

23002-01-001

# Draft Loughmacask Master Plan

## Review of Traffic

for

Kilkenny County Council



February 2023

**ROADPLAN**

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## **1 Introduction**

Kilkenny County Council (KCC) requested an opinion from Roadplan Consulting on the traffic and transport aspects of the proposed Loughmacask Masterplan Draft July 2022 (the Masterplan) following feedback received during Public Consultation which raised concerns relating to reductions in the level of service of the roads network that could potentially result from additional traffic associated with the various residential and other developments proposed under the Masterplan.

The scope of the report to be provided was generally described as follows:

- A high-level assessment of TIA's submitted with planning applications, including those granted along the Tullaroan Road, the Grange's Road and Freshford Road.
- Evidence-based opinion on the potential impact of any future development on the existing roads infrastructure and the Butt's roundabout in particular.
- Establish if the existing roads infrastructure has capacity for additional traffic arising from the Masterplan.
- A high-level opinion on the appropriate phasing, relative to the expected roll-out of infrastructure.

## 2 Methodology

The methodology used in compiling this report was generally as follows:

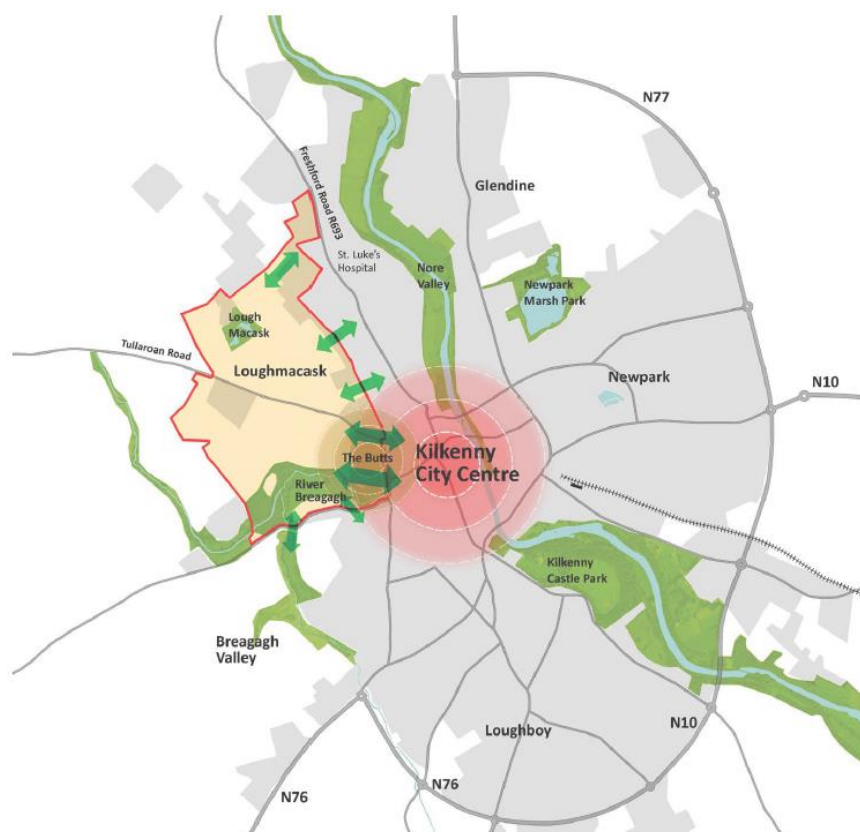
- Data collection: the following information was obtained:
  - a schedule of the predicted developments (expanded detail to supplement the zoning map):
    - type of development expected
    - likely density of development
    - when the development would be expected to happen
  - a schedule of the planned supporting roads infrastructure:
    - description, including likely connectivity
  - a copy of the Draft Loughmacask Masterplan
  - a list of any developments external to the area that could impact on traffic conditions in Loughmacask.
  
- A desk-study of information available from Traffic Impact Assessments of past planning applications was made, including associated reports of An Bord Pleanála, where applicable.
  
- A site visit was made at peak times to photograph existing traffic conditions, queues and congestion.

Up-to-date traffic information was unavailable to re-run past traffic models. This report therefore contains an opinion based on the information in previous reports coupled with site observation, rather than a re-analysis of traffic impacts using newly-gathered traffic figures.

### 3 The Loughmacask Masterplan

The Loughmacask Masterplan Draft July 2022 contains a description of the development intended to occur in the Loughmacask area over the period of the Masterplan and an outline of the infrastructure to be built in support of the intended development.

The area covered by the Masterplan and its location relative to the city is shown on the following figure.



*Figure 1 – Loughmacask Masterplan Area*

The west side of the city is the less developed side. This situation has been changing over the last twenty years with the construction of relatively large areas of residential development in the western environs, a process that slowed during the economic downturn but has resumed in recent years.

Development has spread northwards from the western environs to the Loughmacask area and the intention of the Masterplan is to guide and steer that development so that the area supports existing communities and fosters new ones.

The quantum of development envisaged by the Masterplan in the Loughmacask area is as follows:

- *“It is estimated that the Loughmacask development lands have the potential to deliver 904 residential units”.*

The masterplan denotes certain areas of land as Strategic Reserve, and explains that:

*Areas of ‘strategic reserve’, will provide for the expansion of the city beyond the period of the Development Plan (i.e. post-2027).*

The nature of development that may be undertaken on the Strategic Reserve lands is not stipulated in the masterplan, nor is its density. However, further clarification was provided to us by Kilkenny County Council as follows:

*The Masterplan area includes lands that are zoned both “Residential” and “Strategic Reserve” in the current Kilkenny City and County Development Plan 2021-2027. Under the current Development Plan lands zoned “residential” (including historic permissions under construction) can accommodate approximately 900 units, whereas Strategic Reserve lands, which cannot be developed during the lifetime of the current plan can potentially accommodate up to 700 units should the zoning be amended as per the Masterplan proposal in future Development plans.*

A population growth target of 30% between 2016 and 2040 (to 34,500 persons) is set out for Kilkenny City. The Development Plan has formalised this target through Objective 4G. The Masterplan states how the provision of housing for the increased population is planned as follows:

*“The Core Strategy aims to deliver 30% of this new housing within the existing built-up footprint (i.e. within the CSO city boundary), with the remainder to be accommodated on the periphery, in the Breaghagh Valley and Loughmacask areas.”*

Other development proposed under the Masterplan:

- *“... a new school located between Lousybush Lane and Dunningstown Road.”* This is the relocated CBS secondary school.
- *“... a Local Centre .....(described as) ... retail and commercial uses to serve the community of Loughmacask and surrounding areas”.* Our understanding is that this retail centre is to be a size that would have a local catchment and would not be destination shopping attracting trips from outside the northwest of the city.

The Masterplan estimates that about a third of the residential development on new residential zoned lands (24.37Ha) in Loughmacask is already committed:

*"... planning permission exists for approx. 300+ houses..."*

However, the current status of committed development has been confirmed by Kilkenny County Council planning department and is stated in this report in Chapter 6 Permitted Developments.

The Masterplan points out that Loughmacask is exceptionally well positioned relative to the city centre (the proximity is evident in Figure 1 above):

- *"The lands ... are within 300 meters of Irishtown... and are exceptionally well positioned. (and suited to) ..... the 10-minute city concept"*

For that reason, the Masterplan places a very strong emphasis on sustainable and active mobility, referring to the following:

- *"The over-arching character of Loughmacask will be of a high quality, walkable, cycle friendly and connected new quarter of Kilkenny City."*
- *"Vision for Loughmacask as a walkable residential quarter."*

The objectives in respect of car-based travel are expressed as follows:

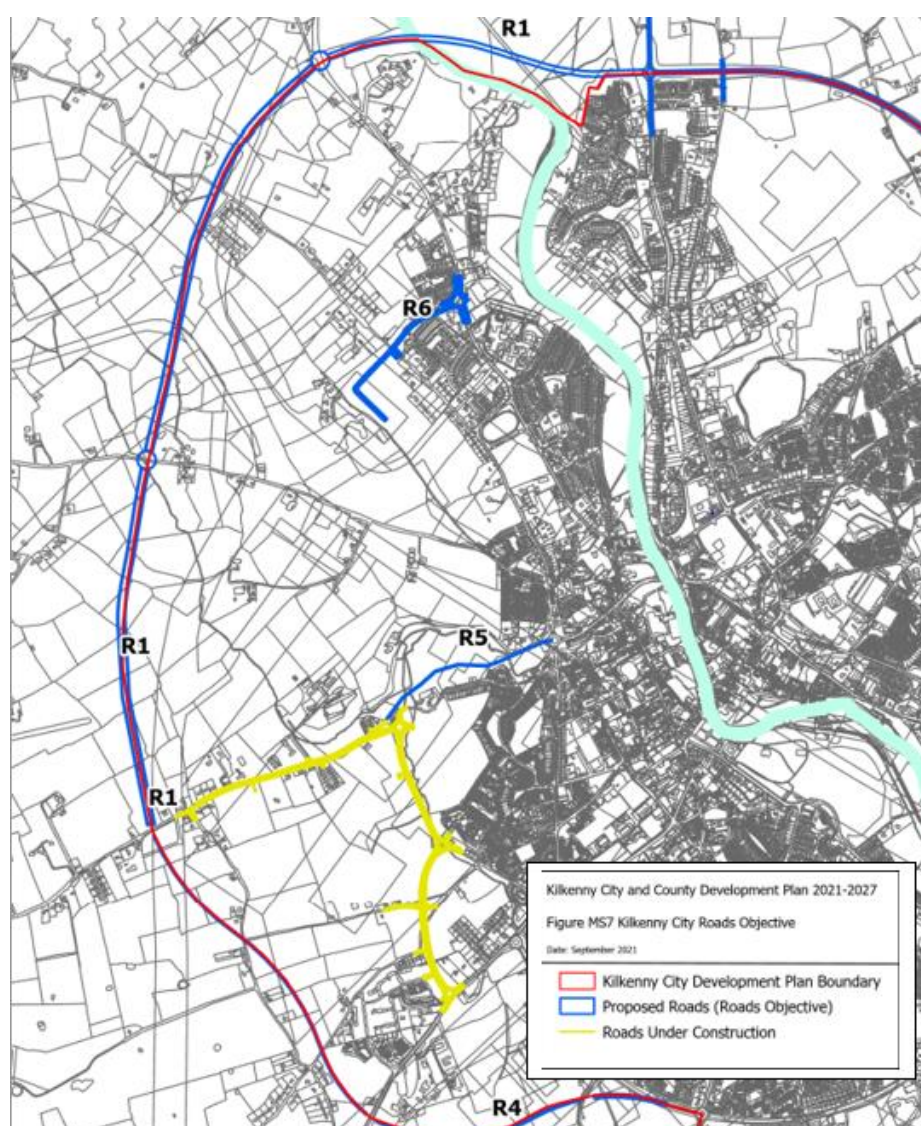
- *".....reducing private transport dependency....."*
- *"..... active open spaces and amenity areas providing safe routes throughout Loughmacask that should substantially eliminate the need for local car journeys."*

