

# Construction of Toonlane Junction

N22BBM

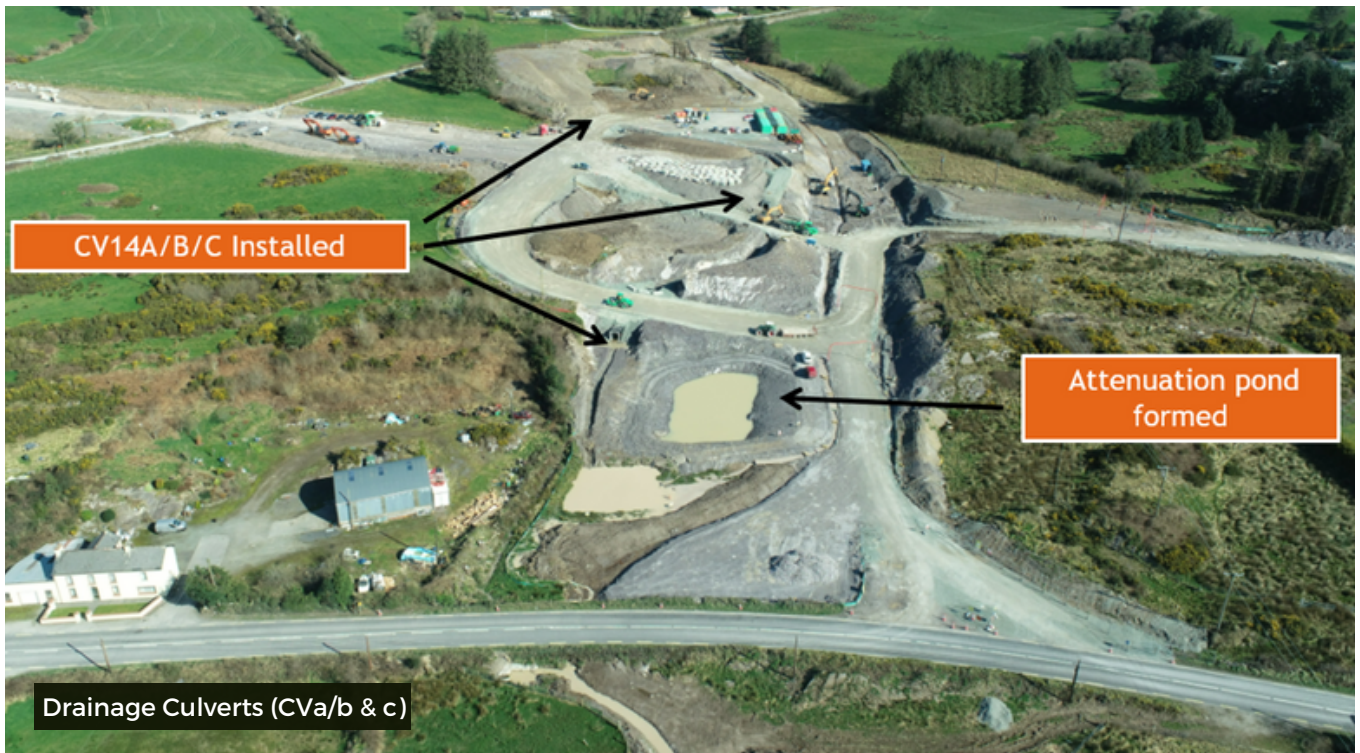
## Introduction

The Toonlane Junction is significant in the context of the overall N22BBM scheme as it is one of only three full-movement junctions on the scheme.

It serves a large catchment, being the only junction on the scheme between the Millstreet Road in Macroom and the Western Tie-in junction, serving Baile Mhic Íre, Baile Bhuirne, the Clondrohid Road and surrounding hinterlands. The junction itself is a substantial piece of infrastructure comprising three access roads AR16, AR17 and AR18, the northern and southern junction slip-roads, a 550metre length of new road construction to form the new Clondrohid Road connecting the exciting N22 to the old Clondrohid road.

