

## **1.0 Context**

This note has been prepared by Waterman Moylan in response to concerns received regarding the proposed Road Closure of the Rathbeale Road for 9 months during the proposed road upgrade works to Rathbeale Road.

The Local Area Councillors were invited to briefing by the project team on the Part 8 planning for the Rathbeale Road Upgrade in May 2017. They were advised that a full road closure of the section of Rathbeale Road that is to be upgraded, with diversion of Rathbeale Road traffic onto the Glen Ellan Road was being proposed as the optimum solution for the implementation of the project. The Rathbeale Road has a two way AM peak hour flow of 710 vehicles (3 October 2017 traffic count).

The Rathbeale Road Upgrade Project received 111 submissions during the consultation period which closed on the 26th September 2017. 93 of the submissions received related to the proposed closure of the Rathbeale Road and diversion of traffic on to the Glen Ellan Road.

The proposed road closure and diversion if approved will be dealt with by a separate statutory process whereby the appointed contractor would make an application for a temporary road closure in accordance with Section 75 of the Roads Act 1993-2015. This application would be accompanied by a Traffic Management Plan (See Section 5). The contractor is obliged to take account of a Preliminary Traffic Management Plan to be prepared by Waterman Moylan, as the basis for their traffic management plan, and to incorporate any constraints set out in the contract documents.

The rationale behind the proposed road closure and selected diversion is examined in this report. This report will be appended to the statutory Part 8 Report for the Rathbeale Road Upgrade to be presented to elected representatives at area committee and full council meetings in November 2017.

**Figure 1:** Site Location Plan



## 2.0 Works Description

The road upgrade works, which are subject to a Part 8 planning application by Fingal County Council (FCC), include:

- Upgrading of the existing Rathbeale Road from the Murrough Road junction to the proposed junction with the Swords Western Distributor Road, a distance of approximately 1000m, which includes re-grading and re-alignment of the existing carriageway, the provision of new high quality pedestrian/cyclist facilities along the full length of the northern side of the Rathbeale Road and the provision of shared footpath/cycle facilities on the southern side of the Rathbeale Road from the Swords Western Distributor Road to the proposed toucan crossing at the proposed archaeological park.
- Provision of a new right hand turn lane on the western approach to the existing Murrough Road Junction.
- Provision of a junction for access for proposed Local Authority Housing.
- Provision of toucan crossing facilities at entrance to the proposed archaeological park.
- Provision of a junction for secondary access from Mooretown Lands.
- Provision of a signalised junction at the intersection of the Rathbeale Road with the Swords Western Distributor Road.
- Provision of new/upgraded footpath facilities on the south side of the Rathbeale Road adjacent to Rathbeale Cottages.

- Retention of existing natural boundary to the southern and northern side of the Rathbeale Road as indicated on Drawing No. P1000 and the provision of new boundary treatment consisting of a dwarf wall and railing along the perimeter of the new archaeological park and along the perimeter of the Fingal County Council Housing Department development site with associated landscaping measures.
- All miscellaneous ancillary works including street lighting, road markings, road signage, drainage, utility diversions, ducting, landscaping, planting and additional road boundary treatments where required.

### **3.0 Construction Options**

The existing Rathbeale Road is a 6m to 6.5m wide carriageway with a 1.8m wide footpath on its southern side. The length of the upgrade scheme is approximately 1000m. The upgrade works will involve realignment and reconstruction of the carriageway and extensive utility works including the diversion of existing utilities and services and installation of new utilities and services, and all associated works.

The various construction and diversion options that are considered for implementation during the construction of the Rathbeale Road Upgrade project are listed below:

#### **Construction Options:**

- **Option 1A** - The implementation of traffic control measures and a one-way shuttle operation along the length of the works area, maintaining traffic flows along the Rathbeale Road for the duration of the works.
- **Option 1B** – The closure of the Rathbeale Road for the full length of the works and for the duration of the works.
- **Option 1C** - The implementation of traffic control measures and a one-way shuttle operation for the eastern and western sections of the works and a road closure for the middle section of the works.

#### **Option 1A – One-way Shuttle Operation along the Length of the Works**

To implement a shuttle system for the entire works, the contractor would most likely take possession of half of the road corridor width for a length of approximately 350m at a time. The contractor would operate a one-way shuttle system along this length. This approach would require at least six separate construction phases to complete the works. It is estimated that each phase would take 10 to 12 weeks to complete.