The Masterplan acknowledges that existing streets carry high levels of through traffic and that vehicular access will be needed to Loughmacask. The Masterplan incorporates the following roads objectives of the Development Plan

- *"Road development objectives of potential pertinence to the Masterplan lands include the following:*
  - *Objective R1: "Reserve the proposed line of the western by-pass for the city from the Castlecomer Road to the Waterford Road free from development, including for a river crossing and seek approval from An Bord Pleanála for Phase 1 of the Western By-pass, the Kilkenny Northern Ring Road Extension."*



- *Objective R5: "Reserve the line of Phase 2 of the Central Access Scheme from the Waterbarrack roundabout to the roundabout on the Kilcreene Road." This is labelled Future Road on 4.3 Fig*
- *Objective R6: "Provide for a road connection from the Freshford Road to the site reserved for a proposed secondary school within the Loughmacask masterplan area."*
- *Objective R7: "To progress the route selection, planning and development of a road connecting the R695 Kilmanagh Road to the R693 Freshford Road."*



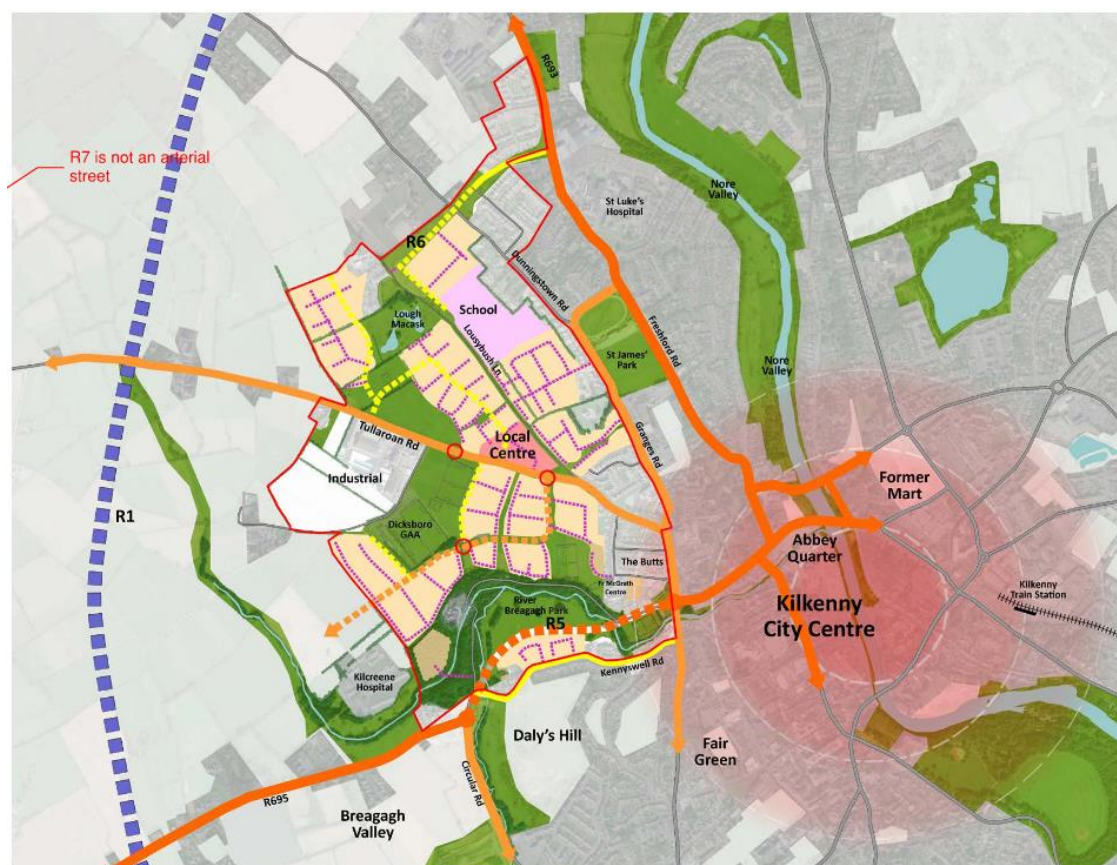
*Figure 2 – Roads objectives*

In relation to access to the Loughmacask area the masterplan states:

- *".....the primary vehicular access will be from the east or the west into but not through Loughmacask."*
- *"The eastern and southern edges adjoin the existing city environs and connections to and from the city will be developed to support and promote walking, cycling and access to local bus services and other land uses."*
- The Masterplan clarifies that: *...The route of this road ....(R7, connecting the R693 Freshford Road to the R695 Kilmanagh Road).....will likely run to the west of the Loughmacask area, thereby facilitating the primary vehicular access to Loughmacask from the west, rather than from the city centre. Local access will continue to be provided along the existing street network with access points from these developed so as to ensure high quality, attractive and safe pedestrian and cycle mobility within the Loughmacask neighbourhood and the wider City.....Phased implementation of additional road infrastructure in accordance with Objective R7 ..... will facilitate phased changes in traffic movements, including re-routing HGV traffic from the Tullaroan and Granges Roads to the bypass. The optimal route would run to the west of the Loughmacask area, thereby facilitating the primary vehicular access to Loughmacask from the west, rather than from the city centre. In the interim primary vehicular access will continue to be provided along the existing street network with access points from these developed so as to ensure high quality, attractive and safe pedestrian and cycle mobility within and between Loughmacask neighbourhood and the wider City.*
- *Into the future, vehicular access will be provided principally from the west and subject to route options assessment may be from the Western Bypass or from a direct road link from the R695 in the shorter term. Additionally, local access points will be provided from the Tullaroan, Dunningstown and Granges Roads. Through traffic will be designed out so as to ensure a high quality and safe walking environment. Traffic management and modification of streets, including the additional route to the west, will ultimately eliminate the majority of through traffic and in particular, HGVs.*
- The Masterplan contains the following reminder ..... *As part of the Loughmacask masterplan process, the line of the Central Access scheme within the masterplan area is under review*

The Masterplan offers certainty in respect of the following vehicular transport measures:

- Primary vehicular access to Loughmacask is likely to be from the west in the long term.
- The eastern and southern boundaries contiguous with the city centre development zone will primarily serve walking cycling and public transport; however, they will also provide secondary access for vehicles.
- Through vehicular traffic and HGV's will be diverted from both Loughmacask and the Granges Rd. onto the out-of-city road network to be constructed west of Loughmacask.
- R7, if constructed, may be located to the west of Loughmacask.



*Figure 3 – Roads Hierarchy*

Other Roads referred to in this report are:

The Central Access Scheme (CAS): The scheme connects the Callan Road (N76) to the Freshford Road (R693) and includes a connection from the Waterbarrack through to the Castlecomer Road (N77) incorporating a river crossing. It comprises three phases:

- Phase 1: From Castlecomer Road to Dean Street, including the River Nore crossing (Phase 1 is complete)
- Phase 2: The east-west link connecting the western environs road system to the existing road network at Waterbarrack roundabout and East-West Link Road from Waterbarrack Roundabout to the Circular Road.
- Phase 3: (This section was deleted by the City and County Development Plan 2021 -2027.) From the proposed Kenny's Well Roundabout to the Freshford Road Roundabout (the Loughmacask North Link Road/Loughmacask Road connecting the proposed Phase 2 East-West Link Road to the Freshford Road roundabout).

The Western Bypass completes the ring road of Kilkenny city and extends from the existing roundabout at the Castlecomer Road (N78) westwards to the Callan Road (N76) and onwards to the Waterford Road roundabout. The length of this proposed road is approximately 7km and a line has been reserved for its future delivery.

The Kilkenny Northern Ring Road Extension connects the Castlecomer Road at Junction 10 to the R693 Freshford Road, north of Kilkenny City Centre. The length of the proposed scheme is approximately 1.5km. The project includes for the provision of a bridge crossing over the River Nore and pedestrian and cyclist facilities are incorporated along the City side of the scheme.

