

TRAFFIC IMPACT STATEMENT

PROPOSED UP-GRADING OF EXISTING RECYCLING FACILITY

50 WYLLIE ROAD, KEMBLA GRANGE



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1.0 INTRODUCTION

K.F. Williams & Associates Pty Ltd have been commissioned by Bi Corp Pty Ltd to undertake a traffic impact study for the proposed expansion of their Re-cycling Facility at 50 Wyllie Road, Kembla Grange.

A Development Application has been lodged with Wollongong City Council for the upgrading of the site which will increase the re-cycling capacity from 30,000t/pa to 230,000t/pa. The development would be classified BY THE State Environmental Planning Policy (Infrastructure) 2007 under schedule 3, as being required to be referred to the RMS.

The aim of this report is to investigate:

- The existing site conditions & traffic generation rates
- The existing local traffic infrastructure
- Review on-site conditions and upgrading of facilities to cater for the proposed increased production.
- Investigate predicted traffic generation rates & future traffic routes.
- Review Councils future road network strategy & access impacts the traffic generation may have on this infrastructure.
- Review impact on adjacent roads due to construction.

The application has now been referred to The Department of Planning & Infrastructure who have requested additional information be provided (refer Appendix F). This report has now been updated to review these requirements.

2.0 LOCATION OF PROPOSED DEVELOPMENT

The development is located in the south western Wollongong suburb of Kembla Grange, a Wollongong City Council suburb, 8km south west of Wollongong central business district and 4.5km North West of Dapto central business district.

The site has road frontage off Wyllie Road with an area of 21.72ha and is described as Lot 10 DP.878167 – 50 Wyllie Road, Kembla Grange.

The site is bisected into two (2) zones i.e.

IN2 – Light Industrial – south East Corner (6.1ha)

RE2 – Private Recreation – North/North West area (15.62ha)

The Light Industrial area is presently occupied by a re-cycling plant. The remainder of the site is vacant with scattered vegetation.

For plan showing site locations and adjacent road layout refer KF110816/T01 attached *as Figure 1*.

3.0 EXISTING SITE CONDITIONS

3.1 Existing Roads

The site has direct access onto Wyllie Road. Wyllie Road is a long cul-de-sac which connects West Dapto Road to the site, other adjacent Industrial land, Recreational land and Wollongong Lawn Cemetery.

Present sites utilizing Wyllie Road are the Wollongong Lawn Cemetery, minor sports fields and the current development site.

A Development Approval for a 38 lot Industrial subdivision was approval on Lot 2 DP.792692 (2005/1926) but this approval has not been acted on.

Wyllie Road has a 7m bitumen pavement with grass verges, the posted speed limit is 80km/hr.



**Photo1:
Wyllie Road Viewed towards West Dapto Road**

Present traffic generation would be less than 500v/day.

Wyllie Road has been widened to have a 12.8m pavement and K & G at the intersection with West Dapto Road. West Dapto Road is a main through road with 3.3m wide lanes in either direction and 1.7m to 2.3m wide sealed shoulders.



**Photo 2:
West Dapto Road (looking East)**

A traffic count undertaken by Wollongong City Council in July 2012 indicated an AADT (7 days) of 4189 vehicles (refer Appendix A for count data).

West Dapto Road intersects with the Princes Highway 0.6km north east of the intersection with Wyllie Road. The Princes Highway at this location has an approx. AADT of 14,000 vehicles. This intersection is currently being upgraded with Traffic Lights and Right Turn/Left Turn lanes being added.

3.2 Existing Traffic Generation

The majority of the land serviced by Wyllie Road is presently undeveloped. Present traffic generation is restricted to the existing re-cycling centre, Wollongong Lawn Cemetery/religious centre and a small playing field.

The current re-cycling facility employs 8 people and caters for 30,000t/pa. The centre operating hours are 6am to 6pm – Monday to Saturday (i.e. 6 days/week – 288 days per year). The majority of material is processed Monday to Friday. Saturday will account for 25% of the *normal week-day* production rate.

Based on this & discussions with company Management table 1 below sets out the existing traffic generation from the re-cycling centre.