The operation of a one-way shuttle system will result in queuing and significant delay at either end of the works for traffic travelling along the Rathbeale Road, for an extended duration. The construction works will take 14 to 16 months to complete if carried out in 6 separate construction phases, resulting in prolonged delays and disruption to Rathbeale Road traffic and residents along the Rathbeale Road. It is

likely to be very difficult to safely accommodate cyclists or pedestrians along sections of the road during shuttle operations due to the narrow road corridor width.

The works include for the provision of 110KV ESB ducting, surface water sewer and foul water sewer services under the realigned Rathbeale Road. To construct these services under the road without a road closure would require possible temporary road widening in places to allow for one-way shuttle lanes which may further encroach into existing hedge rows.

#### **Option 1B – Road Closure of the Rathbeale Road for the Full Length of the Works and for the Duration of the Works**

This option would involve closing the Rathbeale Road from the proposed Western Distributor Link Road junction to the before the Murrough Road junction. Local pedestrian and vehicular access would be maintained for residents.

The estimated construction period for a road closure is 9 months as the contractor will be free to progress works in the most efficient manner without the need to maintain through traffic along the route.

Extensive utility diversion and upgrade works are required on this project. These include the provision of ducts for the undergrounding of 110Kv ESB lines, undergrounding of minor ESB overhead lines, diversion of the existing foul sewer, the construction of a surface water sewer to drain the road, diversion and realignment of gas main and watermain together with new ducting for traffic and other utilities.

Site investigations carried out along the road have identified that the location of existing utilities (gas, watermain, ESB) under the road varies. The utilities have not been laid to a consistent strategy, and vary in location from one side of the road to the other along the length of the proposed works. It is proposed to renew and relocate the existing utilities into a bank of new ducts running along the proposed northern footpath for the entire length of the upgrade works.

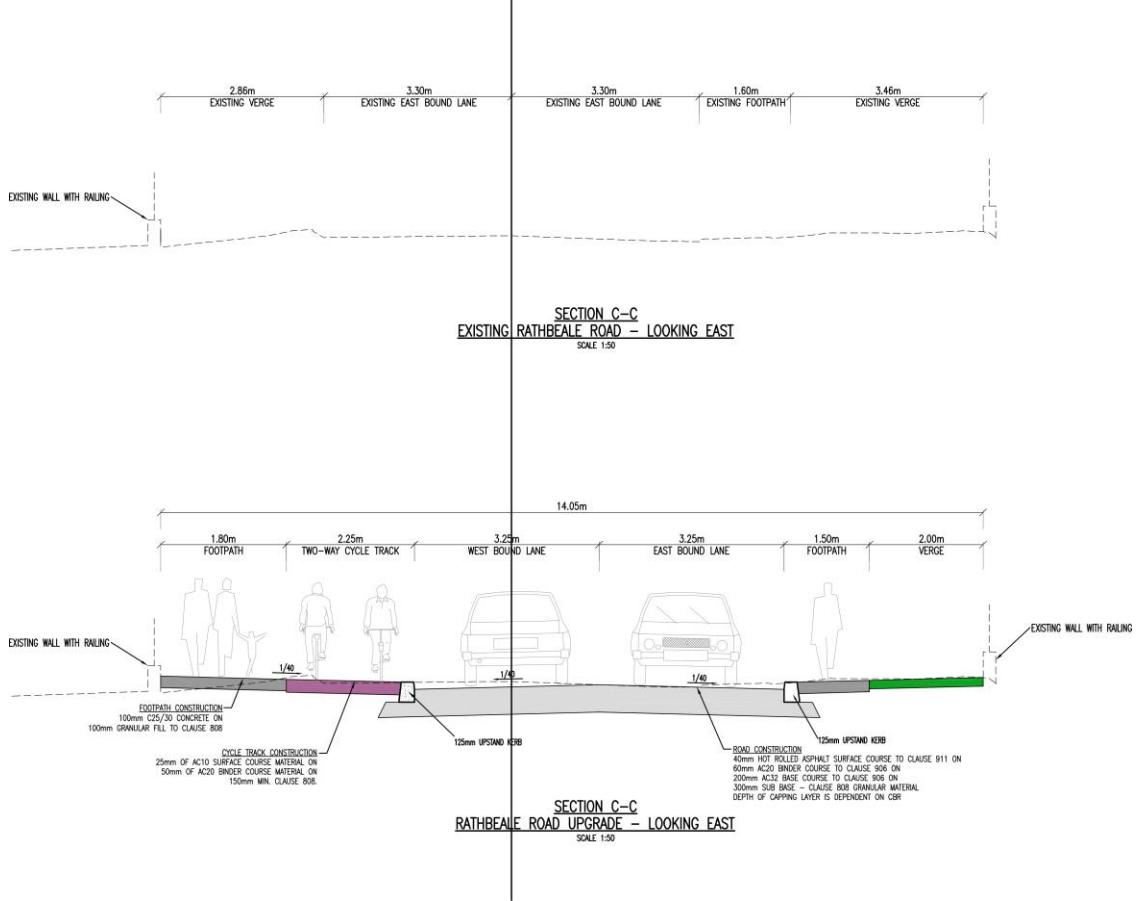
This creates difficulties for diversion of utilities under a one-way shuttle system as the switch over of services would be multiple and would have to take place in short sections requiring multiple attendances by utility providers, and potentially leading to delays in the works. This is not practical under a one-way shuttle system, which to work effectively, requires sections of approximately 350m of road to be constructed at a time. A full road closure would facilitate more efficient diversion of utilities and allow for switch over of services serving the local residents in a timely manner during the works. It would also allow the rationalisation of most of the services into the footpath limiting requirements to interfere with the road in the future from a utility perspective.

