

13057

PROPOSED RESIDENTIAL DEVELOPMENT
AT AYRFIELD, GRANGES ROAD,
KILKENNY

Traffic and Transport Report

for

Reddy Architecture + Urbanism

on behalf of

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Traffic and Transport Report

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TABLE OF CONTENTS

- 1 INTRODUCTION 1
 - 1.1 INTRODUCTION..... 1
 - 1.2 OBJECTIVES..... 1
- 2 PROPOSED DEVELOPMENT 2
 - 2.1 SITE LOCATION 2
 - 2.2 EXISTING ROAD NETWORK..... 2
 - 2.3 EXISTING LAND USE..... 3
 - 2.4 DESCRIPTION OF PROPOSED DEVELOPMENT 3
 - 2.5 QUEUE LENGTH SURVEYS..... 4
 - 2.6 PROPOSED ROAD NETWORK IMPROVEMENTS 4
- 3 ACCESS STRATEGY..... 6
- 4 ZONING..... 8
- 5 TRAFFIC CAPACITY..... 9
 - 5.1 TRIP GENERATION 9
 - 5.2 TRIP DISTRIBUTION AND ASSIGNMENT..... 9
 - 5.3 CAPACITY ASSESSMENT..... 9
- 6 VULNERABLE ROAD USERS 11
 - 6.1 PEDESTRIANS..... 11
 - 6.2 CYCLISTS..... 11
- 7 CONCLUSIONS..... 12
- APPENDIX – DRAWING..... 13

1 Introduction

1.1 INTRODUCTION

Roadplan Consulting has been instructed by Reddy Architecture and Urbanism to prepare a Traffic and Transport Report of a proposed residential development at Granges Road on behalf of Niall and Angela Browne.

The development area is located on the grounds of Ayrfield House (now demolished) on a plot of approximately 13 acres, and will have its own access onto Granges Road.

In preparing this report, Roadplan has made reference to

- the 'Kilkenny City & Environs Development Plan 2008 - 2014',
- the 'Loughmacask Local Area Plan',
- the Emerging Plans for the Central Access Scheme (CAS) and other associated roads proposals,
- the DoT 'Design Manual for Urban Roads and Streets', and
- the NRA 'Traffic and Transport Assessment Guidelines', September 2007.

1.2 OBJECTIVES

The objective of this report is to examine the traffic and transportation implications associated with the proposed development in terms of how it can integrate with existing traffic in the area.

In so doing the following development impacts were assessed:

- the impact of forming a new access on the Granges Road in terms of how it could best be located relative to existing accesses,
- the impact of the relocation of the Public Open Space zoning (as shown in the City & Environs Development Plan 2008 - 2014), and
- the traffic capacity impacts, if any, of the development on the surrounding road network.

The report determines and quantifies the extent of additional trips generated by the development and the impact of such trips on the operational performance of the local road network and junctions, in particular the following junctions: Waterbarrack Roundabout; Butt's Green Mini-roundabout; Parkview Mini-roundabout.

2 Proposed Development

2.1 SITE LOCATION

The development is located as shown on Figure 2.1 'Site Location Map'.