## 4 Traffic Conditions

On Thurs 12th January the site of the existing Butts Roundabout (the junction of the Tullaroan Road and the Granges Rd) was visited during the AM peak (between 8:00 and 9:00) and the PM peak (16:00 to 17:15), and the following observations on traffic were made:

- The AM visit:
  - In the period before 8:10 the roundabout was free of traffic queues and was not congested
  - After 8:10 there was a higher percentage of buses in the traffic mix; these are likely to be buses associated with the schools and were full-size buses and a large number of minibuses.
  - After that time traffic backed up from the Waterbarrack roundabout to the Butts roundabout and through the Butts Roundabout onto Granges Road so that there was stationary southbound traffic on Granges Road
  - Soon afterwards Granges Road was fully queued in the other direction, with the queue extending from the schools. There was also a traffic queue (5 vehicles or so) on the road from the Loreto View.
  - Queue Max of about 15 vehicles was observed on the Tullaroan Road and this varied between 5 and 10 vehicles over the period before 9am.
  - Tullaroan Road traffic also had the advantage of more breaks in traffic than did the minor road opposite. Drivers queueing in the inbound direction were reluctant to let people on at the Loreto View entry and that increased driver frustration.
  - Traffic flow into the roundabout was restricted by congestion on the roundabout exits.
  - There was no time during the congested period after 8am and before 9am when the queue on the Tullaroan Road cleared. This is an important occurrence to note.
  - There is a clear need for pedestrian facilities across the arms of the Butts Roundabout. Pedestrians were seen to find it very difficult to cross the junction.
  - Traffic volumes were getting lighter at the quarter of an hour between 8:45 and 9:00.
  - By 9am the outbound lane is freer; before nine it was queued.
  - By 9am the Tullaroan Road arm was clear of queued traffic for the first time. The Loreto View arm was also clear.
  - There is a significant difference from 9am. Essentially no queue was present on the Tullaroan Road and there was no queue on

Granges Road outbound direction; however, the inbound direction was still queued.

- Once the queue in the outbound direction (Granges Road) ended by 9 there was no problem with the Tullaroan Road because drivers have priority over inbound traffic at the roundabout
  - By 9:10 there was no inbound queue. Traffic was clear in total and flowing normally with normal gaps and the roundabout was operating in an uncongested condition.
- 
- The PM visit:
    - The site was visited from 16:00 in the afternoon, the period at which the secondary school pupils are collected.
    - No continuous congestion was seen at the junction at this time.
    - There is heavy traffic associated with the schools, but queues tended to discharge.
    - No congestion was noted on the Tullaroan Road arm at this time and the short queues that did form discharged quickly.
    - As the hour progressed, stationary traffic backing back from the traffic signals in Dean Street caused the Water Barrack roundabout to become congested and traffic could not get through from the Granges Road.
    - It was only the inbound direction that was congested, but that congestion was significant and extended in the out-of-city direction past the Butts Roundabout.
    - The outbound direction operated better. There was local congestion at the school but there was no hold up of traffic backing back to the Butt's Roundabout.
    - By 4:30pm congestion had eased and at 5pm there was no queueing on any of any arms.
    - By 5:15 the traffic had become heavier again at the roundabout. There was continuous traffic inbound on the Grange's Road through the roundabout and outbound on the Grange's Road but all was generally flowing okay.
    - There was a significant flow of traffic turning right onto Loreto View, possibly to avoid the congestion at the traffic signals at Dean Street

## 5 Past Studies – Planning Applications

CBS School:

The intended layout of the relocated CBS secondary school is shown in the following images and contains the school building with parking, an extended access road from the Freshford Road crossing the Dunningstown Road and forming a traffic signal junction with that road.

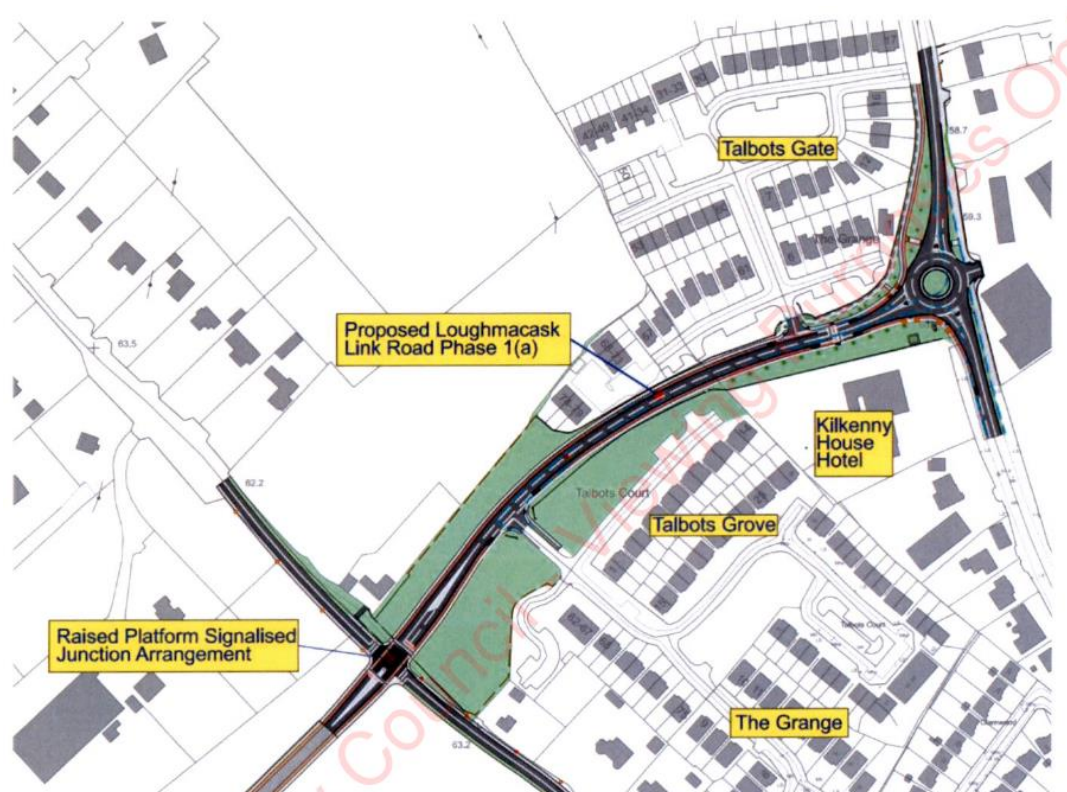


Figure 3-1 - Proposed Junction Upgrade on Freshford Road / Talbot's Gate Road

### Figure 4 – School: overall plan

The traffic impact assessment for this development was restricted to the assessment of two junctions:

- the proposed Freshford Road / Talbot's Gate roundabout;
- the proposed Dunningstown Road / Talbot Gate Road signalised junction.

The impact on the Butts Roundabout arising from the proposal was not assessed by the TIA. The traffic impact assessment concluded that both junctions would operate acceptably with the school in place. No information is provided on predicted traffic impacts in other areas of the Masterplan.



Figure 4-2 - Walking/Cycling Distance to Proposed School

Figure 5 – School: walking connections

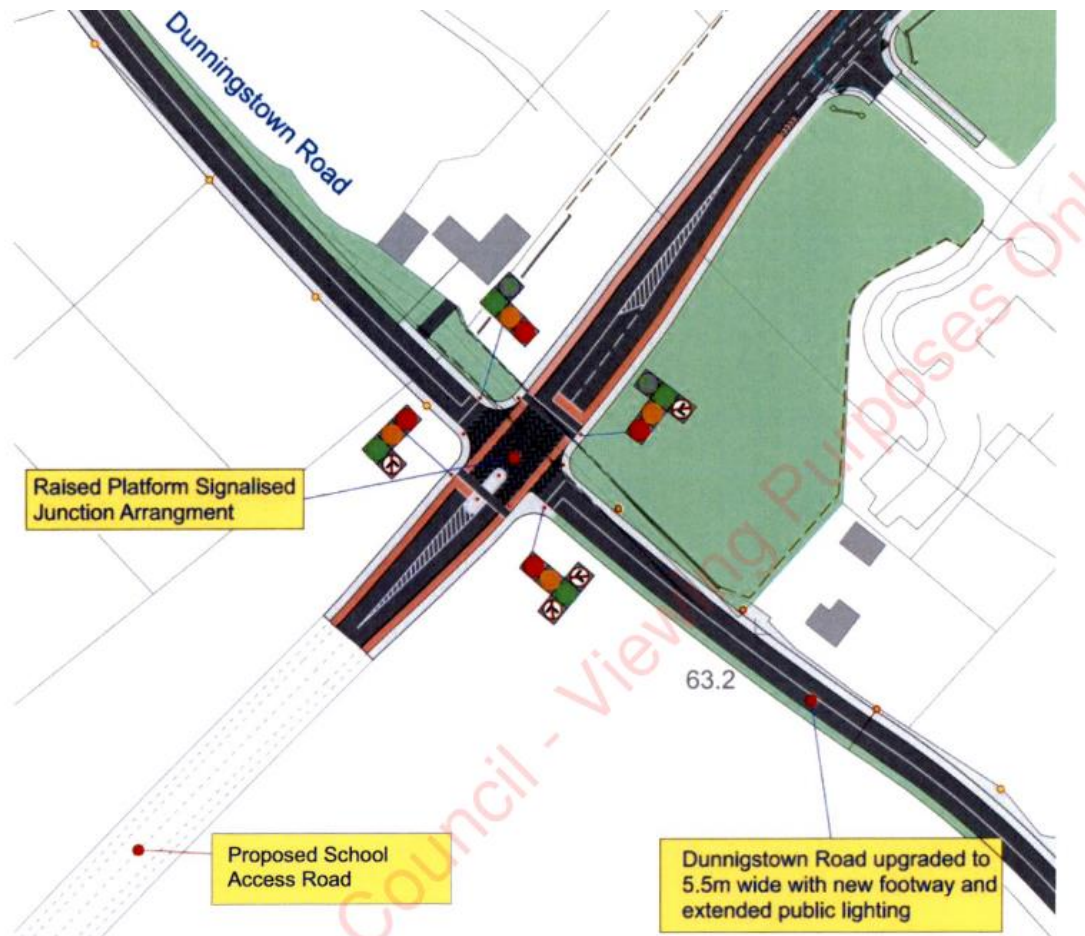


Figure 6 – School: Access



**Moore site:**

This traffic impact assessment considers the Butts roundabout, and it predicts the characteristics in traffic capacity terms of the roundabout in various years with and without the proposed development.