A roundabout is also to be constructed at the southern extremity of the junction during the 3rd quarter of 2022, which will form the tie-in of the junction to the existing N22 Road. The construction of this junction needed to be advanced at an early stage so as to permit the existing Clondrohid Road to be closed, which in turn would facilitate the construction of the mainline alignment.





## Description of the Works

Works commenced with the Bulk Earthworks which began in January 2021. These works involved a major rock breaking exercise to the south side of the junction to remove a significant rock outcrop.

The quantities of rock broken and reused are as follows:

- 8,000 m<sup>3</sup> for the road
- 1,500 m<sup>3</sup> for the abutments of the Clondrohid Road Underbridge (S07)
- 3,500 m<sup>3</sup> for the settlement pond

Following completion of the earthworks, the project entered the construction phase which included the following tasks:

- Drainage & Ducting
- Public lighting
- Installation of kerbing
- Pavement construction
- Northern tie-in works
- Southern tie-in works

The majority of these works were constructed off line. However, both the northern and southern tie-in works included a significant temporary traffic management element, with works being carried out adjacent to live traffic.

Operative safety was of paramount importance in this situation, something that was reinforced with regular toolbox talks.

The bulk of the junction construction works were carried by the Contractor's own personnel with approximately 20 no. operatives working on these works at its height. In addition, specialist sub-contractors were used for the following elements of the works:

- Kerb laying
- Lighting installation
- Road pavement construction
- Signage
- Road Markings



## Challenges Encountered in the Course of Construction

The structure in the centre of this junction is the Toonlane Underbridge S07 which was being advanced by our Structures Team concurrently with the junction works by the Roadworks Team. The co-ordination of works between these two teams, both working to tight time-frames, was always going to be challenging. This required a significant element of communication and co-ordination so as to ensure that neither element of the works was hindered by the other.

The presence of overhead High-Voltage power cables meant that public lighting columns had to be relocated with additional rock breaking required. The management of the Health and Safety concerns around working with live traffic was a source of concern which required additional resources in terms of management time to ensure that this risk was adequately managed.

Getting materials on site from our supplier "Roadstone" presented its own challenges because of the high level of similar activity on other parts of the site. Management of this situation required significant advance planning and scheduling to ensure that no hold-ups were experienced.

Despite the challenging construction environment being experienced at present, no skills shortages or difficulty with material supply were encountered. This can be put down to various pro-active measures undertaken by the contractor such as advance ordering/buying.

One of the issues which must be considered in any construction project is weather related effects. In the case of this particular project, despite starting work in January after a wet period of weather, we were fortunate not to experience any severe weather during the course of the project, something that can only be put down to good fortune.

## Environmental Considerations

The site had been assessed for Archaeology before the main contract commenced. A site-wide Ecological Assessment was carried out in advance of these works to ensure that any constraints were identified at an early stage.

Noise, vibration and dust levels were all monitored by the on-site environmental team during the course of the works, to ensure that the works were carried out at all times within the limits allowed in the contract for each of these parameters.

Dust suppression proved challenging during the drier periods and this was managed by the use of a water bowser.

## Quality Control

Prior to commencement of pavement operations, installation and testing of the drainage and service ducting was undertaken. The drainage pipes & service ducts were tested to ensure there were no open joints or blockages. Prior to pavement works, California Bearing Ratio (CBR) tests of the sub-formation and top of capping (final earthworks layer) were performed to ensure sufficient strength of formation, subgrade, capping prior to placement of the overlying pavement layers.

When C1804 material is placed, Proof roll tests were carried out and witnessed by our inspectors to ensure we achieved sufficient compaction.

When the Blacktop Asphalt layers commenced, cores were taken by the Subcontractor and sent to the lab to be tested for Thickness, Density, Air Void Content in line with the specification requirements. Texture testing was also completed to ensure adequate skid resistance was achieved.

Line marking was completed, signage & lighting erected and snagging of the completed works in the junction was undertaken and actioned prior to diverting traffic to the newly constructed road.