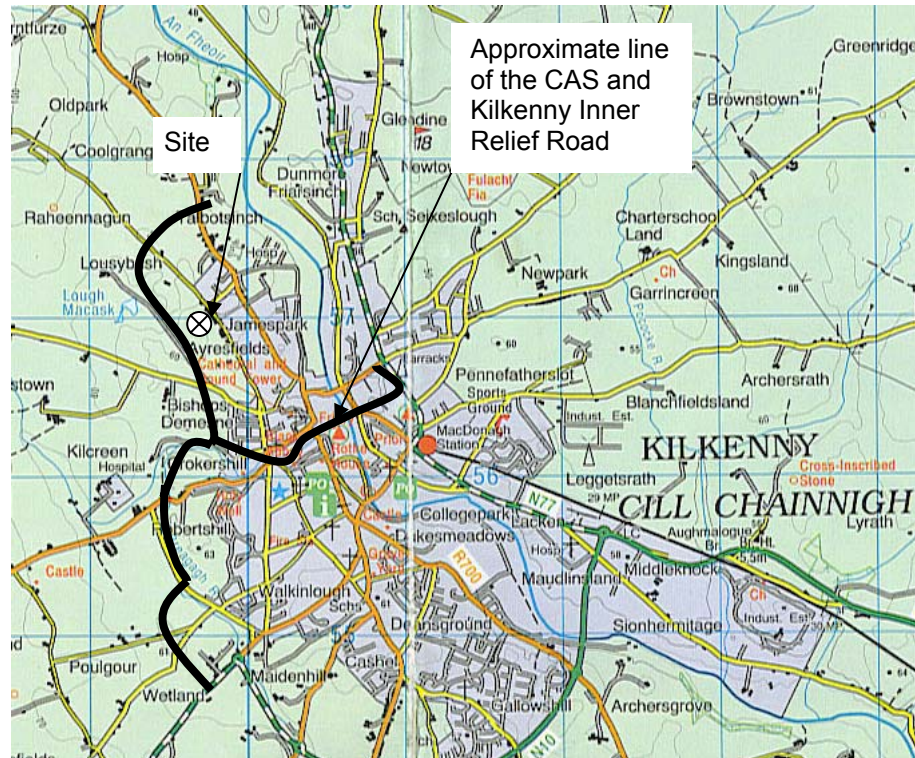


Figure 2.1: Site Location Map

The relative position of the land parcel to existing features is indicated on Figure 2.2.

2.2 EXISTING ROAD NETWORK

The cross-section of Granges Road is generally as follows:

- 1m cyclelane northbound
- 6.5m carriageway
- 1m cyclelane southbound

It is within the 50 Kph speed limit zone, as are all the roads within the study area. On the east side of Granges Road are two schools (one primary, one secondary). The level of traffic likely to be generated by the proposed development is low and its impact will not extend beyond the Butt's Roundabout and the Parkview Roundabout.

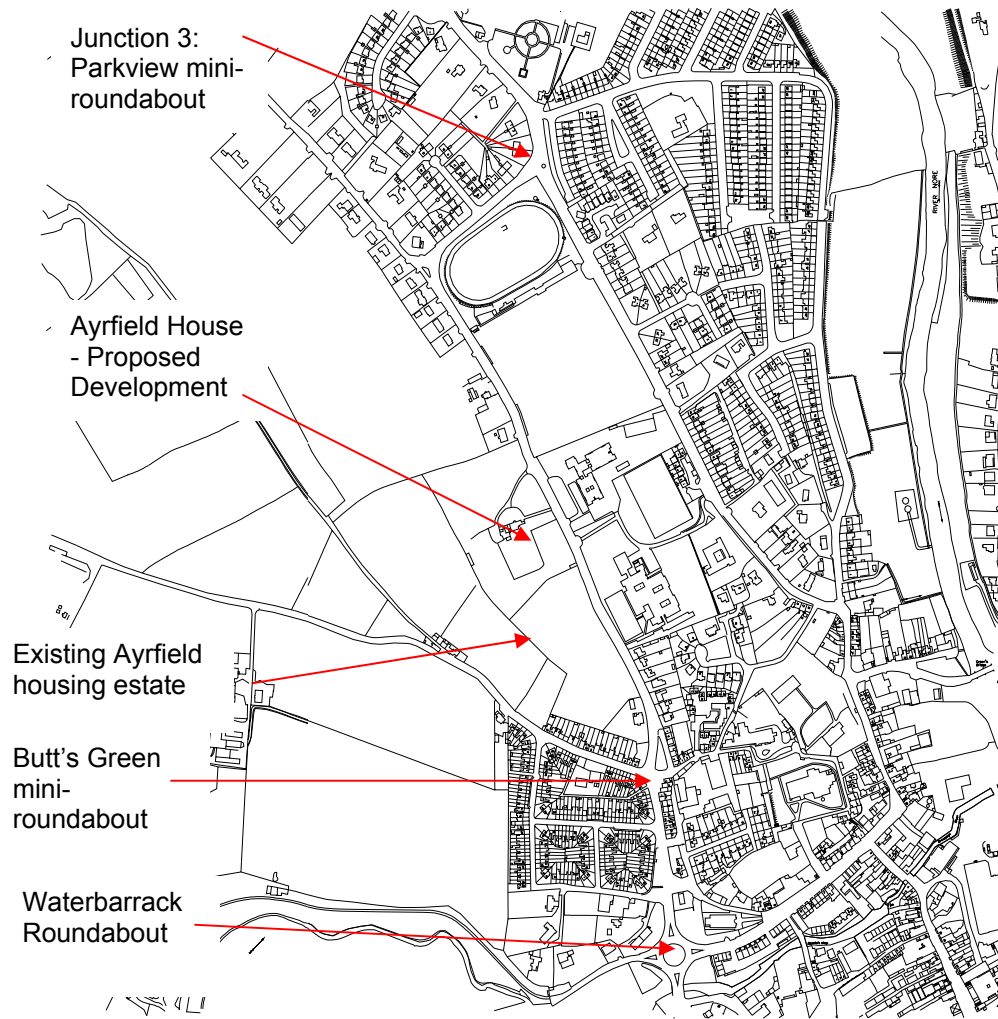


Fig 2.2: Street Map of Grange Road.