#### **Option 1C – One-way Shuttle Operation for the Eastern and Western Sections of Works and a Road Closure for the Middle Section of the Works**

The proposed Rathbeale Road upgrade works can be split into three sections by its physical nature, each of which are addressed separately below:

1. The eastern section of works include works to the Murrough road junction and approximately 150m of road where the existing corridor is approximately 14.5m wide. Along this section of road, it is proposed to provide a 6.5m wide road, 4.05m footpath and cycle track on the northern side and a 1.5m footpath on the southern side, totalling a proposed carriageway reservation of 12.05m

*Figure 3: Existing and Proposed Section through Eastern Section of Works*



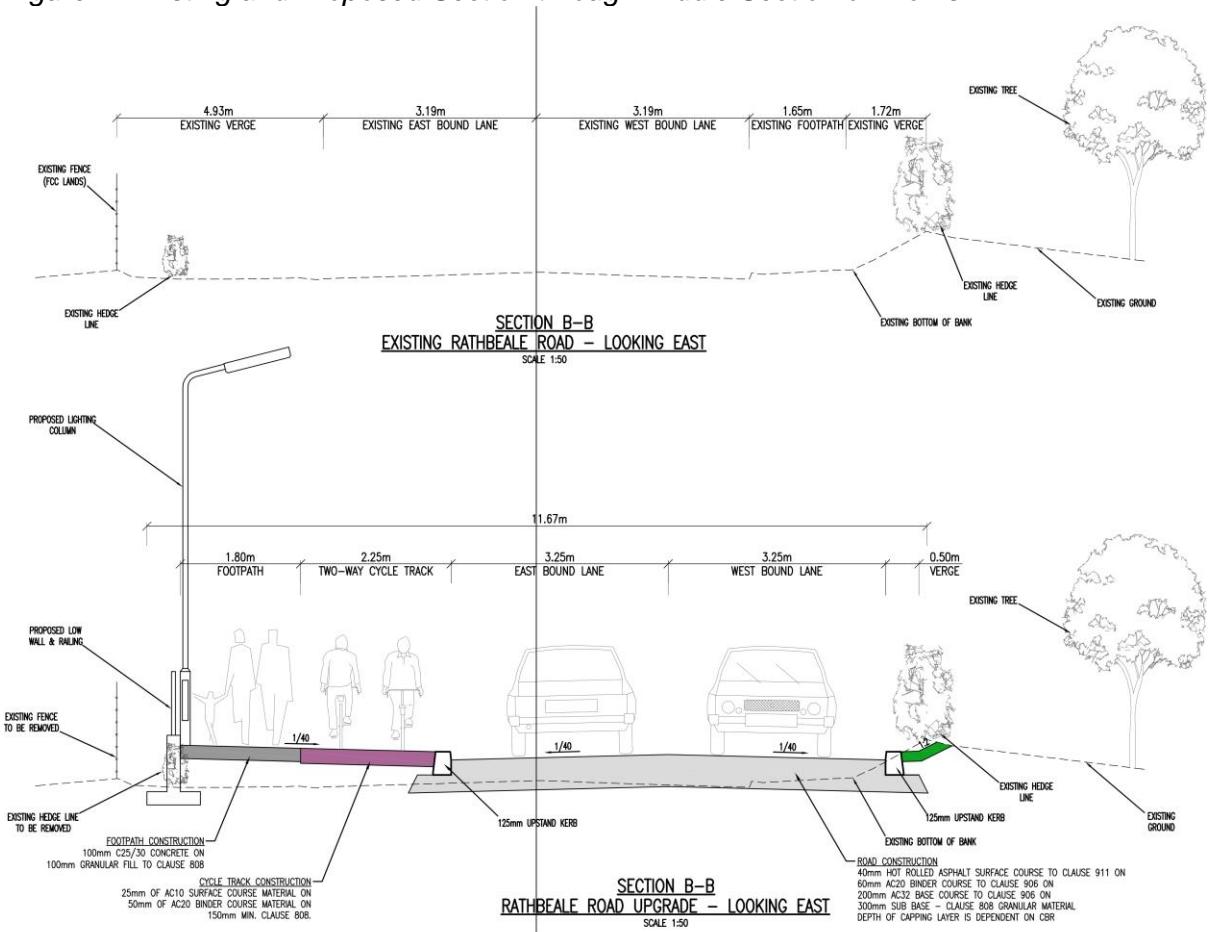
It would be feasible for the contractor to construct the realigned carriageway and footpath on the southern side of the road, while maintaining or locally widening the northern lane of the existing carriageway to maintain one-way traffic. Sufficient verge is available to accommodate a temporary footpath also. Refer to Figure 3 above. On completion of the new southern lane and footpath, these can be used to maintain traffic and pedestrian flows while the northern traffic lane and footpath / cycletrack is upgraded.