## Conclusion

Works commenced on the construction of the Toonlane Junction in January 2021 and were completed in August 2021. The new Clondrohid road and T- junction were open to live traffic on Saturday 25th August following the completion of the Road Safety Audit.

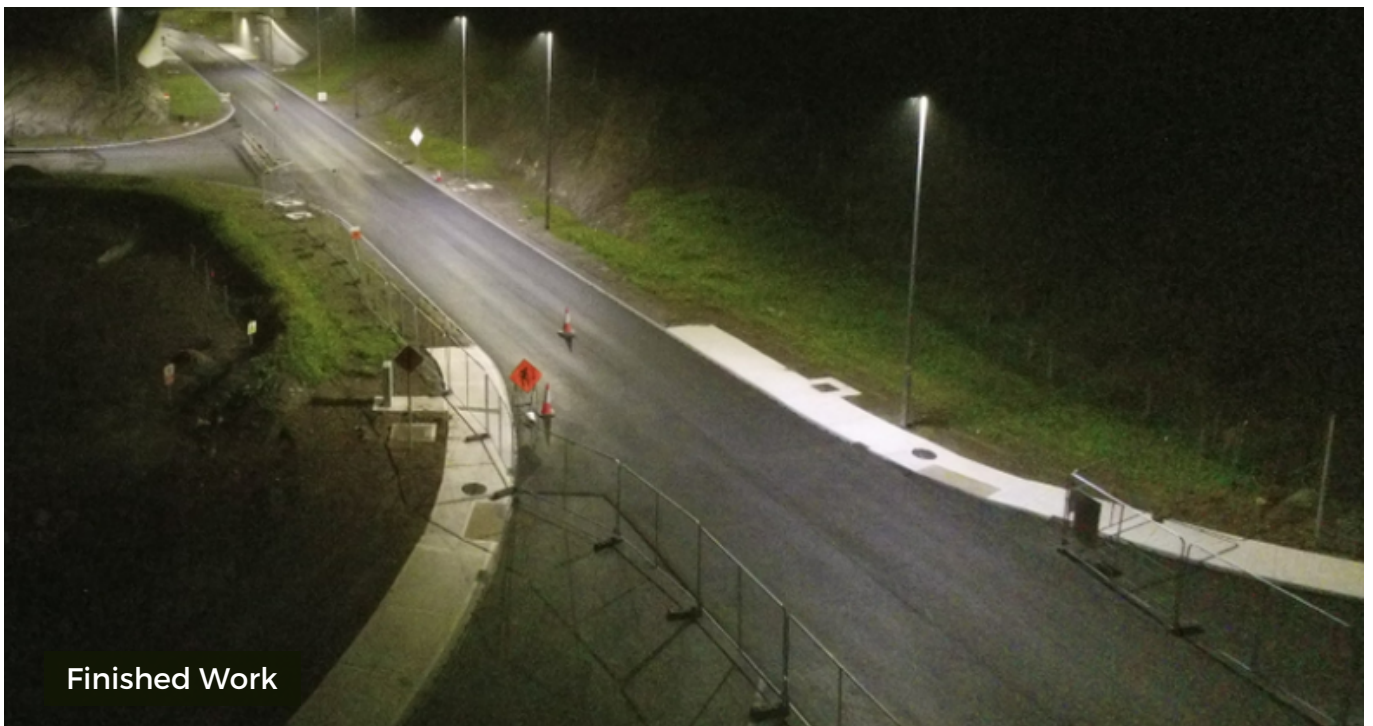
These works were managed by Dilan O'Donoghue, contractor's site engineer. Dilan told me that there was a great sense of achievement among the construction team when the road was finally open to traffic, given all the effort that was put in to get it delivered on time. The most challenging aspect of these



Northern Tie-In

works was the planning, co-ordination and communication involved with the various work crews to ensure that the work was carried out accurately and efficiently. He felt that much of the success could be put down to the availability of members of the contractor's senior site team in Section 1 of the project, in assisting with problems promptly, as they arose.

The full completion of this junction as a roundabout will be carried out at a later stage and is currently scheduled to be completed in the 3rd quarter of 2022.



Finished Work