Table 1

30,000t/pa – Traffic Generation/Weekday i.e. 120t/days			
Description General	Vehicle Types	Number	Total Equivalent Movements *
Employees 8 Visitors 4 Machinery/deliveries	Standard Car	4	8
	Standard Car	4	8
	Single unit Trucks	4	12
Material Delivery	Standard car/utes	24	48
	Single unit Trucks	6	18
	Trucks/Dogs	6	48
Material Sales	Standard car/utes	24	48
	Single unit Trucks	6	18
	Trucks/Dogs	6	48
		Total	260/day

* Equivalent Movements Base on

Car/Utility/Car Trailer = 1
Single unit truck = 1.5
Truck/Dog or Semi = 4

Current deliveries/sales are estimated to be 80% from the north (Wollongong/Northern suburbs) & 20% from the south (Dapto/Shellharbour).

Vehicle generation from the Wollongong Lawn Cemetery would be concentrated in platoons with average 10/15 vehicles at a time.

The present day Wyllie Road AADT can be estimated by considering the traffic generation from the three main traffic generating developments as follows:

- *Exiting Recycling facility AADT: 260 vpd (refer Table 1)*
- *Church AADT: The church car park has 112 spaces. Assuming 80% attendance will generate 2 x 90 vehicles on Sunday for 52 weeks; 7 day AADT = 26vpd. Traffic generated by the church during normal week days will be negligible.*
- *Cemetery AADT: 30vpd*

The AADT for Wyllie Road can therefore be estimated as 316 vpd, rounded to 500 vpd.

The current estimated AADT for Wyllie's Road is 500 vehicles which includes the current development.

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT

The site is presently utilized to re-cycle 30,000t of material per year. Materials to be re-cycled include discarded concrete, bricks, bitumen, rocks/stones, soil, general solid waste, metal, timber and general green waste. Material is delivered to site in vehicles ranging in size from small car trailers/utilities (0.5 tonne loads) to large truck/dog combinations (30 tonne loads).

Materials are processed on-site and sold to clients, delivery vehicles range in size from 0.5 tonnes to 30 tonnes.

This proposal is to upgrade the facility progressively over the next 5 years from 30,000t/pa to 230,000t/pa. The site will operate 7 days/week for 48 weeks pa.

For proposed site layout plan refer KF110816/C10/J-Appendix B.

The number of employees (presently 8 on-site) will progressively increase to 40 people, these will include the following.

Office Staff
Weighbridge operators
Mechanics/Welders
Truck/Loader operators
Labours
Environmental Engineer
Safety Officer
General Manager
Sales rep/Estimators

For predicted increase in traffic generation rates refer Section 6.

5.0 WEST DAPTO RELEASE AREA – FUTURE ROAD UPGRADING

The site is at the northern edge of the current West Dapto Release area, the future road network is described in Wollongong City Council DCP2009-Chapter D16. An extract from the plan showing the proposed road network and future intersection treatment with the site is included in Appendix C.

The intersection of West Dapto Road & the Princes Highway is currently being upgraded to have traffic lights installed, this is the first stage of the plan. As this intersection becomes saturated and begins to impact on the adjacent railway level crossing, Wyllie Road will be upgraded to 2 lanes in either direction and extended to meet Northcliffe Drive. The timing of this extension is not currently known, however Council estimate it will be in place by 2036.

Council has provided traffic data which predicts that Northcliffe Drive extension at this time will have an AADT of 24,989 vehicles (refer Appendix C).

Wyllie Road will become the future northern link into the West Dapto release area, K F Williams & Associates Pty Ltd plan KF110816-T02, [attached as Figure 2](#), shows the road network adjacent to the site and the land zoning as currently proposed.

6.0 PREDICTED TRAFFIC GENERATION

The predicted traffic generation is based on the current operation rates and hence extrapolated to produce the future traffic movements. The RMS Guide to Traffic Generating developments has no specific guidelines for re-cycling plants and hence rates based on the existing development seem appropriate.

The majority of waste is generated from building sites which operate Monday to Friday, Saturday & Sunday operations seem to be restricted to small property owners, and tonnage rates are generally 25% of the Monday to Friday rates.