2.3 EXISTING LAND USE

Ayrfield House is demolished and the lands are not in use at present. The site is located within the area of the Loughmacask Local Area Plan. The north-eastern area of the site contains mature trees.

2.4 DESCRIPTION OF PROPOSED DEVELOPMENT

Draft sketch layout plans of the development indicate provision of approximately 20 houses on the site, one of which will occupy three acres. The three-acre site encompasses the mature trees. Two accesses are intended: one to serve the single house on the three-acre site and the second to serve the rest of the houses.

The three acre site preserves the existing mature trees within its curtilage. That site is therefore a stand-alone parcel of ground and we are informed that its frontage is not available for the provision of access to the remaining landholding. The extent of the available frontage from which access to the main residential development can be provided therefore extends from the southern boundary of the three-acre site to the boundary of the existing Ayrfield housing estate.

In light of those requirements the Architect's sketch layout of the developments is as shown hereafter:



Figure 2.3: Architect's Sketch Layout

2.5 QUEUE LENGTH SURVEYS

In previous studies we carried out in the area the pattern of queues on the Granges Road was noted:

- On-road set down during school times resulted in queues in the vicinity of the secondary school (the Loreto School). In addition traffic queues while schoolchildren cross at the controlled crossing.
- It is noted that the Loreto School has, since those surveys were done, construct a set-down and parking area within the school and an off-road bus set-down area on the school side of Granges Road, all under planning application PL/ 0775. It is likely that the situation in relation to on-road traffic disruption will be greatly lessened as a result, and the benefits will be apparent when the schools re-open shortly.
- Parents generally drive into the grounds of the primary school to accompany their children to the school door thereby avoiding traffic obstruction on Granges Road.

2.6 PROPOSED ROAD NETWORK IMPROVEMENTS

The Central Access Scheme is the principal road proposal for the City and is intended to be constructed in the short term. The statutory procedures to gain consent to acquire the land required for the road are complete and it is intended that construction will begin at some time in 2014.

The CAS will commence at the Castlecomer Road and terminate at the Waterbarrack Roundabout. Future development links are intended to extend to the Freshford Road and the Callan Road.

Kilkenny County Council is also proposing to develop an extension to the Kilkenny Outer Relief Road. This scheme will commence at the recently constructed Castlecomer Road Roundabout north of Kilkenny City, continue west and terminate at a roundabout with the N10 Waterford Road South of Kilkenny City. We understand no statutory consents have been sought for this scheme and no construction time has been set.

3 Access Strategy

The access strategy is described as follows and is indicated on Figures 3.1 and 3.2 that follow:

- Provide a single access to the site of three acres. The access is located on the north end of the site at the location of the existing access to Ayrfield house
- Provide a grouped access for the remaining of the site (the principal access). It will take the form of a simple T-junction. As previously stated the 3-acre site encompasses the mature trees of the landholding within a separate parcel of land. The frontage available for the access to the main residential development extends south from the 3-acre site.

The principal access was located bearing in mind the following factors:

- Availability of sightlines. Sightlines which accord with the DoT Manual for Urban Roads and Streets can be provided from the proposed access.
- Presence of accesses to schools opposite. The access is located between the schools rather than directly opposite an entry or exit point of either school. This avoids the creation of a crossroads junction which would be undesirable, and largely avoids disruption due to turning conflicts. The primary school has an internal set-down area in front of the school buildings and parents enter the school grounds to park in order to walk their children directly to the classroom. Granted Planning Application (PL 0775) for the secondary school includes significant traffic provisions, as follows:
 - An off-road bus set-down area on the east side of Granges Road
 - Separate access to and egress from the school
 - A car set-down area within the school grounds
 - A teacher and visitor car park.
 - Roadside bollards on both sides of Granges Road to deter roadside parking and set-down.