A table of capacity values for the various years provided in the TIA report is reproduced below and shows that the roundabout was assessed to operate close to its ultimate capacity (and generally in the region of its practical capacity) in the assessment year 2021 in the AM peak, and with traffic demand levels below its capacity in the PM peak. This is generally as observed during the site visit for this report.

It needs to be acknowledged however that the traffic flows used to model the performance of the junction were taken from counts of the actual volumes that traveled through the junction. Those volumes are less than the demand flow simply because traffic cannot get through the roundabout because of congestion on the exits. The demand flow is therefore greater than the counted flow.

It is suggested in the TIA report that upgrading of the junction planned by Kilkenny County Council would improve the throughput of traffic. This may not be the case because it is not the junction itself that is restricting traffic movement at present; it is congestion extending back from the road network connecting to the junction that is stopping traffic getting onto the junction. Improvement of the junction would not remove congestion on the exits from the junction and would not, in the continuing presence of that congestion, increase the junction's throughput. Traffic signals could however reapportion available capacity between the arms, perhaps providing more capacity to the Tullaroan Road entry at the expense of the Grange's Road.

However, the analysis does indicate that the junction is working close to its capacity at present (88% in the AM and 61% in the PM).

	AM				PM			
	Queue (PCU)	Delay (s)	RFC	LOS	Queue (PCU)	Delay (s)	RFC	LOS
<b>2021 + Com Dev</b>								
Granges Road	6.7	34.19	0.88	D	1.6	10.45	0.61	B
Loreto View	2.7	59.94	0.75	F	0.4	12.43	0.29	B
Butt's Green	3.8	18.94	0.79	C	5.1	24.85	0.84	C
Lord Edward St	1.7	21.53	0.63	C	0.5	10.01	0.31	B
<b>2021 + Com Dev + Granges Rd Dev</b>								
Granges Road	8.6	42.3	0.91	E	1.7	10.86	0.62	B
Loreto View	3.3	73.83	0.8	F	0.4	12.83	0.29	B
Butt's Green	4	19.85	0.8	C	6.1	28.93	0.87	D
Lord Edward St	1.8	22.35	0.64	C	0.5	10.44	0.33	B
<b>2036 + Com Dev</b>								
Granges Road	24.8	103.15	1.02	F	2.3	13.7	0.7	B
Loreto View	14.3	259.2	1.12	F	0.6	16.08	0.37	C
Butt's Green	7.7	35.21	0.9	E	14	60.45	0.96	F
Lord Edward St	3.7	42.28	0.8	E	0.6	12.08	0.38	B
<b>2036 + Com Dev + Granges Rd Dev</b>								
Granges Road	33.6	130.95	1.05	F	2.5	14.51	0.71	B
Loreto View	15.9	293.98	1.15	F	0.6	16.71	0.38	C
Butt's Green	8.3	37.67	0.91	E	18.4	75.69	0.99	F
Lord Edward St	3.9	44.46	0.81	E	0.6	12.55	0.39	B

**TABLE 3.2: SUMMARY OF EXISTING GRANGES ROAD / LORD EDWARD STREET / BUTT'S GREEN / LORETO VIEW ARCADY RESULTS**

*Figure 7 – Moore TIA*

### Clancy Development

The traffic impact assessment carried out for on this development is similar to that of the Moore development and also indicates that the Butts roundabout carries traffic loading that is close to its capacity at present. The 2020 assessment, based on traffic counts carried out in 2019 (pre-COVID), predicted that the roundabout is operating at 78% in the AM and 59% in the PM.

#### **Granges Rd / Loreto View / Butts Green / Lord Edward St Roundabout – Capacity Assessment**

Year	Period	Approach	Predicted RFC value	Avg Queue (vehicles)	Queue delay (secs./veh.)
2020 Base Flows	AM Peak	Granges Rd	0.78	3	20
		Loreto View	0.62	2	34
		Butts Green	0.53	1	6
		Lord Edward St	0.64	2	21
	PM Peak	Granges Rd	0.59	1	10
		Loreto View	0.25	0	11
		Butts Green	0.55	1	6
		Lord Edward St	0.29	0	10

*Figure 8 – Clancy TIA*

### Cantwell and GMB developments

The TIAs that were carried out on these separate sites were compiled in 2010 at a time when the traffic model of Kilkenny city had been updated and there was an intention to complete the CAS scheme through the western environs and Loughmacask with a tie-in to the Water Barrack by 2014. The traffic model contained predictions based on the rerouting of traffic from the Grange's Road and the Tullaroan Road onto the new section of CAS road through Loughmacask. The resulting reduction in traffic on the Butts Roundabout was such that the developments could be sustained without significant impact in road traffic terms.

However, the CAS has not yet been built and there is no other relieving road infrastructure constructed in the Loughmacask area. The predictions of the traffic model (predictions dating from 2010) are therefore not now relevant.

### An Bord Pleanála

The Board expressed the opinion that phases two and three of the CAS have the purpose of facilitating development in Western Environs and Loughmacask. The Board Direction Ref: HA.0014/KA0011 stated that:

*"The primary purpose of those parts of the proposed road scheme identified as Phases 2 and 3, viz, the link to the Western Environs and Loughmacask is to facilitate large scale future development in those areas."*

However, Phases 2 & 3 of the Inner Relief Road / Central Access Scheme as they relate to the development of lands at Loughmacask were rejected by the Board in its determination of ABP Ref. No. PL10.HA0014 (relating to the CAS) on the basis that the link to the Western Environs and the Loughmacask Road would be premature pending progress on that part of the Kilkenny Outer Ring Road between the Castlecomer Road and the Freshford Road (including a new River Nore crossing) which would alleviate traffic pressure on the city centre, especially from heavy goods vehicles.

The Board expressed the opinion that another bridge north of the city would provide an alternative route to which traffic, including development traffic generated by Western Environs and Loughmacask could distribute. The Board stated that:

*"The ring road between the Castlecomer Road and the Freshford Road (including a new river Nore crossing) which would obviate the need for traffic arising from the development of these areas (Western Environs and the*

*Loughmacask Road) to traverse the city centre..... and .....would alleviate traffic pressure on the city centre, especially from heavy goods vehicles."*

**From the Inspector's report on ABP- 306491-20: Phase 1 of a residential development consisting of the construction of 40 no. dwelling houses: Tullaroan Road, Loughmacask,**

The Inspector noted that development in Loughmacask is contingent on new roads infrastructure.

*" It has previously been recognised that the local road network is incapable of accommodating any significant development of those lands to the northwest of the city and, in this regard, it is apparent that the development of the wider landbank of which the subject site forms part is contingent on the delivery of a new Inner Relief Road (referred to as the Central Access Scheme) which will act as a distributor road for the area and a relief road for the city."*

Phase 3 of the CAS was seen by the Inspector as the necessary road infrastructure:

*"More specifically, Phase 3 of the proposed Central Access Scheme (CAS) will extend from the proposed Kenny's Well Roundabout to the Freshford Road Roundabout .....thereby effectively providing an inner western by-pass of the city and opening up a substantial area of zoned lands to the west of the city for development."*

The strategic role of Loughmacask in the orderly development of the City was noted:

*" However, notwithstanding its refusal of Phases 2 & 3 of the Central Access Scheme, and concerns that the development of the LAP lands would be premature in the absence of a timeframe for the implementation of the IRR / CAS and progress on the ring road between Castlecomer Road and the Freshford Road (including a new River Nore crossing), the Board opted to grant permission for ABP Ref. Nos. PL10.238383 & PL10.238542 on the Loughmacask lands (including the subject site) on the basis that the potential impact of traffic arising from those residential developments on the local road network was considered to be acceptable having regard to the phasing of the development, the associated road improvement works proposed, and the strategic role of the Loughmacask area in the growth of Kilkenny City and its environs."*

## 6 Permitted Developments

The following extract from the masterplan (figure 6.16) illustrates where development has been permitted in the area. Sites with permissions are outlined with a black dashed line and are numbered 1 to 6.