The site operating hours will be 6am to 6pm, Cartage volumes are based on the following distributions.

10% - 0.5t loads (i.e. Utilities/trailers)

20% - 1.0t to 8t loads (single unit truck) (average 3t loads)

70% - 12t to 30t loads (large trucks/truck/dog combination/semi-trailers (average 15t loads).



**Photo 3:
Typical Single Unit Truck
View of vehicle crossing watercourse to enter operations area**



Photo 4:
Typical Truck/Dog Combination.
View of vehicle crossing watercourse to enter operations area

6.1 100,000TONNES / PA

Table 2 below outlines the predicted traffic generation rates when production increases to 100,000 t/pa.

Table 2

100,000t/pa – Predicted Traffic Generation/Weekday i.e. 379t/day			
Description	Vehicle Type	Number	* Total equivalent Movement
General Employees 18 Visitors 8 Deliveries	Standard Cars	9	18
	Standard Cars	8	16
	Single Unit Trucks	6	18
Material Delivery	Standard car/utes	76	76
	Single unit Truck	25	38
	Truck/Dogs	18	72
Material Sales	Standard car/utes	76	76
	Single unit Trucks	25	38
	Truck/Dogs	18	72
	Total		424/day

* Total Standard Vehicles Equivalent numbers based on:

Car/Utility/Car Trailer = 1
Single unit truck = 1.5
Truck/Dog or semi = 4

The total daily traffic generation in standard vehicle unit equivalents is 424/day. Based on 10% peak hour rate this is 42 vehicles/peak hour.

6.2 150,000tonnes/pa

Table 3 below outlines the predicted traffic generation rates when production increases to 150,000t/pa.

Table 3

150,000t/pa – Predicted Traffic Generation/Weekday i.e. 568t/day			
Description	Vehicle Type	Number	* Total Equivalent Movement
General Employees 18 Visitors 8 Deliveries	Standard Cars	13	26
	Standard Cars	12	24
	Single Unit Trucks	8	24
Material Delivery	Standard car/utes	114	114
	Single axil Truck	38	57
	Truck/Dogs	26	104
Material Sales	Standard car/utes	114	114
	Single axil Trucks	38	57
	Truck/Dogs	26	104
		Total	624/day

* Total Standard Vehicles Equivalent numbers based on:

Car/Utility/Car Trailer = 1

Single axil truck = 1.5

Truck/Dog or semi = 4

The total daily traffic generation in standard vehicle unit equivalents is 624/day. Based on 10% peak hour rate this is 62 vehicles/peak hour.

6.3 230,000tonne/pa

Table 4 below outlines the predicted traffic generation rates when production increases to 230,000t/pa.

Table 4

230,000t/pa – Predicted Traffic Generation/Weekday i.e. 871t/day			
Description	Vehicle Type	Number	* Total Equivalent Movement
General Employees 40 Visitors 16 Deliveries	Standard Cars	20	40
	Standard Cars	16	32
	Single Unit Trucks	12	36
Material Delivery	Standard car/utes	174	174
	Single unit Truck	58	87
	Truck/Dogs	40	160
Material Sales	Standard car/utes	174	174
	Single unit Trucks	58	87
	Truck/Dogs	40	160
		Total	950/day

* Total Standard Vehicles Equivalent numbers based on:

Car/Utility/Car Trailer = 1

Single axil truck = 1.5

Truck/Dog or semi = 4

The total daily traffic generation in standard vehicle unit equivalents is 950/day. Based on 10% peak hour rate this is 95 vehicles/peak hour.

Traffic generation from the Church and Cemetery are expected to remain constant over time at 56vpd. Growth of AADT in Wyllie Road from existing development would not increase by more than 1% p/a.

The AADT when the site reaches output of 230,000 t/a will therefore be 1,006 vpd (ie 950 vpd plus 56 vpd) which has been rounded to 1,000 vpd.

As outlined in section 3.2 of the current vehicle generation rates are estimated from information provided by the operator of the facility.

Production will increase from 120 tonne days to 871 tonne days. This is an increase by a factor of 7.25.