The layout of these measures is shown on the drawing extract contained in the Appendix. It is an extract from the layout drawing submitted as further information on the planning application. It is expected that these measures will significantly improve the impact of the schools on traffic flow. Their advantages are:

- Set-down will occur within the school grounds.
- The bollards will deter on-road set-down.
- Bus-set down will occur on the east side of Granges Road and those pupils will not need to cross the road (the number of pedestrians crossing was observed to be a major disruption to the mainline flow).
- The access is located so that it is outside the area of right-turn stacking associated with both school accesses. Primary school traffic can therefore continue to stack along the frontage of the Ayrfield site without interference from a residential access. The secondary school traffic stacks along the Granges Road towards the town and does not impact on the frontage of the Ayrfield site.
- A development of approximately 19 houses is small and will not generate a significant volume of traffic (traffic generation is discussed in a later chapters). In addition the greater number of trips will be towards the City and the CAS (when constructed) and such trips will normally entail a left-turn (rather than a right-turn) to the access (this is corroborated by the traffic survey information in the following section). Left turns have negligible impact on junction capacity.

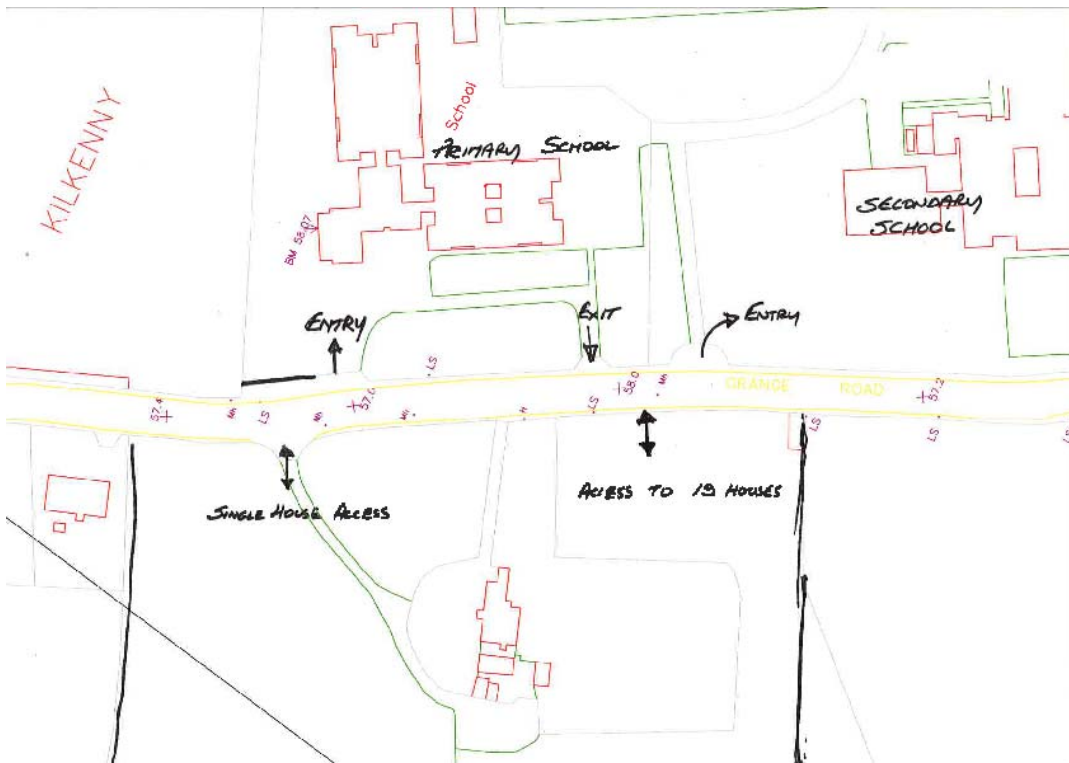


Figure 3.1 Access Locations



Figure 3.2 How Access Locations Facilitate Right-Turns to Schools Opposite

4 Zoning

The clip from the Zoning Map of the City & Environs Development Plan 2008-2014 shows that the site has residential zoning (buff shading) but that a band running west-east through the site has Recreation, Amenity and Open Space zoning (green).

In discussions with Reddy Architecture and Urbanism we were informed that the open space zoning was intended as an area to incorporate the existing mature trees within the site, essentially protecting them; it was not intended to be a reservation in which a future road connection from Lousybush Lane to Granges Road could be provided. It could however be used as a link by pedestrians and cyclists.