2. The middle section of the works includes a length of approximately 475m of road where the existing road corridor narrows considerably and is 10.8m wide in places. Along this section of road, it is proposed to provide a 6.5m wide road and 4.05m footpath and cycle track on the northern side, totalling a proposed carriageway reservation of 10.55m. The corridor along this section of road is narrowed by the need to maintain existing hedgerows where at all possible.

It will be necessary to construct the northern footpath / cycletrack and traffic lane first, as it will be necessary to lay the new service and utility ducts and pipes under the northern footpath before diverting the existing live services before working on the road carriageway. As can be seen from Figure 4 there is inadequate road corridor space to the south of the road (right hand side in Figure 4) to maintain a safe one-way traffic system while the northern footpath / cycletrack and northern lane of the road are being reconstructed. It is therefore not feasible to implement the planned works along this central section of the route while maintaining a one way traffic flow.

The works along this section can only be carried out under a full road closure.

Figure 4: Existing and Proposed Section through Middle Section of Works

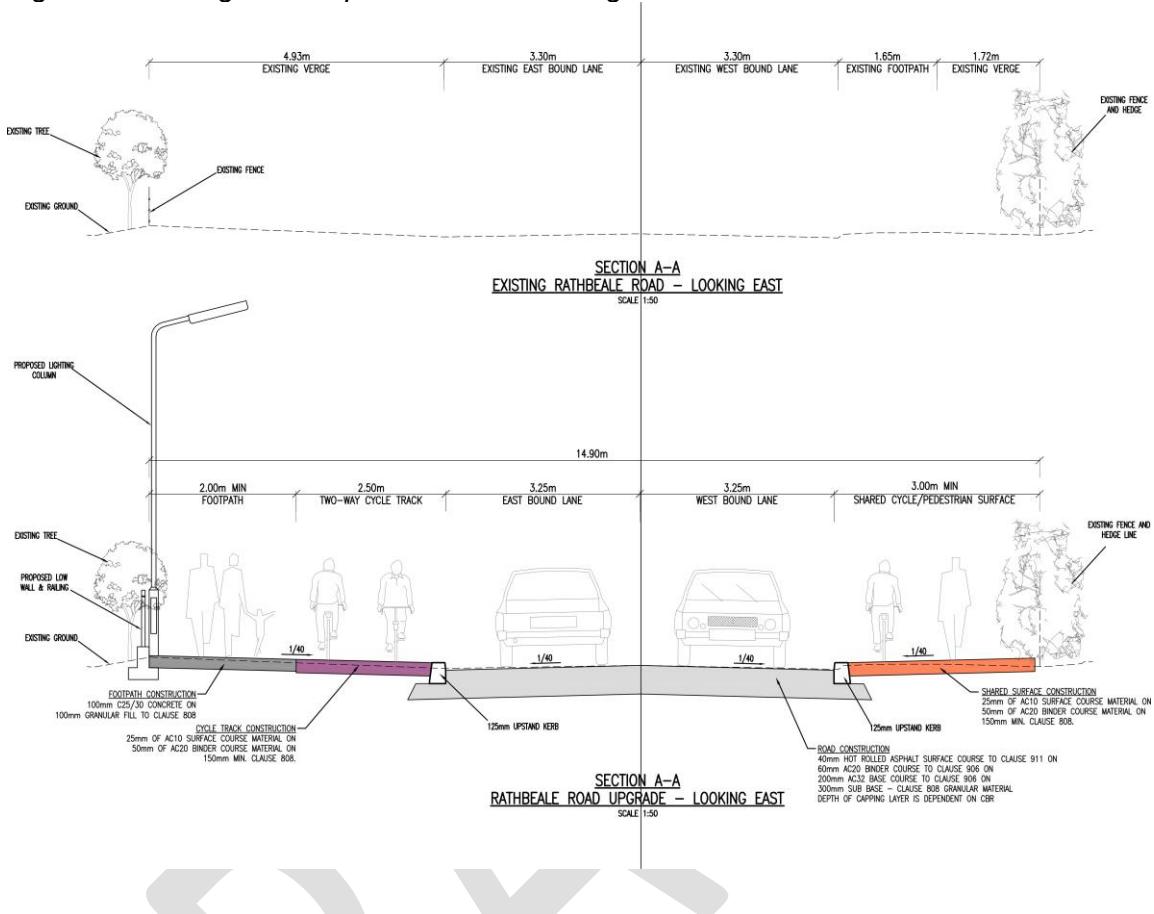


3. The western section of works include works along the footpath in front of the Rathbeale Cottages, the provision of the proposed junction with the Swords Western Distributor Road and approximately 285m of road where the existing corridor is approximately 14.5m wide or wider. Along this section of road, it is proposed to provide a 6.5m wide road, 4.50m footpath and cycle track on the northern side and a 3.0m shared footpath / cycletrack on the southern side.

As can be seen from Figure 5 below the existing southern lane and footpath could be kept open as a one-way shuttle system and pedestrian access during the construction of the northern lane and northern footpath / cycletrack.

Once completed, the new northern traffic lane, footpath and cycletrack could then be used for a one-way shuttle system and pedestrian route, while the works to the southern traffic lane and shared footpath / cycletrack are completed.

*Figure 5: Existing and Proposed Section through Western Section of Works*



#### 4.0 Diversion Routes

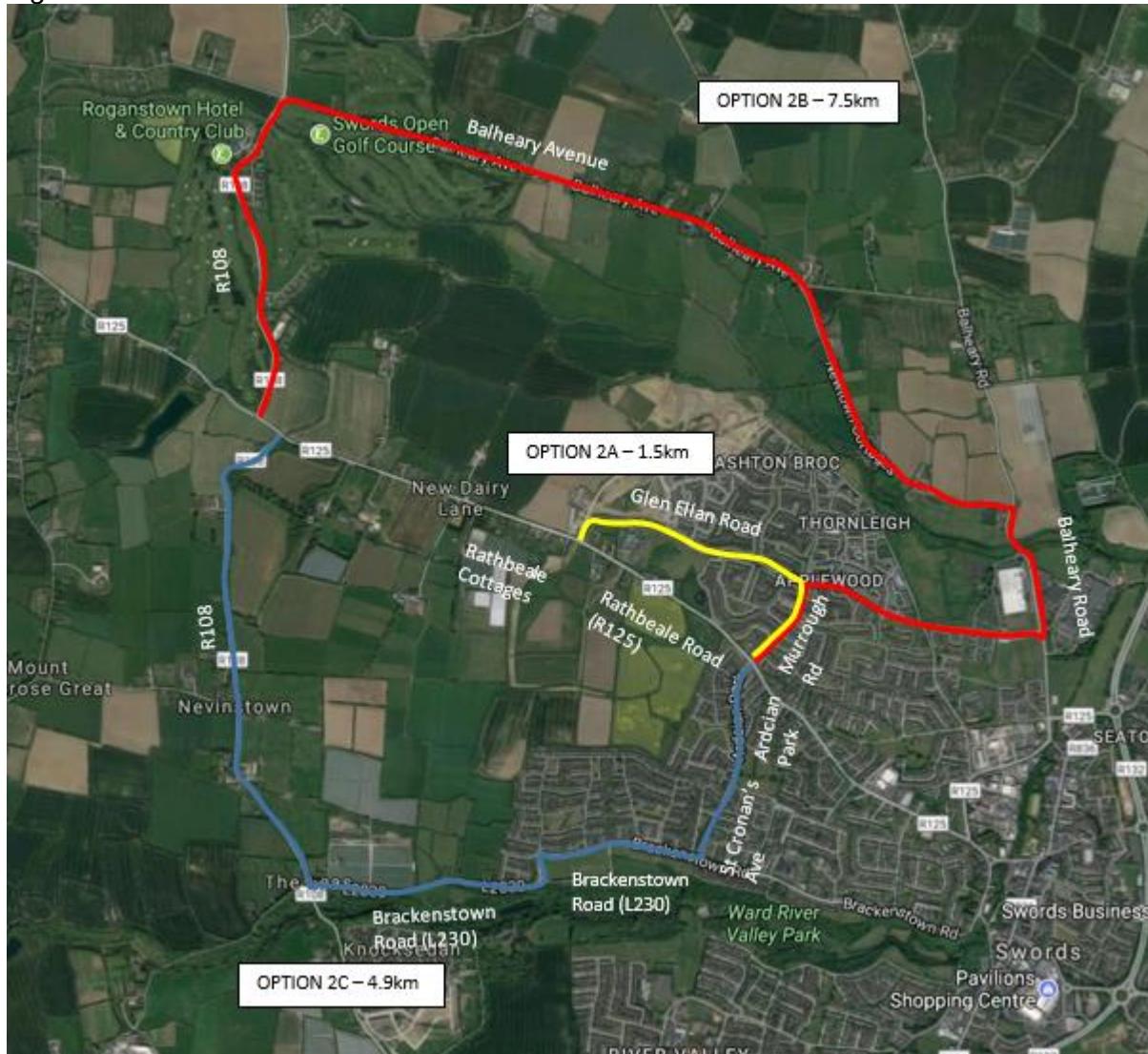
Three possible diversion routes to facilitate traffic diverted from the Rathbeale Road were identified. These routes are described below:

Options 1B and 1C would require diversion route to be implemented during the duration of the road closure. Three possible diversion routes to facilitate traffic diverted from the Rathbeale Road were identified. These routes are described below and shown on Figure 2:

#### Diversion Options:

- **Option 2A** – The closure of the Rathbeale Road and the diversion of traffic on to the Glen Ellan Road, Murrough Road and back to the Rathbeale Road a distance of 1.5km. A temporary link road and footpath is required to connect Rathbeale Road to Oldtown Avenue and Glen Ellen Road.
- **Option 2B** - The closure of the Rathbeale Road and the diversion of traffic along the R108, Balheary Avenue, Balheary Road, Glen Ellan Road, Murrough Road back to Rathbeale Road a distance of 7.5km.
- **Option 2C** – The closure of the Rathbeale Road and the diversion on the R108, Brackenstown Road, St. Cronan's Avenue, Ardcian Park and back on to Rathbeale Road a distance of 4.9km.

Figure 2: Diversion Routes - Alternatives



### Option 2A (1.5km)

Option 2A is the shortest of the three diversion routes at 1.5km which takes 4 minutes to drive on average. The Glen Ellen Road is 7.5m wide road with good pedestrian and cyclist facilities along the length of the road. There are also off road cycle tracks for over most of this route.

There are only 4 direct residential developments accessing onto this section of Glen Ellen Road including 2 from Millers Glen, Bunbury Gate, Castleview and Brides Glen.

There is also a school fronting onto the Glen Ellen Road. Currently the road is subject to vehicle congestion at school opening and finishing times. This route will require temporary works to facilitate the diversion of traffic and pedestrians from Rathbeale Road to the west end of Glen Ellen Road, including approximately 50m of temporary road and footpath.

A new pedestrian link through the Archaeological Park, connecting Rathbeale Road and Glen Ellen Road, east of the school, is included in the Local Area Plan (LAP) for the area. The developer of Millers Glen development has confirmed it plans to construct and open this path in advance of the start of the Rathbeale Road upgrade works. This will provide pedestrian access to the school campus for residents of the Rathbeale Road.

To divert traffic along this route would require the provision and implementation of a detailed Traffic Management Plan, with additional emphasis on the school and safety of the school children, staff and parents. The project team would engage with relevant stakeholders to ensure that the preliminary traffic management plan pays due regard to issues of safe pedestrian and vehicular access to the school.