Comparing Table 1 with Table 4 it is evident that

- cars/utes increase from 24 to 124 (5.2 fold increase)*
- Single unit Trucks increase from 6 to 58 (9.7 fold increase)*
- Truck & Dog Trailer increase from 6 to 40 (6.7 fold increase)*

These figures are generally consistent with the increase in production at the facility.

7.0 SITE INTERNAL TRAFFIC MOVEMENTS

Passenger and deliver/service vehicle access to the main production area will be restricted at the site office/weighbridge.

KFW plan KF110816-C15 shows the internal traffic movements for deliveries to the site and sales/pick up. All vehicles will enter and leave via the weighbridge. The processing area will be out of bounds to the public.

A car park will be provided *to ensure visitors, customers and employees do not take vehicles into the production/operations area without authorisation.*

Wollongong Council's DCP 2009 and other sources do not provide specific car parking guidance for this type of facility.

Customers intending to purchase materials will initially proceed to the weigh bridge and be authorised to proceed to a designated area (after payment for materials) to have their vehicle or trailer loaded. Customers will therefore not require a designated car parking space.

Based on a *review of Ch E3 of the WCC DCP 2009 and review of staff and visitor numbers, being* maximum of 40 employees and up to 16 visitors *per day*, the recommended number of car parking spaces is *as follows*:

Employees ½ employees	= 20
Visitors Max stay 2hrs	= 4
Total	= 24

Schedule 1 of Ch E3 or WCC DCP 2009 is presented in Appendix J.

8.0 ACCESS ROUTES

8.1 Existing Road Infrastructure

As discussed previously 80% of vehicle generation movements will be from the north and 20% from the south. The development of the site to accommodate 230,000t/pa will occur over the next 5 years, this will be prior to the Wyllie Road extension to Northcliffe Drive being completed and is considered to be the worst case for traffic impact. Plan KF110816-T03, *attached as Figure 3*, shows the predicted transport routes on the existing road network.

8.2 Future Road Network

The future road network is show on WCC – DCP2009-D16, copy of overall plan included in Appendix C. Discussion with Council traffic engineers indicate they would only support one access point from the development onto the future north/south link road which would be 2 lanes in either direction. Due to site constraints the site entry is proposed to be offset from the present Wyllie Road reserve by 70m.

KFW plan KF110816-T04, *attached as Figure 4*, shows the predicted transport routes on the future road network.

9.0 IMPACT ON EXISTING ROAD NETWORK

The potential impact on the existing road network was analysed in the intersection modelling programme SIDRA for the following scenarios –

Existing traffic flows

100,000t/pa

150,000t/pa

230,000t/pa

Existing traffic volumes were predicted to increase by 1%pa, the 230,000t/pa production rate is to be achieved within five (5) years.

The existing site entry and the intersection of Wyllie Road/West Dapto Road were investigated. The remaining road network has been analysed by Wollongong City Council to allow for the re-zoning of the West Dapto release area in their Tracks Model. The 2036 volumes were provided by Council for our review.

The impact on the intersection of West Dapto Road/Princes Highway intersection has been extensively modelled by Wollongong City Council as part of the West Dapto re-zoning process. A report (November 2011) was prepared by Council & lodged with the RTA, which recommended upgrading of the intersection, as a result the intersection is presently being upgraded (refer Appendix G – Copy of Report) Section 2 of the report details to predicted traffic increase, Council proposes to monitor the intersections performance, this will define when the Northcliffe Drive extension will be implemented. The report concludes

“The actual timeframe for this work is largely dependent on market forces driving demand for new development with resultant increases in traffic volumes”.

It cannot be estimated when the impact of this sole development will impact on the intersection, the current upgrading will be more than adequate to cater for the traffic generation from the development for the next 10 years.

Section 6.0 of this report outlines the predicted vehicle generation for each of the scenarios.

9.1 Existing Road Network

It is not anticipated that Wyllie Road will be extended to connect with Northcliffe Drive in the next five (5) years and hence the impact of the development on the existing intersections, i.e. site entry off Wyllie Road and Wyllie Road/West Dapto Road was investigated.