In that context the repositioning of the green area from the centre of the site to its southern boundary (as shown on Figure 2.3 Architect's Sketch Layout) does not give rise to any traffic and transportation issues. The repositioned green area is equally useful to pedestrians and cyclists as that indicated on the zoning plan.

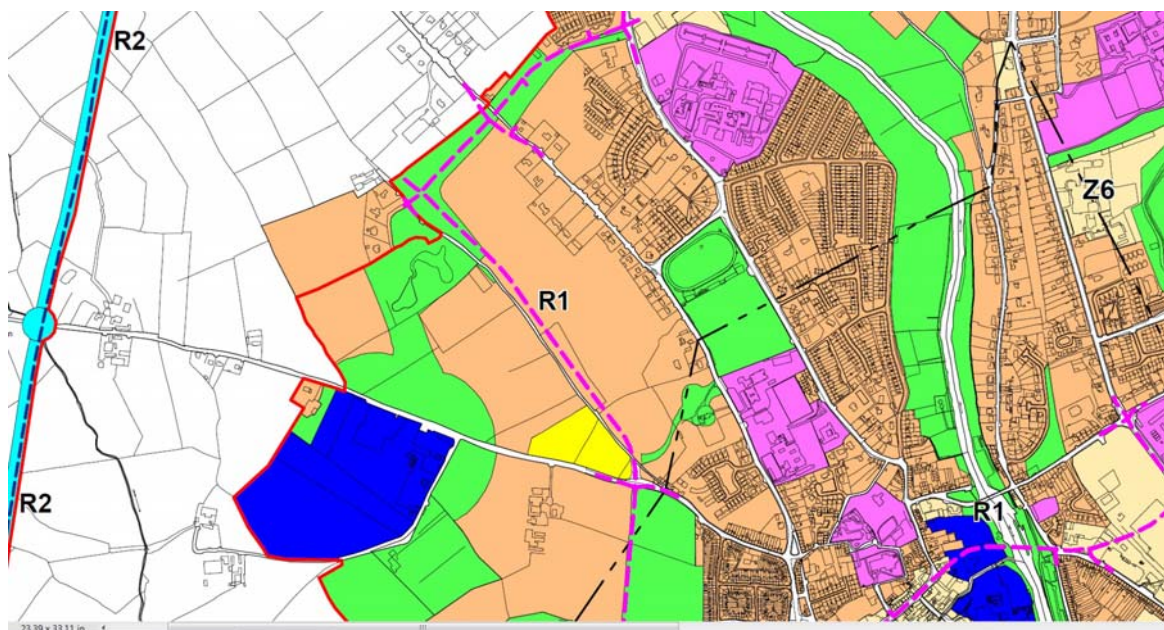


Figure 4.1 Clip from Kilkenny City & Environs Development Plan 2008-2014 Zoning Map

5 Traffic Capacity

5.1 TRIP GENERATION

Information from previous studies (and taken at that time from the Kilkenny County Council SATURN Traffic Model) in relation to the trip generation rates for residential development and these is shown in the table below:

Residential Units Trip Rates from the SATURN Model

	Trips to development	Trips from development
AM Peak	0.17	0.60
PM Peak	0.70	0.30

The predicted trips to and from the housing development would be:

Trip Generation - 20 Residential Units

	Arrivals to development	Departures from Development
AM Peak	3	10
PM Peak	14	6

5.2 TRIP DISTRIBUTION AND ASSIGNMENT

Information received from the SATURN Model provided the directional split of traffic to and from Granges Road as listed below:

AM Peak:

- From the development, 7% will travel to Granges Road North and 93% will travel to Granges Road South
- To the development, 80% will arrive from Granges Road South and 20% will arrive from Granges Road North

PM Peak:

- From the development, 35% will travel to Granges Road North and 65% will travel to Granges Road South
- To the development, 99% will arrive from Granges Road South and 1% will arrive from Granges Road North

This distribution pattern has been applied to traffic flows that would be generated by the main residential development (approximately 19 houses). This gives the following rounded predicted turning movements at the proposed main development access onto Granges Road:

Predicted Turning Flows from the development

	Right Turn from the development access	Left Turn from the development access	Total
AM Peak	9	1	10
PM Peak	4	2	6

Predicted Turning Flows to the development

	Left Turn into the development access	Right Turn into the development access	Total
AM Peak	2	1	3
PM Peak	14	0	14

5.3 CAPACITY ASSESSMENT

Traffic flows were available for surrounding junctions for the AM and PM peak assessment periods from our past studies in the area in 2008. Information was obtained at the following locations:

- the Waterbarrack roundabout – Junction 1
- the Butt’s Green mini roundabout – Junction 2
- the Parkview mini-roundabout – Junction 3

The traffic flows were tested in the assessment years using TRL junction capacity software to determine the operational characteristics of the junctions in capacity terms.