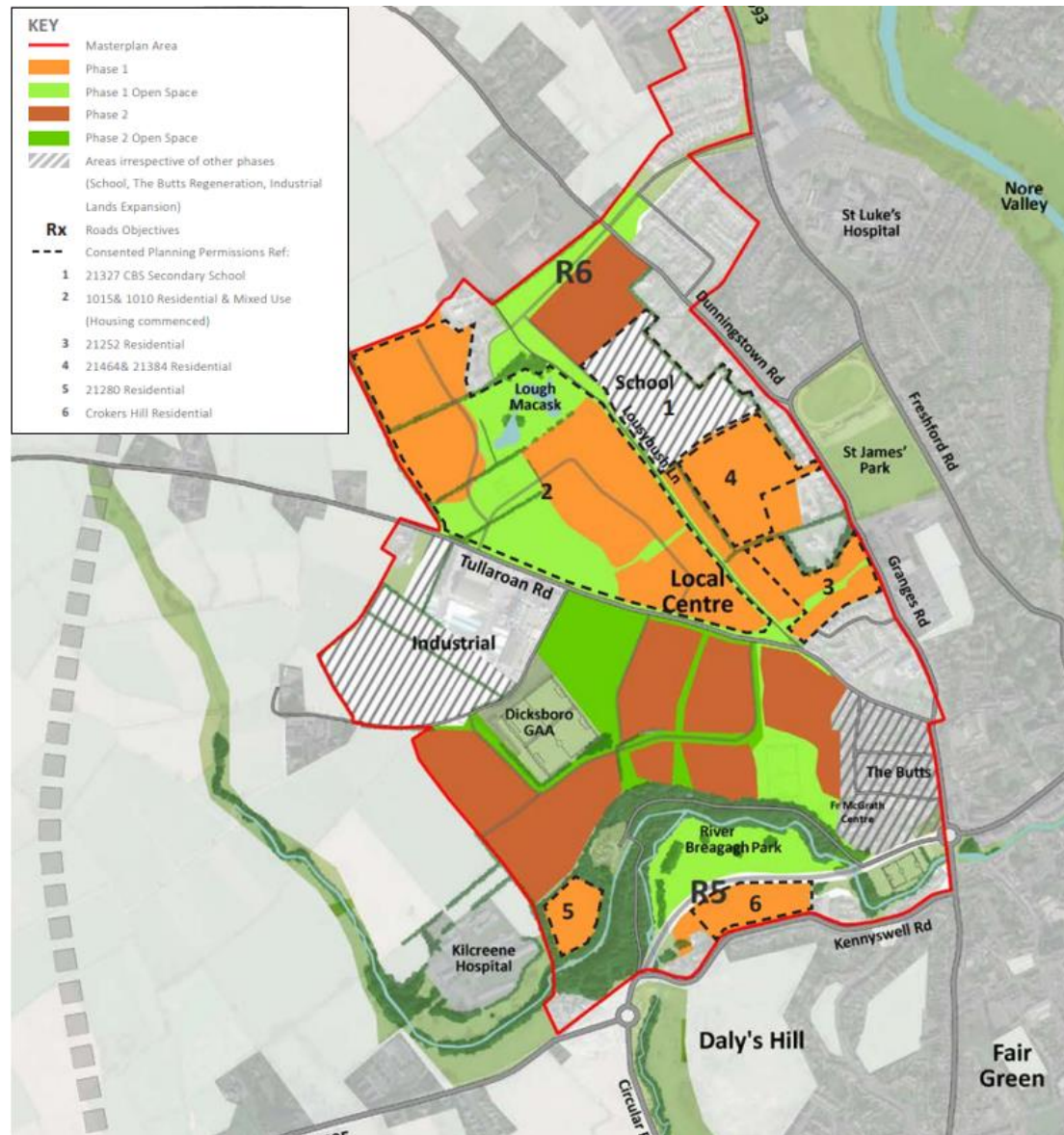


Figure 9 – Permitted developments

The number of units permitted in these developments are outlined in the table below.

Permitted residential developments in the masterplan area total 657.

Densities are illustrated in the Masterplan (figure 6.14). See below extract (Figure 10) that illustrates same.

Map Ref (Fig. 1)	Planning Ref	No. of Units	Commenced
1	21/327 School	37 classrooms c. 1,000 students 92 car spaces	No
2	10/10	112	Yes. 34 units. 17 on 04/01/22 17 on 29/08/22
2	10/15	228	Yes. 228 units. 228 on 25/07/22
3	21/252	75	No
4	21/384	87 + creche	No
4	21/464	60	No
5	21/280	9	No
6	Part 8 - 05/18  ABP Ref: 305062/19	86	Yes

Table 1: Permitted developments

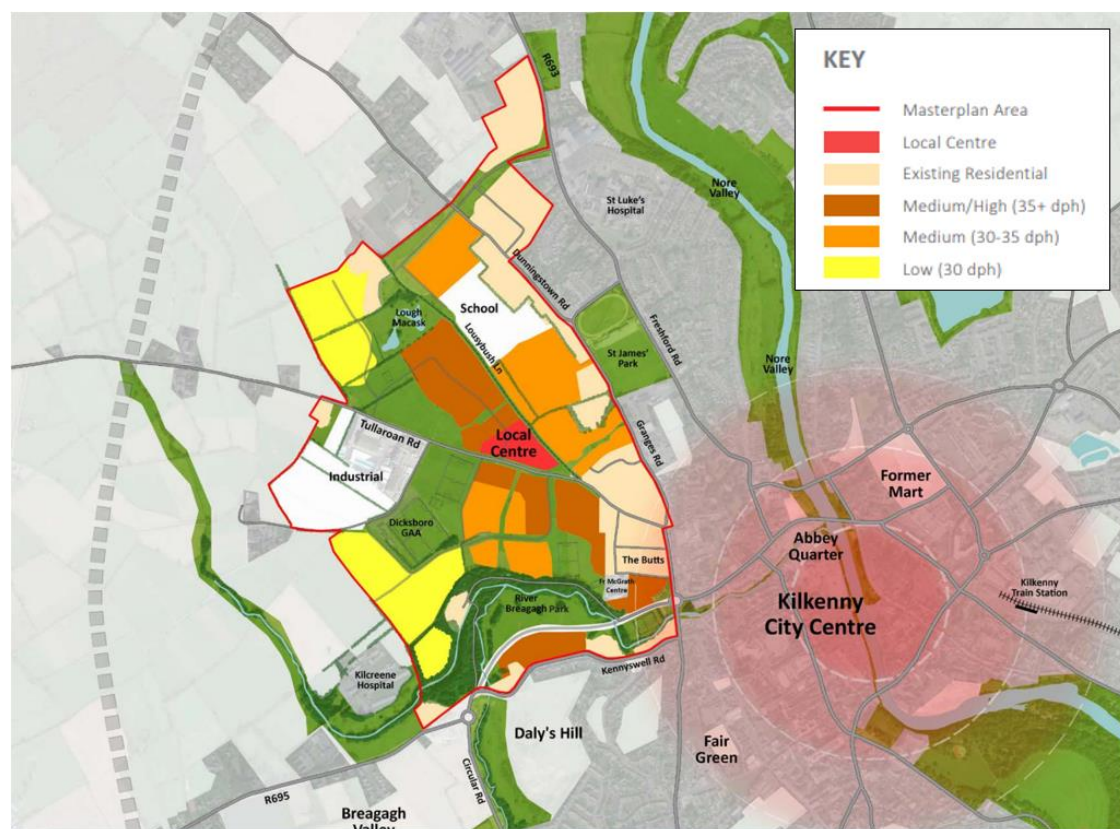
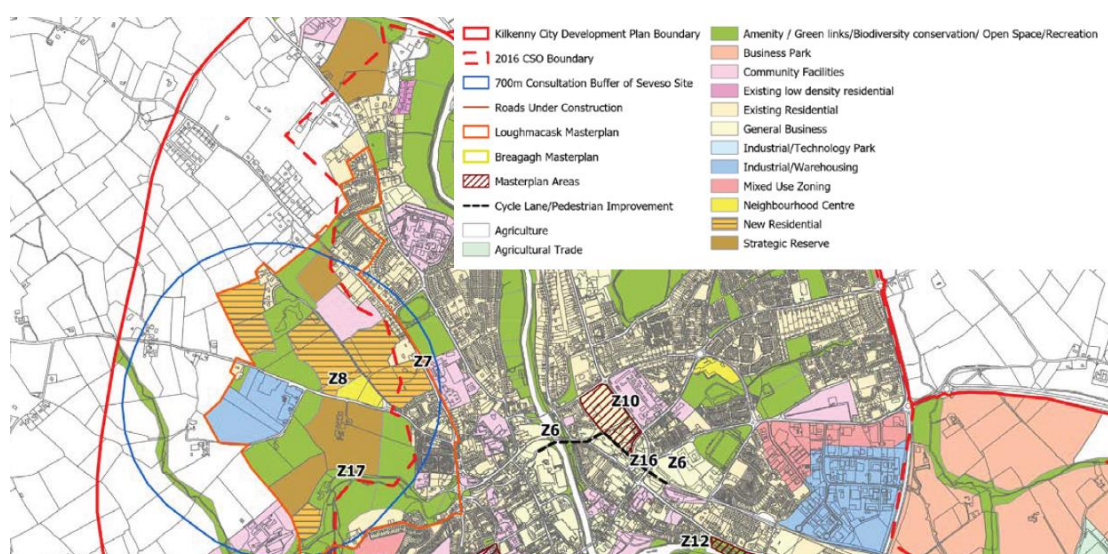


Figure 10 – Residential Densities

Within the Masterplan area, 657 dwellings have been granted on currently zoned residential lands and some have commenced construction, but it is understood that none are yet completed. Of the 657 granted dwellings, 340 take access onto the Tullaroan Road and the others access onto either the Granges Road or the Kennyswell Road. The new school has been granted permission and will take access off the Freshford Road.

The outstanding development to complete the Masterplan is therefore as follows: 247 dwellings to complete the Masterplan lands that are currently zoned residential; the development of the neighbourhood centre: and, the development of the Strategic Reserve lands (for which the Masterplan has not prescribed the nature or density of development but which, we are informed, could accommodate up to 700 additional dwellings) – see Figure 11.



**Figure 11 – Land Use Zoning**

The remaining residentially zoned lands are likely to take access from the Tullaroan Road, as would the neighbourhood centre.

Most of the lands zoned Strategic Reserve are located south of the Tullaroan Road and may take access off that road. Strategic Reserve lands located beside the proposed school are may take access off R6.

## 7 Discussion

Kilkenny gains population during the day – there is a net influx of workers as commuters (see Figure 12 below). The city has more jobs than resident workers. Table 2 shows the number of jobs per resident worker to be 1.25. (Source: Population and Employment in Urban Settlements in the Southern Regional Assembly area, Census of Population 2016)

Settlement Name	Population 2016	Resident Workers	Total Jobs	Jobs: Resident Workers
Kilkenny	26,512	10,952	13,738	1.254

*Table 2 - Extract from Appendix 2 of the Project Ireland 2040 National Planning Framework*

This fact is important in terms of transportation because it requires the city to be accessible to an inflow of workers commuting from other towns, the surrounding countryside and other counties, and it requires accessibility be available at a time when morning schools' traffic is at a peak.



*Figure 12 - Nett Commuter Flows: Kilkenny*

The AM peak is critical in the city and it is that time period that is problematic in relation to traffic in the masterplan area. The fact that peak commuting demand in the AM period corresponds with the peak period for travel to schools exacerbates the problem. This is evident at the Butts Roundabout

Almost all development traffic from Loughmacask will travel to the Butts Roundabout because the origin and destination of trips are in the direction of the city, not in the direction of Tullaroan.