9.1.1 Site Entry Off Wyllie Road

The predicted traffic volumes together with a 1% pa increase in the existing traffic in Wyllie Road were analysed in the SIDRA intersection program. Table 5 below outlines the results. The level of service of an intersection is an index of the operational performance of the traffic on a given lane or leg of the intersection. It is based on measures such as delays, degree of saturation and speed during a given flow period. Values range from “A” (very good) to “F” (fail or fully saturated).

Table 5

Intersection – Level of Service (Degree of Saturation) Site Entry/Wyllie Road			
Scenario	Site Entry	Wyllie Road North	Wyllie Road South
Existing	A (0.01)	A (0.01)	A (0.01)
100,000t/pa	A (0.03)	A (0.01)	A (0.02)
150,000t/pa	A (0.04)	A (0.01)	A (0.03)
230,000t/pa	A (0.06)	A (0.01)	A (0.05)

For SIDRA printout/traffic volumes refer Appendix D. All legs of the intersection operate at a level of service of A for the existing and proposed traffic volumes.

The intersection is at the northern tangent of a curve in Wyllie Road. The curve radius is 50m and hence has a comfortable speed of 40km/hr. The SISD required for 40km/hr is 66m, the posted speed is 80km/h (or SISD of 170m).

Sight distance of 80m is available to the south and in excess of 170m to the north.



**Photo 5:
Wyllie Road – Sight Distance
Looking South from site entrance**



Photo 6:
Wyllie Road – Sight Distance
Looking North from site entrance

It is recommended vegetation be removed from the existing verge and the curve speed limit be posted at 40km/hr.

9.1.2 Wyllie Road/ West Dapto Road Intersection

Existing traffic volumes in West Dapto Road were provided by Wollongong City Council. The intersection was analysed for both the AM and PM peak periods with the predicted traffic generation by the development added. Table 6 below outlines the results.

Table 6

Intersection - Wyllie Road/West Dapto Road			
Level of Service (Degree of Saturation)			
AM Peak			
Scenario	Wyllie Road	West Dapto Road East	West Dapto Road West
Existing	A (0.00)	A (0.08)	A (0.13)
100,000t/pa	A (0.04)	A (0.10)	A (0.13)
150,000t/pa	A (0.05)	A (0.11)	A (0.13)
230,000t/pa	A (0.08)	A (0.13)	A (0.13)
PM Peak			
Existing	A (0.02)	A (0.14)	A (0.11)
100,000t/pa	A (0.04)	A (0.15)	A (0.12)
150,000t/pa	A (0.05)	A (0.16)	A (0.12)
230,000t/pa	A (0.07)	A (0.18)	A (0.12)

All legs of the intersection operate at a level of service of A.

Wollongong City Council in their letter 14th May 2014 (refer Appendix F) have also requested the capacity of this intersection be reviewed just prior to the Northcliffe Drive extension being completed. Council provided their TRACKS model data for 2031 which models this situation (refer Appendix H). The council data did not include Wyllie Road traffic volume increase, the existing traffic volumes in Wyllie Road was estimated to be 500VPD (Refer Section 3.2) in the absence of any definitive information it has been assumed this value could increase to 1000 VPD.

The intersection was again analysed for both the AM & PM peak periods, Table 7 below summarizes the results for full details refer Appendix I.

Table 7

Intersection – Wyllie Road/West Dapto Road – Year 2031 Level of Service (Degree of Saturation)			
Scenario	Wyllie Road	West Dapto Rd North	West Dapto Rd South
2031 – AM Peak	A (0.18)	A (0.41)	A (0.32)
2031 – PM Peak	A (0.18)	A (0.32)	A (0.48)

All legs of the intersection still operate at a level of services of A, the degree of saturation rises from (0.18) to (0.48), i.e. the intersection operation is still satisfactory.

The posted speed limit is 80km/hr requiring a SISD of 170m. Available SISD is 85m to the west and in excess of 170m to the east. It is recommended the existing vegetation be removed from the road verge towards the west to increase sight visibility.

As presented in Figure 5, the existing and proposed intersection of West Dapto Road and Princes Highway will be controlled by traffic lights.

Based on the predicted Level of Service presented in Table 6 and Table 7 it may be deduced that the Level of Service at other intersections will not be adversely affected by the proposed development.