The following table shows the predicted RFC values, average queue lengths, average vehicle delay and total delays for the existing and proposed junctions for both the a.m. and p.m. peak periods. RFC is Ratio of Flow to Capacity and is a measure of the traffic loading on an entry to a junction relative to the capacity of that entry.

The summary predictions shown in the table indicate that at the time of the studies the junctions were operating well within capacity in both peak traffic periods. Since that time traffic volumes have either remained static or, in many cases, have decreased in line with decreasing economic activity. The existing junctions therefore have sufficient capacity to receive the low level of traffic that would be generated by the proposed development. Significant additional transport infrastructure is intended to be provided in this area in the future, in the form of both the CAS and its development extensions, further adding to the receiving capacity of the overall road network in the area.

2008 AM Peak		Predicted RFC Value	Average Queue (vehicles)	Queue delays (secs./veh.)	Total Delay (veh./hrs.)
Junction 1	Butt's Road	0.353	1	3	1.79
	Dean Street	0.190	0	2	
	Dominic Street	0.449	1	4	
	Waterbarrack Rd	-	-	-	
Junction 2	Granges Road	0.330	0	5	1.6
	Loretto View	0.036	0	5	
	Butt's Road	0.331	0	4	
	Lord Edward St	0.269	0	5	
Junction 3	Freshford Rd South	0.180	0	0	2.71
	Granges Road	0.390	1	1	
	Freshford Rd North	0.630	2	2	

2008 PM Peak		Predicted RFC Value	Average Queue (vehicles)	Queue delays (secs./veh.)	Total Delay (veh./hrs.)
Junction 1	Butt's Road	0.295	0	3	1.92
	Dean Street	0.327	0	3	
	Dominic Street	0.445	1	4	
	Waterbarrack Rd	-	-	-	
Junction 2	Granges Road	0.397	1	5	2.94
	Loretto View	0.149	0	5	
	Butt's Road	0.639	2	7	
	Lord Edward St	0.168	0	5	
Junction 3	Freshford Rd South	0.490	1	1	3.30
	Granges Road	0.600	1	1	
	Freshford Rd North	0.410	1	1	

6 Vulnerable Road Users

6.1 PEDESTRIANS

Pedestrian links are provided to the proposed development and pedestrian movement will be catered for by an existing 1.5m to 2.0m wide footpath along Granges Road. There are two pedestrian crossings: one north of the schools, the other to the south. The crossing to the south is located approximately 57m south of the existing Ayrfield estate entrance and the crossing to the north is located approximately 90m north of the existing Ayrfield House entrance.

6.2 CYCLISTS

There is an existing 1m wide on road cycle lane provided on both sides of Granges Road. No special provisions are required for cyclists within the proposed development; the traffic loading is sufficiently light for the roadscape to be shared by users.

7 Conclusions

The conclusions of this report are as follows:

- The volume of traffic that would be generated by the development is small: 13 movements in the AM peak (the AM peak, rather than the PM, is the critical peak assessment period).
- The existing road network has spare capacity sufficient to serve the proposed development.
- Significant additional road infrastructure is planned, in the form of the CAS and associated development roads, which will provide a significant increase in road capacity.
- The recent upgrading of set-down and parking at the Loreto Secondary School will have a positive impact on regulating traffic flow on Granges Road.
- The proposed access arrangement is a best-fit with the school access opposite and accommodates right- turning requirements. It is considered adequate for the numbers of turning movements associated with the development. The 3-acre quadrant in the northeast of the overall site is retained free of development in order to preserve mature trees therein. Therefore, the frontage within which an access to the 19 houses could be located is that which extends south from that 3-acre parcel.
- The repositioning of the public space zoning is not considered to have traffic and transport implications.
- The needs of vulnerable road users are catered for by the existing road network.

APPENDIX – DRAWING



Loreto School - Extract from the Layout Drawing

N.T.S.