It is considered that adequately resourced traffic management with appropriate pedestrian crossing facilities is the key to the success of this project. The extension of the existing footpath along the northern side of the Rathbeale Road from Millers Glen to opposite the School entrance is proposed as part of the local development plan. A signalised pedestrian crossing will be provided at this location, allowing for safe crossing to the school entrance. It is intended that these works be finished before the start of the Rathbeale Road diversion.

Dublin Bus has confirmed that of the three diversion options considered, Option 2A to be preferred as it is the diversion route with the least disruption and inconvenience to its customers. The same is the case for emergency vehicles as Option 2A is the most direct and quickest diversion route, should emergent vehicles need to use the diversion route.

#### **Option 2B (7.5km and 6.4km to the Balheary Road / R125 junction for vehicles travelling to the R132)**

This route is the longest of the three diversion routes reviewed at 7.5km. The route for the most part (5.8km) is a rural road with road widths below 5.5m in places. This section of rural road has 58 houses, 16 Trident Holiday Homes (Heyward Mews), Roganstown Hotel & Country Club, McLoughlin Restaurant and Swords Golf Course fronting onto it.

There are no pedestrian or cycle facilities along long sections of the route. There is also no public lighting along sections of this route. The increase in the volume of traffic that the diversion would generate would result in unsafe conditions for users of this road, and in particular for pedestrians and cyclists. It would also represent a severe inconvenience to the occupants of the existing properties along the route.

#### **Option 2C (4.9km)**

This diversion is 4.9km in length. A section of this route (3km) is a rural road along the R108 with road widths below 5.5m. This section of rural road has 16 residential units fronting onto it.

There are no pedestrian or cycle facilities along long sections of the route. There is also no public lighting along sections of this route. The increase in the volume of traffic that the diversion would generate would result in unsafe conditions for users of this road, and in particular for pedestrians and cyclists. It would also represent a severe inconvenience to the occupants of the existing properties along the route.

## **5.0 Assessment of Options**

Construction Option 1A, which would keep Rathbeale Road open for the full duration of the project is not viable as sections of the road corridor are too narrow to allow for safe stop / go one-way shuttle system working. This option is therefore not feasible as the risk to programme and ultimately health and safety would be considered too high.

Diversion Options 2B and 2C are unviable due to the additional length of the journeys that diverted traffic would have to take, the fact that the routes make use of narrow rural road inappropriate for the higher levels of traffic the diversion would result in, health & safety concerns regarding the lack of public lighting on the roads and the lack of pedestrian & cycle facilities, Dublin Bus and emergency vehicle requirements and due to the very intensive traffic management measures that would be required to maintain the diversion routes and diversion signage.

The relative merits of Options 1B and 1C are discussed below under a number of headings:

### **Programme**

<b>Construction Option Number</b>	<b>Estimated Construction Time</b>
Option 1B – Full Road Closure	9 Months
Option 1C – Part Road Closure & Shuttle System	12 to 14 Months

The option to close Rathbeale Road for the entire works results in a significantly shorter construction programme duration. It will allow the contractor to secure the site and programme the order of works in a more optimal way.

The operation of a one-way shuttle system will result in queuing and significant delays at either end of the works for traffic travelling along the Rathbeale Road, for an extended duration. The construction works will take approximately 12 to 14 months to complete if the middle section of work is carried out under a one-way shuttle system of approximately 250m at a time resulting in 4 phases of 8 to 10 weeks each. This result in prolonged delays and disruption to Rathbeale Road traffic and to local access for residents along the Rathbeale Road.

This compares to an estimated 9 month construction period in the case where the road is closed for the entire works and the contractor is free to progress works in the most efficient manner without the need to maintain through traffic along the route.

This shorter construction programme will minimise the impact on Rathbeale Road users and on the local residents who live on to the section of Rathbeale Road being upgraded.

### **Traffic Management**

The use of a shuttle system is not ideal from the perspective of both pedestrians and cyclists. Pedestrians and cyclists will be using sub-standard facilities along the

Rathbeale Road shuttle system for the duration of the works which would have health & safety implications. The diversion along the Glen Ellen Road would allow for the use of standard footpaths and cycle tracks throughout the duration of the works and would minimise any health & safety issues.

The shuttle system would cause significant backing up of traffic along the Rathbeale Road, both into and out of Swords on a constant basis throughout the works, in particular during peak hour traffic and will require a 24 hour breakdown service.