**Photo 7:
West Dapto Road/Wyllie Road Intersection Sight Distance
Looking West**



**Photo 8:
West Dapto Road/Wyllie Road Intersection Sight Distance
Looking East**

9.2 Future Road Network

The future road network for the West Dapto release area is shown on the extract of Wollongong City Council's *West Dapto plan presented in drawing KF110816-T05, attached as Figure 5*

The plan shows the Northcliffe Drive extension traverses the site along its southern boundary. *Northcliffe Drive* will have 2 lanes in either direction, the site entry will have to be re-designed to gain access to this road.

Council currently support the construction of a roundabout at this location (refer plan). This roundabout would need to be designed to take this and the other adjacent developments into consideration.

9.3 Construction Impact

Section 4.0 of this report describes the proposed site layout which is shown on K F Williams Plan KF110816-C10/J, copy appendix B.

Construction activities in order to upgrade the existing facility would include:

- A) Civil Works
 - Cut/fill earthworks
 - Stormwater Drainage Construction
- B) Structural Works
 - Building footings/ concrete slab
 - Building steelwork erection
 - Building cladding and final fit out
- C) Services
 - Upgrade existing water/ sewer infrastructure
 - Upgrade electrical infrastructure

Traffic generation as a result of the above activities is shown in table 8 below.

The construction period is estimated to be 4 months.

Table 8

Traffic Generation – Construction			
Activity	Description	Vehicle Types	Frequency
A – Civil Works	Excavation/ earthworks including pipe trench excavations	All machines currently on-site	Nil
B – Building Construction	Concrete works	HRV/Concrete deliveries	8/ pour total 4 pours
	Steel work	HRV/crane	1/ day over 2 months
	Construction workers 4/6 Workers per day	Standard Vehicles	6/day for 2 months
C – Services	Services/ personnel 2/4 Work	2 SRV	2 SRV/ day for 1 month

It can be seen from table 8 above that an average of 4/6 workman will attend the site during the construction period of approx. 4 month. This number is similar to the additional staff required to operate the upgraded facility and hence will have little impact.

All large earthmoving machines are presently on-site and will remain so. The major traffic impact will be the deliveries of concrete, steelwork, pipes and building cladding and erection.

The largest impact will be during a concrete pour with approx. 8 HRV delivery trucks over a 4 hour period, with a total frequency of 4 times in the second month of construction.

Heavy vehicles presently frequent the site, this impact will have little effect on the adjacent road system which has been designed to cater for the total West Dapto release area in the future.

It must be noted that it is most unlikely that the construction work described above will occur all at once. The construction work required to bring the facility up to 230,000 t/pa is most likely to occur over a period of five years and will therefore have minimal traffic impact.

10.0 RECOMMENDATIONS & CONCLUSIONS

It is proposed to upgrade an existing re-cycling facility at 50 Wyllie Road, Kembla Grange from its present capacity of 30,000t/pa to 230,000t/pa. This Statement investigates the traffic impact of the development. It is anticipated that the development will occur within the next 5 years. The future upgrading of the adjacent road system is not anticipated to occur in this timeframe and hence the impact on the existing road system was investigated.

The investigation revealed that the predicted traffic generation will have little effect on the existing road system. Minor vegetation clearing of the verges is recommended to upgrade the existing safety of the present road system.