The origins and destinations of trips cannot be easily reached by using the out-of-city road network. The nearest orbital network of local roads around the city is 5km+ out of town and is too far away and too poor in quality to be of use. Just as cross-river trips on the north side of the city do not use Threecastles



Bridge to avoid city centre congestion, drivers in Loughmacask would not use the out-of-city local road network to avoid congestion at the Butts Roundabout



**Figure 13 – Out-of-city orbital road network**

Almost all development traffic will load onto the Tullaroan Road towards the city and has no option other than to pass through the Butt's Roundabout.

That junction is congested during the AM peak. The extent of congestion (both the duration of congestion and the length of the delay per vehicle) is more than just a short interruption to traffic at school time; it is a problem for the movement of people through the area during the AM peak period.

On-site observation showed that there was no time during the AM peak period when the queue on the Tullaroan Road discharged. This is important because it means that each vehicle generated by development in Loughmacask in the AM peak would join the queue and extend the queue length.

The existing queue was observed to be relatively short – 5 to 15 vehicles in length. The traffic loading on the Tullaroan Road is relatively small at present (275 or so vehicles inbound in the AM). The photo below shows the outbound lane empty of traffic, indicating that traffic flows are relatively light.



*Figure 13 - 15-car, 100m long queue on Lord Edward Street.*

From the number of vehicles counted entering the Butts roundabout from Lord Edward street during the AM peak (up to 275), from the fact that the entry was queued throughout almost the full hour (50mins or so) and from on-site observation of the traffic entering the roundabout, it is estimated that one vehicle entered the roundabout every 12 seconds or so from that approach.

There are 340 houses granted permission to date in Loughmacask that will access onto the Tullaroan Road (other houses for which permission has been granted take access onto other roads). Using standards generation rates for residential development such as those of the TRICS database, the number of departure vehicular trips generated by that level of development would be 170 or so during the AM peak. It is likely that peak vehicular trips would be suppressed by congestion – some drivers may choose to walk, or they may delay their trip to an off-peak time; however for many people there may be no choice but to travel by vehicle during the peak. The level of peak spreading and modal shift that would occur as drivers respond to increased congestion is uncertain, particularly in the context of recently increased working-from-home, but if the number of inbound vehicles were 110 (rather than 170), the maximum queue during the am peak would extend by 660m length on Lord Edward Street / Tullaroan Road (an increase from the maximum observed queue of 90m or so). Longer queues are experienced elsewhere in the city - such as on the Carlow Road during the AM - but the change in the queue length and delay length on the Tullaroan Road would be significant.

If the queue extended to 110 vehicles, the time taken for the last vehicle to get through the Butts Roundabout would increase by 20+ minutes – the queue is slow-moving at this location because the exits from the junction are congested so the resulting delay is lengthy.

Feedback from the public consultation associated with the Masterplan has raised community concerns in relation to such potential traffic impacts. In that context the development of the full Masterplan area with reliance on the Tullaroan Road and Butts Roundabout to serve all trips, and in the absence of measures to achieve a large reduction in vehicular traffic or a large diversion of traffic onto new roads would be unrealistic.

The fact that drivers many defer trips to avoid the AM peak may lead to peak spreading whereby congestion on Lord Edward Street / Granges Road occurs for longer periods of the day. In particular, the PM peak period is not significantly problematic at present but could become more congestion due to the additional development traffic.

However, it is not only the imminent construction of an additional 300+ houses that may impact on traffic conditions in the Loughmacask area; the following other changes may potentially give rise to additional traffic issues:

The Relocation of the CBS: There will be a significant number of vehicular trips associated with the secondary school (the TIA estimates 300+ vehicular arrivals in the AM and departures in the PM). Trips are to and from the city centre at present but will be to and from Loughmacask when the school relocates. While the access is to be from the Freshford Road it is inevitable that there will be an increase in traffic on the nearby roads and in the vicinity of the Butts Roundabout.

Additional housing developments on Granges Road. The additional housing in the Masterplan area, located on the Granges Road, and for which consent has been granted, would not directly add to queue lengths on the Tullaroan Road; however, it would have an indirect impact by increasing the traffic loading on Granges Road and on the Butts Roundabout, perhaps decreasing the opportunity for traffic to enter the roundabout from Tullaroan Road.

Potential one-way on Vicar Street. Improvements to the urban realm of Vicar Street are planned which include making the street one-way. Approximately half the current traffic flow on the street would displace onto another route, and because Granges Road is the only other road on the west side of the river providing access to the city from the north, it would take a share of that displaced traffic.

Kilkenny Northern Ring Road Extension. This scheme is essential for the city, but it could lead to a redistribution of traffic, causing drivers travelling between the western environs and the N77 to travel via Granges Road rather than the longer route via the south and east sections of the ring road or the slower route through the city centre. This could cause some peak traffic spreading, extending the time periods of heavy traffic on Granges Road if the KNRRE became operational before the construction of a relief road in Loughmacask.

Making Butts Roundabout Pedestrian Friendly. The walking route to the CBS from the south will be via Lord Edward Street and Lousybush lane. Some schoolchildren are likely to cross at the roundabout and there are no facilities there at present. Insertion of improved pedestrian facilities and new pedestrian crossings are urgently needed, but they could reduce vehicular traffic capacity – see Figure 15.

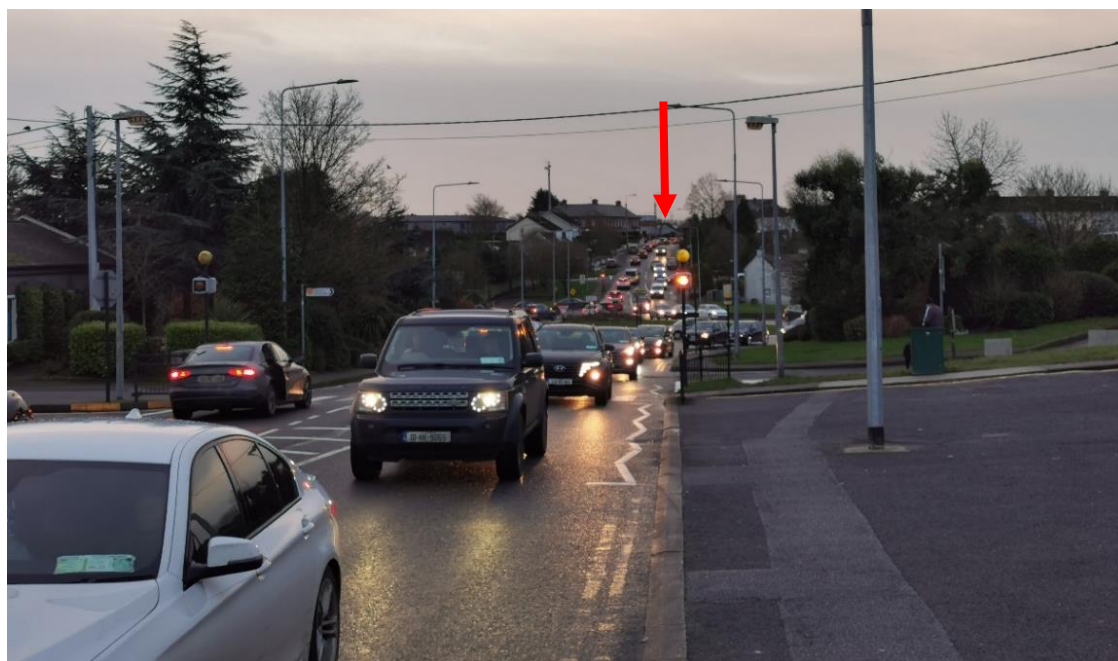


*Figure 15 - Pedestrians crossing Butts Roundabout*

It should be noted that the Butts roundabout is not the primary cause of congestion in the area. Congestion extends from the exits of the Butts roundabout in both directions along the Granges Rd, as can be seen in the following two photographs – see Figures 16 and 17. The problem is not at the Waterbarrack roundabout either; the issue is the amount of traffic on the axis of the Granges Road and Dominic Street and on Dean Street, and the lack of capacity of those streets due to the presence of schools, crossings and other urban features that constrain traffic flow. Congestion on these streets extends back to the Butts and Waterbarrack roundabouts, causing both roundabouts to be unable to operate at their full capacity.

The TIAs confirm what is evident from site observation: the junctions themselves are not the root cause of the problem. The traffic impact assessments indicates that the Waterbarrack roundabout is operating at about 60% of capacity during the AM peak and the Butts Roundabout is operating at just over 80% capacity

in the same time period. Each roundabout therefore has some spare capacity at present, but it is impossible to utilise it because of congestion on the exits from the junctions.