The closure of the Rathbeale Road and diversion on the Glen Ellen Road will provide a safe alternative route for cyclists diverted from the Rathbeale Road. It is acknowledged that management of traffic at the schools will be key to the successful operation of this diversion. The key period to be addressed will be the morning peak, when traffic flows along the Rathbeale Road from the west coincide with the school morning drop-off. Traffic Management measures will be implemented for the full duration of Rathbeale Road construction along Glen Ellen Road to maintain free flow for school children drop-offs and to maintain children safety and all times.

## **Health and Safety**

Full road closure will allow the contractor to take control and enclose of the entire works area without having to facilitate through traffic and pedestrian routes, significantly minimising the health and safety risk to the general public around the works area.

Safety and health issues for construction workers will be much improved in the case of a full road closure, as it will avoid their having to work alongside live traffic.

Maintaining pedestrian / cycle routes alongside the shuttle system for an extended duration of works, significantly increases the health and safety risks to the public as a result of the works.

The shorter the duration of works the lower the health and safety risk to the general public. Local homeowners could face having to access their homes through a building site for up to 50% longer duration if a shuttle system is utilised.

Safe local access will have to be maintained for the existing residents along Rathbeale Road, but the complete separation of the works from all other road users significantly reduces the health and safety risks associated with the works.

## **Utilities**

The works include significant utility diversions that currently traverse from one side of Rathbeale Road to the other along the entire length of the works. Full road closure will facilitate more efficient diversion of utilities and allow for switch over of services serving the local residents in a timely manner during the works.

The alignment of existing utilities which traverse from one side of the Rathbeale Road to the other along the length of the works will increase the risk of the Contractor not being able to carry out sections of the works while maintaining a shuttle system and pedestrian access along the western and eastern sections of the works. This could result in further delays to the overall construction programme as works are

carried out locally in sub-phases, facilitated by localised realignments of the trafficked road lane.

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## **6.0 Recommendations**

Following a review of the merits of Options 1B and 1C, as outlined in Section 5.0, it has been concluded that, due to the much more significant health and safety risk associated with Option 1C and the significant risk it may not be physically possible to carry out the works along some sections of the Rathbeale Road corridor under a one-way stop / go shuttle system, that the works should be carried out under a full road closure. Option 1B is proposed as the preferred diversion route. It is the shortest diversion route and the Glen Ellen Road is the only road suitable to safely facilitate the diverted traffic. This diversion route has adequate pedestrian & cycle facilities and is the preferred diversion route of Dublin bus and quickest for emergency vehicles.

It will be necessary for a temporary road and footpath connection to be provided to facilitate the diversion from the Rathbeale Road to the west end of the Glen Ellen Road. A section of this road has already been constructed as part of the Oldtown LAP lands infrastructure.

## **7.0 Next Steps – Preliminary Traffic Management Plan**

A Preliminary Traffic Management Plan is to be prepared as part of the tender design stage of this project. The Preliminary Traffic Management Plan will set out guidelines for the Contractor to progress and implement during the construction phase. The Preliminary Traffic Management Plan should be further developed by the Contractor and the Project Supervisor for Construction Stage (PSCS). The PSCS will co-ordinate the implementation of the approved final traffic management plan during construction of the Works.

All Traffic Management during the course of the Works will be in accordance with the requirements of the Department of Transport document Guidance for the Control and Management of Traffic at Roadworks and in accordance with Fingal County Council requirements.

A Preliminary Traffic Management Plan will outline the following requirements:

1. All necessary road signage for the diversion of traffic, including additional signage for school children. Appropriate advance warning signage including temporary illuminated signage will need to be provided on all key roads and roads adjacent to the site. Some VMS (Variable Message Signs) signs may be requested by the Traffic Department.
2. Temporary yellow boxes along Glen Ellen Road during the diversion to minimise the congestion during school opening and finishing times to facilitate traffic flow from Millers Glen, Bunbury and Castleview.
3. Enforcement of illegal parking along Glen Ellen Road during School opening and finishing hours to maintain traffic flow and facilitate emergency vehicles to access local roads. It is noted that the Oldtown LAP development will be removing school drop-off / pick-up parking along the Glen Ellen Road. The School has reopened its on-site drop-off / pick-up parking in recent times and this system is now being utilised. Temporary double yellow lines along Glen Ellen Road from the diversion off Rathbeale Road.
4. Access for construction traffic and deliveries should be restricted to out of peak hour traffic where possible.
5. Local access for residents along the road will be maintained.

6. Temporary speed ramps along Glen Ellen Road from the diversion off Rathbeale Road to the Murrough Road Roundabout.

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