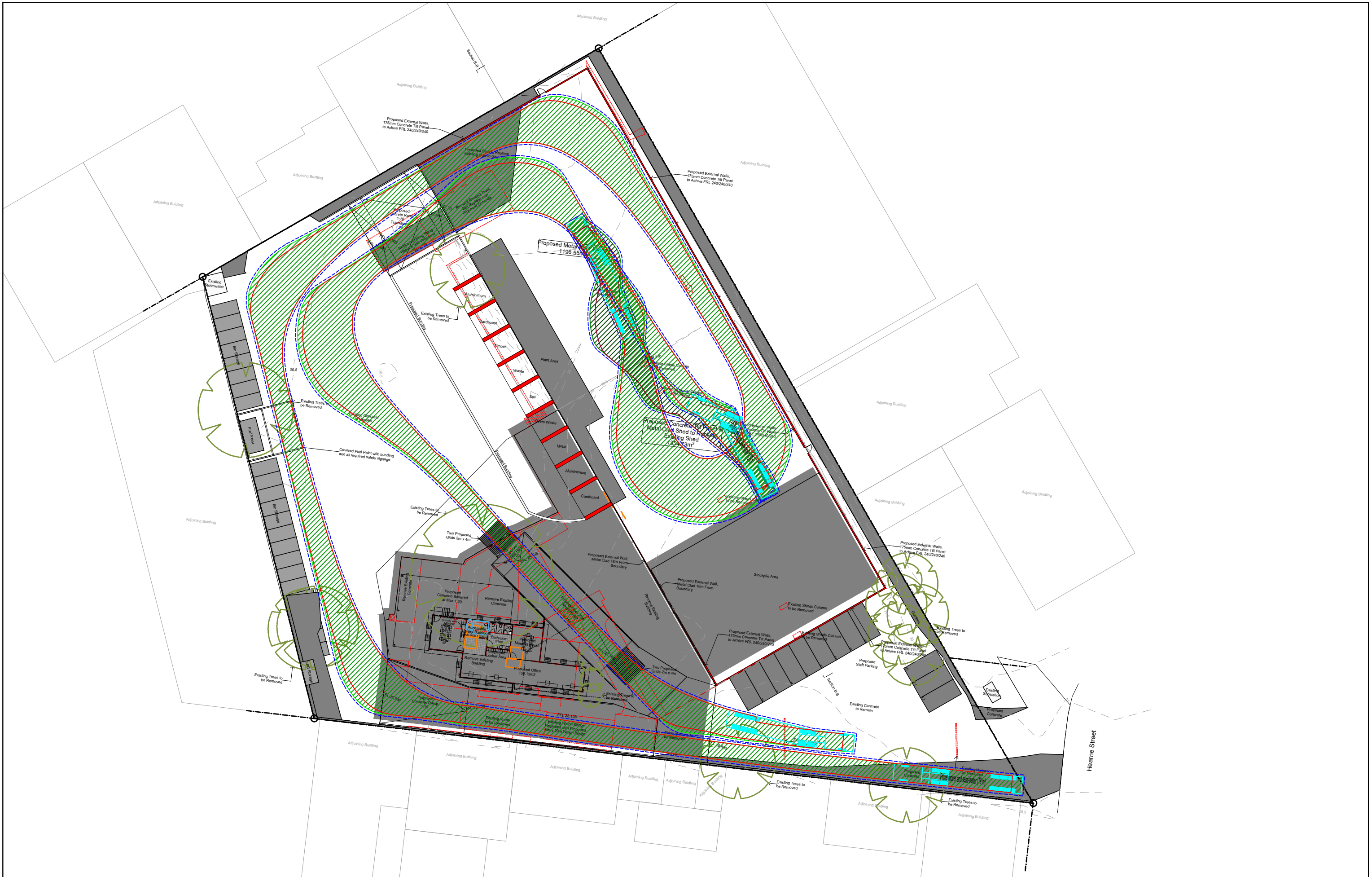


Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon 19-Sep	Tue 20-Sep	Wed 21-Sep	Thu 22-Sep	Fri 23-Sep	Sat 24-Sep	Sun 25-Sep		
AM Peak	576	611	568	624	658	637	410		
PM Peak	784	794	752	731	756	636	496	9163	8496
0:00	38	32	38	32	47	108	118	37	59
1:00	21	20	19	23	27	62	63	22	34
2:00	10	14	16	17	24	40	45	16	24
3:00	35	37	37	38	29	29	38	35	35
4:00	41	62	39	35	42	28	35	44	40
5:00	189	182	200	201	209	100	47	196	161
6:00	385	413	404	397	414	232	72	403	331
7:00	476	507	506	527	546	340	94	512	428
8:00	576	611	555	610	658	441	192	602	520
9:00	576	551	568	624	584	486	336	581	532
10:00	533	512	552	527	571	601	393	539	527
11:00	537	540	534	543	554	637	410	542	536
12:00	580	522	574	562	590	636	483	566	564
13:00	528	544	550	533	560	567	496	543	540
14:00	592	614	596	528	609	555	419	588	559
15:00	702	617	641	638	682	507	414	656	600
16:00	706	717	702	692	745	500	420	712	640
17:00	784	794	752	731	756	487	463	763	681
18:00	597	631	591	671	665	424	375	631	565
19:00	337	426	444	434	470	325	259	422	385
20:00	264	277	302	311	290	214	225	289	269
21:00	181	218	223	250	222	195	195	219	212
22:00	105	112	166	157	243	219	125	157	161
23:00	43	54	77	108	161	154	51	89	93
Total	8836	9007	9086	9189	9698	7887	5768	9163	8496

7-19	7187	7160	7121	7186	7520	6181	4495	7235	6693
6-22	8354	8494	8494	8578	8916	7147	5246	8567	7890
6-24	8502	8660	8737	8843	9320	7520	5422	8812	8143
0-24	8836	9007	9086	9189	9698	7887	5768	9163	8496

ATTACHMENT G

Internal Circulation Swept Path Analysis



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	15/11/16

**The Transport
Planning Partnership**

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO MORTDALE		
TITLE	19.0m SEMI-TRAILER - SWEEP PATH		

DWG No.			FIGURE 2
DATE STAMP			
11 NOVEMBER 2016			
PROJECT No.	SCALE	REV.	
16222	1:500 (A3)	A	



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	15/11/16

**The Transport
Planning Partnership**

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE		
TITLE	19.0m SEMI-TRAILER - SWEPT PATH		

DWG No.		FIGURE 2	
DATE STAMP		15 NOVEMBER 2016	
PROJECT No.	SCALE	REV.	
16222	1:500 (A3)	A	



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	HC	WJ	WJ	15/11/16

**The Transport
Planning Partnership**

Suite 402, 22 Alchison Street
St. Leonards NSW 2045
Tel: 02 8437 7800
Email: info@tpp.net.au

PROJECT	BINGO, MORTDALE		
TITLE	19.0m TRUCK AND DOG IN AND OUT		

DWG No.			FIGURE 5
DATE STAMP			
15 NOVEMBER 2016			
PROJECT No.	SCALE	REV.	
16222	1:500 (A3)	A	