*Figure 16 - Congestion extending back from Dominic Street*



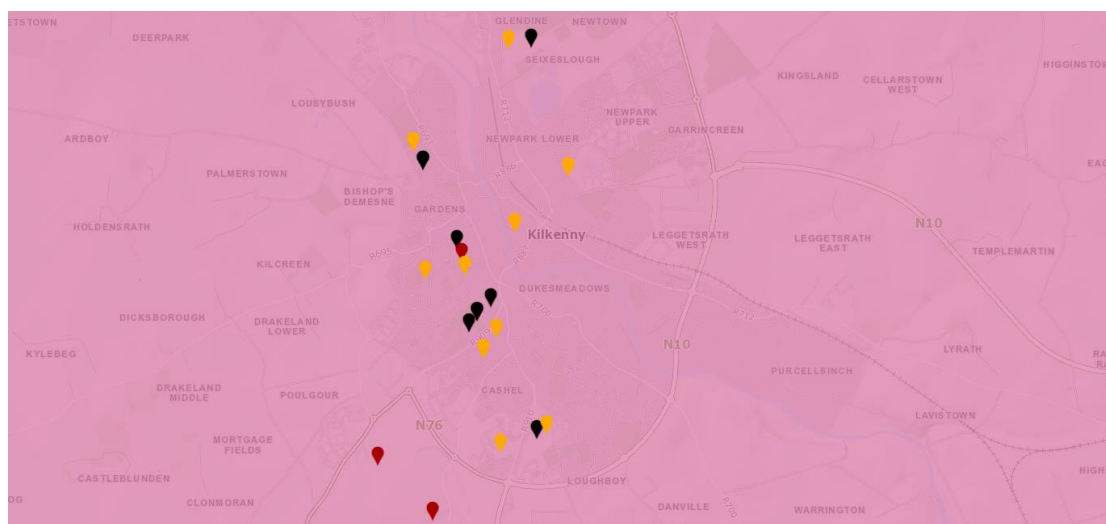
*Figure 17 - Congestion extending back from at the School on Granges Road.*

The northwest of the city is particularly poorly served by roads infrastructure. There is only one road connecting to the city – the Tullaroan Rd. The Granges Rd is the only orbital road carrying traffic around the city. The implementation of the CAS Phase 1 has been beneficial in providing a new river crossing (the Saint Francis bridge); however, a negative impact of the scheme has been some increased difficulty with accessibility to the city from the north – the T-junction

formed between Vicar St. and St. Canice's place constrains entry to the city from the Freshford Road and may be causing traffic to divert to the Granges Road, placing more pressure on already over-capacity roads in the northwest city area. When deciding on the road improvements for the Loughmacask area, it should be kept in mind that the level of service provided by the existing infrastructure is particularly poor. It is not simply that new roads infrastructure is needed to serve new development; even in the absence of any development new road infrastructure is required to solve existing traffic problems.

The Masterplan rightly places emphasis on the need to avoid community severance by ensuring that relief roads carrying through-traffic are not placed through development areas. There is no doubt that the presence of through traffic (including HGVs) on roads where both roadsides are developed increases roads safety risk and suppresses the use of active travel. This is evident in the case of the ring road on the east side of the city and, to a much lesser extent, on the relatively recently constructed roads serving development areas, such as Pennyfeather Way and the LIHAF road in the western environs. However, it should also be borne in mind that severance already exists in the Masterplan area because the Granges Road is so heavily trafficked that the community cannot access the schools easily, particularly by way of active transport modes. This existing severance on Granges Road should be solved and the objective of protecting proposed development in the Masterplan area should not prevent infrastructure being provided in the Loughmacask area that may, at present, be the only effective solution to achieving a sufficient reduction in the volume of traffic on Granges Road. In planning a relief road solution for the area, the layout should aim to balance the aims of avoiding community severance and effectively displacing traffic from those communities out to the edges of the city.

Granges Road is a residential street, but at present it is operating as a relief road and a designated route for HGVs. There are two large schools on the street and the third will shortly be located nearby (see map of school locations below). The vehicular traffic conditions are incompatible with the residential and educational uses. Ideally, Granges Road would be redesigned as a school street (<https://www.nationaltransport.ie/wp-content/uploads/2022/09/SRTS-Design-Guide-Version-1.2-September-2022.pdf>) with traffic diverted to a relief road. Many other schools are located on that same north-south axis on the west side of the city centre and similar measures should be considered for them with vehicles displaced to the west of the city.



**Figure 18 - Schools clustered on north south axis west of city centre**

Another consideration is that, in the absence of a relief road, it would be impossible to implement effective public transport in the masterplan area. A bus using the existing roads and streets would have its schedule severely impacted by traffic congestion; the bus service would be very unreliable. The objective stated in the Development Plan in relation to modal share of public transport may not be achieved if bus times are unreliable.

In relation to a relief road the masterplan states:

*"A significant difference between the Loughmacask LAP 2008 and this Masterplan is the removal of through traffic from the area by the reconfiguration of the road objectives for the area and the rerouting of through traffic"*

*"A Western Bypass corridor will ultimately reduce the need for through traffic in the city centre. Completion of the Northern Ring Road Extension will be an important element to this and will be essential to the transportation and land use activities in the City."*

The need for a relief on the northwest quadrant of the city is recognised by both the Development Plan and the Masterplan. The Masterplan is not prescriptive on where the R7 road should be located. A study of the origin and destinations of trips would help to determine what the trip ends and patterns of traffic are and how effective any new road option would be in ensuring that traffic would be diverted from Granges Road and the city centre out to the new road. An often-quoted statistic in relation to traffic in Kilkenny city and environs area is that 90% of the trips have either an origin or a destination within the city. This means that there is little traffic on long distance trips bypassing the city. The need for a relief road is therefore likely to be far greater than the need for a bypass on the northwest side of the city. The relief road needs to be effective in removing traffic from the city and to do that the alternative route needs to well-located relative to trip ends.

Phasing is discussed in the masterplan but only in relation to the proposed residential development; phasing of the implementation of the roads infrastructure is not stated. If it is considered that the impacts – outlined earlier in this report – that are predicted to arise from the construction of the houses currently permitted and accessing onto the Tullaroan Road are at the limit of acceptability then it may be necessary to defer additional development accessing onto the Tullaroan Road until relieving road infrastructure has been provided.

The roads objectives proposed in the area are the western bypass (R1) and the objectives R5, R6 and R7. R5 on its own would not be expected to provide any relief to the Loughmacask area. It would have a beneficial impact on Kennyswell Rd, the western environs and Dominic Stephens St. etc, but would, on its own, be unlikely to have a significant impact on the northwest of the city. R6 is shown to extend to the school from the Freshford Rd but does not extend west of the school to provide any relief for development traffic and is therefore of little consequence to a phasing plan. The western bypass and R7 are the main provisions that would give traffic relief to the existing road network in the area. The masterplan is not prescriptive in relation to the location or layout of R7 other than to say that it may be located to the west of the development zone. It is therefore not possible at this stage to differentiate between the two roads (R7 and the western bypass) in terms of their likely individual effectiveness in dealing with the issue of through traffic and both can only be considered together in respect of phasing of the development. However, it is considered that additional Masterplan development, over and above that already granted, should occur only when an orbital relief road (or part of a relief road) connecting the west and the north would be in place and would have a layout that would provide for adequate re-distribution opportunity for traffic.

Of the traffic entering the Butts Roundabout from Tullaroan Road during the AM peak and turning right or left, 20% turns to the left and 80% turns to the right. Traffic flows to and from the city direction are therefore significantly heavier and consequently the southern section of R7 – the part between the Ballycallan Road and the Tullaroan Road – is the more important one, and if it were constructed would provide a convenient alternative route for most of the traffic that would otherwise enter the Butt's Roundabout from the Tullaroan Road. It would also provide distribution opportunities for heavy vehicles associated with Grasslands and Holdensrath Quarry. There is therefore, merit in pressing ahead to construct this southern half of R7 first, and on the basis that the transfer of traffic onto the new route occurs as expected then consideration could be given to permitting some portion of the remaining Masterplan development within Loughmacask, perhaps the remaining residentially-zoned development (247 or so houses) subject to confirmation, by Traffic Impact Assessment, of sufficient capacity to accommodate generated traffic.



Given that the first, southern section of the relief road could be of use to up to 80% of Loughmacask traffic, it is also likely that development of parts of the Strategic Lands of the Masterplan could be considered together with that section of relief road. The quantum of Strategic Lands development that could be supported by the first section of relief road would depend on the location of the road and its utility and attractiveness as an alternative route for traffic, and on its junction connectivity. The location and layout of the relief road would need to be determined and traffic assessment of the Strategic Lands would be required to determine the quantum of additional development that could be accommodated by the part-construction of the relief road.

In relation to the neighbourhood centre, it may be the case that its provision could reduce the number of vehicular trips external to the Loughmacask area by providing convenience shopping within the neighbourhood so that residents would not need to travel elsewhere for daily groceries and could walk or cycle the short distance to it. This is based on the understanding that a large supermarket that could attract city-wide trips is not intended. Subject to a TIA, it may be advantageous to develop the neighbourhood centre once there is sufficient demand for local shopping. In the absence of external trips, the centre might not require a relief road to be in place and its provision could support the objective of the Development plan in relation to the 10-minute city.

The remainder of the Masterplan development would await the second half of the relief road: the connection between the Tullaroan Road and the Freshford Road.

However, a possible, temporary impact of the construction of the southern section of the relief road on its own is the diversion of additional traffic onto Lord Edward St. At the moment, traffic circulating around the west side of the city uses the Circular Rd (LIHAF road) and Kennyswell Rd. With the extension of the CAS northwards to Tullaroan Rd, some traffic may divert from Kennyswell Rd onto Lord Edward St. Traffic modelling would be required to determine the extent of the change in traffic routeing. However, construction of the second section of the relief road, to the Freshford Road, should follow quickly after the opening of the first section.

Loughmacask is the missing quadrant in the city (see figure 19); sequential development from the centre makes it a logical development zone. It is well-located a short distance from the city centre and is well-located with respect to the objective of encouraging active travel. If restrictions were placed on development in the masterplan area pending the provision of a relief road it could result in residential development occurring elsewhere in less appropriate areas more distant from the city centre where active travel is less of an option. Providing the relief road within the masterplan area as early as possible to enable development to continue is therefore the preferable scenario, though it

is obviously dependent on the availability of consent and funding for the scheme.