Report by

DW Dowey

M.A.I.T.P.M

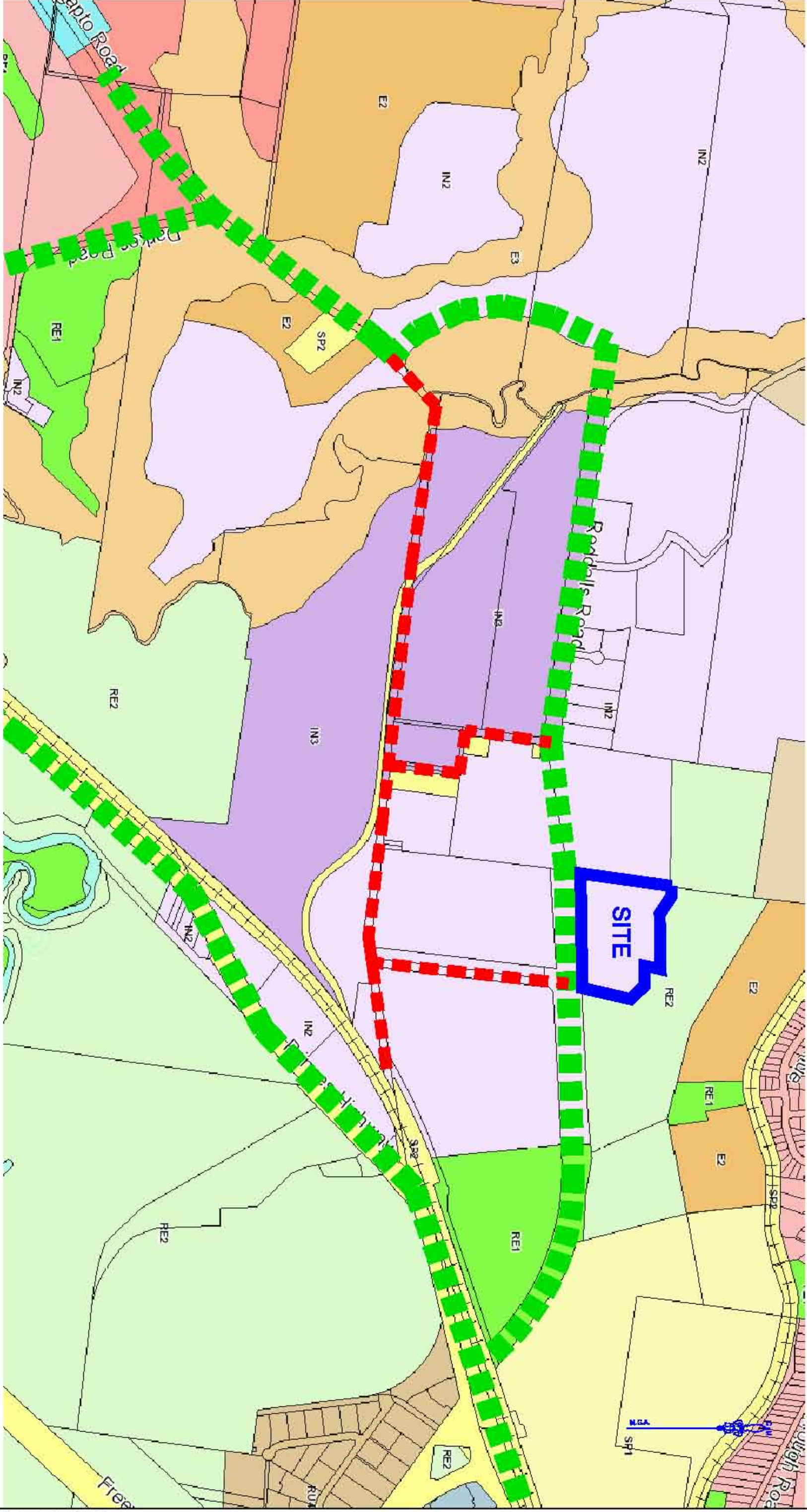
Amendments Rev E (22 April 2015) by:



Wal Mullany

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[illegible]



LEGEND

- PROPOSED 4 LANE ROADS
- PROPOSED 2 LANE ROADS

FIGURE 2

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Project Name: 50 WYLLIE RD KEMBLA GRANGE PROPOSED ROAD NETWORK - ZONING		Project No: KF110816 Drawing No: T02	
Author: [Name] Date: April 2018		Drawn: [Name] Date: [Date]	
Checked: [Name] Date: [Date]		Designed: [Name] Date: [Date]	
Client: [Name]		Contract: [Name]	
Scale: [Name]		Drawing Status: [Name]	
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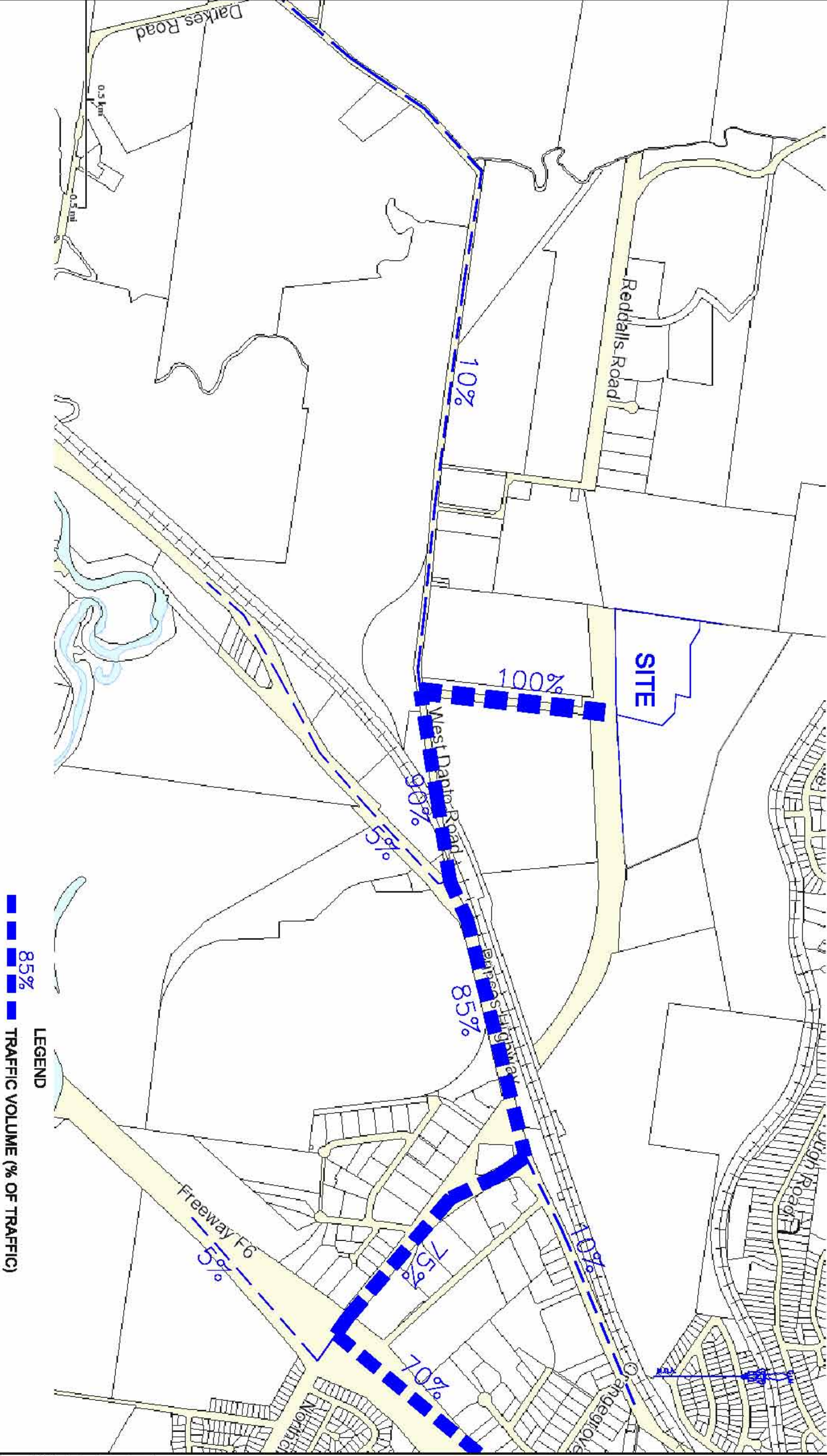


FIGURE 3

Revision		Issue date		Drawn by		Authorised		Amendment or reason for issue	



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Author	—	Date	April 2018	Drawing Title	50 WYLLIE RD - KEMBLA GRANGE EXISTING ROAD NETWORK PREDICTED TRAFFIC PRIOR TO WYLLIE ROAD EXTENSION	Project No.	KF110816
Date of Drawing	—	Drawn	WH			Drawing No.	T03
Design	—	Checked	—			Drawn	—
Check	—	Approved	—			Scale	1:100000
Notes	—					Scale	1:100000

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