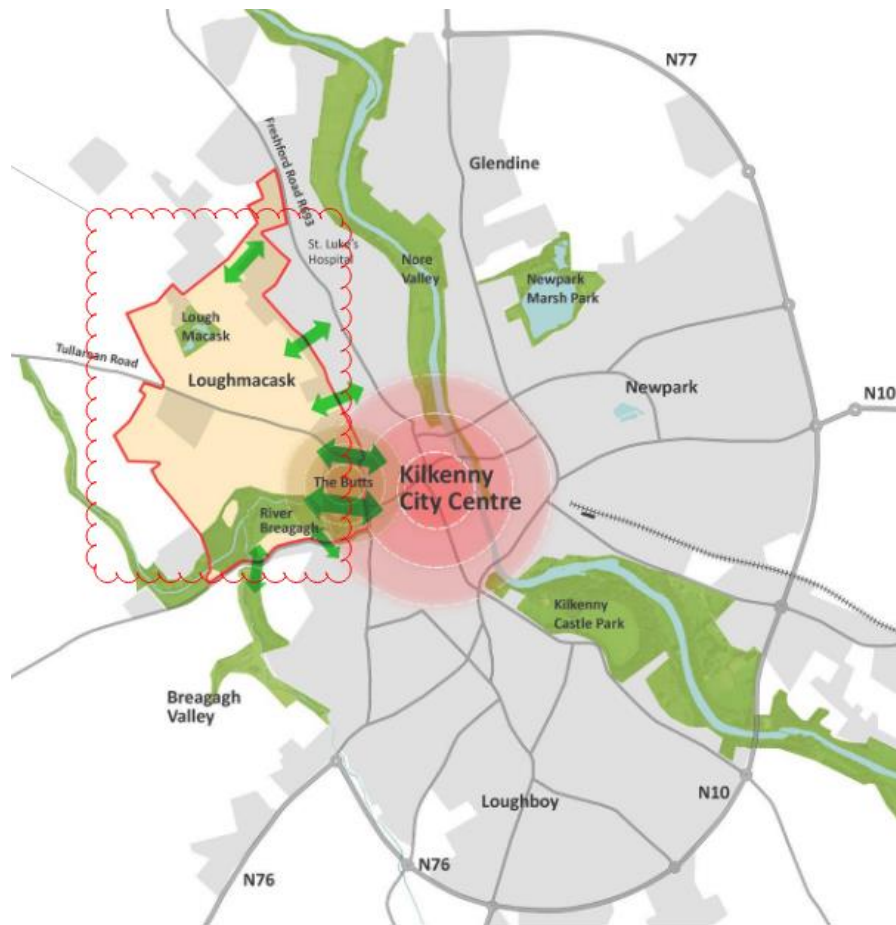


Figure 19 - Loughmacask plan area

## 8 Summary of the Opinion

- The Masterplan envisages development comprising 904 dwellings, a neighbourhood centre, a school and the development of Strategic Reserve lands (the development type is not stipulated in the masterplan, nor is its density, but we were informed that potentially 700 additional dwellings could be built). To date, 657 dwellings have been granted planning permission, 340 of which take access onto the Tullaroan Road. The school has also been granted permission.
- The only route available out of the Masterplan lands (excluding development sites that front onto Granges Road or Kennyswell Road) is the Tullaroan Road leading to the Butt's roundabout; currently, there is no other route feasible for traffic.
- There is traffic congestion at the Butts roundabout during the AM peak at present. The level of congestion, the slowness of traffic movement and the duration of the congestion is such that it forms an impediment to movement in the area and is more than just a short duration inconvenience associated with the schools.
- The problem is not the capacity of the Butts roundabout. The flows going through that roundabout at present are 80% or so of its capacity. Neither is the Waterbarrack Roundabout the problem: it operates at 60% or so of its capacity during the AM peak at present. The issue is congestion of traffic on the roads that lie to both the north and south of the roundabout that stop traffic from traveling through the roundabout. However, it is the case that the Butt's Roundabout does not have much spare capacity at present during the AM peak. During the off-peak period the roundabout operates well within capacity and during the PM peak congestion, queues and delays are much less than during the AM peak.
- Queueing of up to 15 vehicles occurred on the Tullaroan Rd over most of the AM peak period and did not discharge. This means that every additional vehicle generated by development with access onto the Tullaroan Road would stack in the queue. The 340 residences currently granted could extend the queue by 600m+ during the AM peak. If the time to enter the roundabout remains as it is at present, the time for a driver to reach the roundabout from the end of the queue on the Tullaroan Road during the AM peak could be extended by twenty minutes or so.
- Other planned developments, such as the relocated CBS school, the housing development granted on the Granges Road and other road

schemes in the north of the city could increase traffic levels in the northwest quadrant of the city and at the Butts Roundabout making it more difficult for traffic on the Tullaroan Road approach to enter the roundabout.

- Queues and delays resulting from the development of the full Masterplan area would, almost certainly, be unacceptable in the absence of new roads infrastructure providing traffic relief.
- The quality of the road network in the northwest of the city is particularly poor. There are few existing roads and junctions offering little potential for traffic distribution. Granges Road is particularly impacted by congestion at present and given its function as a residential and school street, traffic volume should be reduced significantly on it.
- A relief road is therefore required in combination with active travel and public transport measures to reduce the overall level of vehicular traffic and to divert vehicular traffic onto a more suitable route. The Masterplan intends that R7 or the Western Bypass or both would provide the relief and it recommends that R7 be located on the out-of-city side of the development area so that the community is not severed from the city. A study of the origin and destination of trips that route through the north-western city area should be carried out to determine the necessary characteristics of a relief road (its exact location and its junctions) that would successfully attract an adequate amount of traffic from Granges Road and the wider city area.
- Roads R5 and R6 on their own would provide no significant traffic relief to the area. A relief road (some combination of R7 and the Western Bypass) would do so.
- The Masterplan does not set out a phasing schedule for the provision of the supporting roads infrastructure. None of the roads objectives have commenced construction at this time even though a sizeable number of dwellings are under construction. In the brief provided for this report, an opinion has been sought on the quantum of development that would be supported by the implementation of the various road schemes:
  - R6 is necessary to provide access to the school, and it is a stated requirements of the Masterplan that the road would be operational in advance of the school; however, R6 does not extend west beyond the school and is therefore of little consequence to a phasing plan for the other developments.
  - As stated above, R5 on its own does not provide significant additional utility to traffic travelling to or from the Tullaroan Road

and would not enable that road to support additional development under a phasing plan.

- The development of an orbital relief road providing the opportunity for traffic to redistribute away from the Butts Roundabout and to connect from the Tullaroan Road directly to the LIHAF road to the south and the R693 to the north would enable the successful implementation of the Masterplan.
- It may be the case that R7 could be delivered in two stages: stage 1 between the R695 Kilmanagh Road and the Tullaroan Road, and stage 2 between the Tullaroan road and the R693 Freshford Road. It may be feasible to consent to additional development on completion of one of the stages. The traffic surveys carried out for the TIAs provide information on the turning movements of traffic entering the Butts Roundabout from the Tullaroan Road and give an indication of how useful either of the two stages would be to traffic on that road. Of the traffic entering the Butts Roundabout from Tullaroan Road during the AM peak and turning right or left, 20% turns to the left and 80% turns to the right. Traffic flows to and from the city centre direction are therefore significantly heavier, and consequently the southern section of R7 – the part between the Ballycallan Road and the Tullaroan Road – is the more important section, and if it were constructed would provide a convenient alternative route for most of the traffic that would otherwise enter the Butt's Roundabout from the Tullaroan Road, including Grasslands and Holdensrath Quarry traffic.
- This first half of R7 could permit a portion of the remaining Masterplan development within Loughmacask, perhaps the remaining residentially-zoned development (247 or so houses) subject to confirmation, by Traffic Impact Assessment, of sufficient capacity to accommodate generated traffic.
- Given that the first, southern section of the relief road could be of use to up to 80% of Loughmacask traffic, it is also likely that development of parts of the Strategic Lands of the Masterplan could be considered together with that section of relief road. The quantum of Strategic Lands development that could be supported by the first section of relief road would depend on the location of the road and its utility and attractiveness as an alternative route for traffic. The location and layout of the relief road would need to be known and traffic assessment of the Strategic Lands would be required to determine the quantum of

additional development on Strategic Lands that could be accommodated by the part-construction of the relief road.

- In relation to the neighbourhood centre, it may be the case that its provision could reduce the number of vehicular trips external to the Loughmacask area by providing convenience shopping within the neighbourhood so that residents would not need to travel elsewhere for daily groceries and could walk or cycle the short distance to the neighbourhood centre. Subject to a TIA, it may be advantageous to consent to the development of neighbourhood facilities once there is sufficient demand for local shopping.
- The remainder of development would await the second half of R7 (the connection between the Tullaroan Road and the Freshford Road).
- However, a possible, temporary impact of the construction of the southern section of the relief road on its own is the diversion of additional traffic onto Lord Edward St. At the moment, traffic circulating around the west side of the city uses the Circular Rd (LIHAF road) and Kennyswell Rd. With the extension of the CAS northwards to Tullaroan Rd, some traffic may divert from Kennyswell Rd onto Lord Edward St. Traffic modelling would be required to determine the extent of the change in traffic routeing. However, construction of the second section of the relief road, to the Freshford Road, should follow quickly after the opening of the first section.
- Loughmacask is the undeveloped quadrant in the city; sequential development from the centre makes it a logical development zone. It is well-located a short distance from the city centre and is well-located with respect to the objective of encouraging active travel. If restrictions were placed on development in the Masterplan area pending the provision of a relief road it could result in residential development occurring elsewhere in less appropriate areas more distant from the city centre where active travel is less of an option. Providing the orbital relief road within the Masterplan area as early as possible to enable development to continue there is therefore the preferable scenario, though it is obviously dependent on the availability of consent and funding for the scheme.
- A Sustainable Urban Mobility Plan is being developed by the Council for the city. This will contain measures to give effect to a shift to sustainable travel – a stated objective of the Development Plan. The Loughmacask Masterplan anticipates the success of the modal shift objective by

planning for the provision of a type of infrastructure that is favourable to the use of active travel and public transport. Spatial planning by the Council will assist its mobility planning to manage demand for travel modes, fostering a shift to active travel in the spirit of the 10-minute City. If a profound change in the city's mobility patterns does occur then many of the issues experienced at present in the masterplan area such as congestion and delays would diminish, and if that change happened in a shorter-than-expected period of time, implementation of some of the road's objectives may not be as urgent. The opinions and recommendations of this report are based on an anticipated slow change in modal split, but that should be kept under review in the future.