12.0 TRAFFIC

12.1 Introduction

12.1.1 Background

Trafficwise Ltd. is retained by Kilsaran Concrete to prepare this Chapter of the EIAR which provides an assessment of the receiving road network and an assessment of likely traffic impact arising from the development of Bellewstown Quarry. The aim of this Chapter is to provide the Planning Authority with sufficient roads and traffic related information to determine the historic, recent past and likely future traffic impact arising from the quarry development.

Trafficwise Ltd. has carried out various traffic studies at the application site in the past, amongst which has been a detailed road network and traffic assessment undertaken in 2008 when the quarry was active and was operating at a rate of extraction comparable to that currently proposed, it follows that the 2008 study provides a suitable reference from which to confirm the forecast traffic generation characteristics of the proposed development. The 2008 study includes a detailed haul route assessment together with detailed weighbridge records and classified junction turning count surveys which comprehensively characterised the traffic generation of Bellewstown Quarry.

A series of junction turning count surveys and a comprehensive survey of existing haul routes was undertaken for the 2008 roads and traffic assessment. Corresponding turning count surveys were undertaken in October 2015 whilst the survey of existing haul routes was reviewed and updated in December 2015. A series of junction traffic turning counts and automatic traffic counts were undertaken in May 2021 to inform the current traffic study and the preparation of this Chapter. The series of survey data sets provides a base from which to evaluate past traffic patterns on the receiving road network and also provides a sound baseline upon which to evaluate likely future impacts arising from the proposed development.

An important difference from the past/current operation is that the current proposal seeks to provide additional roads infrastructure connecting the site access on L56172 Mullagh Road to L1615 at a proposed new junction approximately 1km south of Regional Road R150. The scope of this roads and traffic assessment therefore expands upon that of the previous 2008 and 2015 traffic studies in order to focus on the revised traffic distribution arising from the proposed new infrastructure. The general methodology adopted in the preparation of this assessment parallels that of the previous studies, which methodology had been discussed and agreed as appropriate at a pre-planning scoping meeting with the Local Authority Roads Department.

At the pre-planning stages in the preparation of the 2008 traffic study the Roads Department Senior Executive Engineer (SEE) visited the site accompanied by Trafficwise Ltd. to conduct a visual inspection of the existing site, to observe the prevailing traffic conditions at the site access and to conduct a visual inspection and appraisal of the haul routes.

This section of the Environmental Impact Assessment Report is structured generally in accordance with the Chartered Institution of Highways & Transportation (CIHT) document *Guidelines for Traffic Impact Assessment* (September 1994) and the *TII (NRA): Traffic and Transport Assessment Guidelines* (2014).

This Chapter describes the receiving roads environment and reports upon past, present and forecast future traffic conditions arising at the site and on the receiving road network. The quantum of traffic generated by the quarry has been reviewed together with historic traffic data which provides a frame of reference with respect to past, present and future forecast traffic flows on the receiving road network.

As part of the 2008 roads and traffic assessment a detailed road geometry and condition survey was carried out for the then principal haul routes. This section of the EIAR and the accompanying drawings provide details recorded in the survey, which include carriageway width, verge width, access locations, passing areas and informal widened areas etc. The details of the 2008 road geometry and condition survey have been confirmed by a high-level survey undertaken in December 2015. For the most part changes in the road network derive from general maintenance and resurfacing work whilst other more noteworthy works or changes in the carriageway or verge are described herein.

Under the current proposal vehicles transporting materials from the site will principally use the proposed new road infrastructure crossing L56172 Mullagh Road at a relocated site access at Hilltown Little and connecting with L1615 approximately 1 km south of the R150/L1615 junction at Annagor/Beaumont. The pre-existing haul route network as set out in the 2008 and 2015 studies will be used only by a very small number of trucks on occasion for supply to the immediate local market.

The existing road network has catered for traffic movements to and from Bellewstown Quarry for over half a century and for comparatively more elevated than current traffic movements during the past twenty years. The forecast daily traffic generation of the site under the current proposal will be shown to be equal to the generation rate that prevailed in 2008 when no road widening or local improvements had been envisaged as necessary to accommodate site traffic even when considered in concert with a similar quantum of HGV traffic arising at the Keegan Quarry development (now closed) located directly opposite Bellewstown Quarry.

The comprehensive appraisal of the existing receiving road network in this EIAR is intended as a desktop aid to the Planning Authority in assessing the receiving roads environment. It is important to note that the current proposal does not rely on the existing haul routes and instead seeks to construct new road infrastructure which will shorten the distance over which quarry traffic will be required to travel on the receiving public roads in Bellewstown. Quarry traffic will principally traverse only a 1 km section of L1615 south of the R150.

The site has operated for a long time, and indeed, has in the past, under the management of various organisations, generated several times the recorded 2008 traffic volumes which correspond to the traffic volumes proposed under the current application.

Concrete blocks and readymixed concrete have historically been batched and exported from the site. Concrete block production ceased in the mid 1990's. Upon acquiring the site in 2006 Kilsaran Concrete closed the concrete batching plant which significantly reduced traffic generation. The production of blocks and concrete had not only generated exports of product from the site but had also generated traffic importing constituents such as sand and cement used in the manufacture of concrete based value-added products.

In general, practically all roads in the receiving area have been observed to carry some HGV traffic during traffic surveys and site visits in 2008, 2015 and more recently in 2021. During the 2008 and 2015 site visits both the subject quarry and the Keegan quarry site on Hilltown

Little were closed or inactive so this historic data provides an additional reasonable frame of reference from which to judge, in the absence of quarry traffic, the levels of background network HGV through traffic and traffic generated by nearby commercial and agricultural enterprises.

The current proposal seeks to continue operations at the existing quarry with no increase in the number of HGV generated by the site on an annual basis from that which was cited in the 2004 registration under Section 261.

Receiving road network traffic flows have not altered significantly since 2008 and it is likely that the level of impact on the receiving road arising from the proposed development will be similar to that of 2008. It is important however to acknowledge that the total volume of HGV on the immediate receiving roads will be practically half that observed in 2008 due to the closure of the Keegan Quarry development. It is also important to note the significantly altered traffic distribution arising from the proposal to construct a new private road connecting the site access at Hilltown Little with L1615. The L1615 runs through Hilltown Great and Beaumont to connect Bellewstown Cross with R150 at Annagor/Beaumont. Quarry generated traffic will be required to use only a 1 km section of L1615.

Notwithstanding the significant infrastructure improvement, in terms of haulage traffic volumes this application seeks to confirm that same level of HGV activity as had been agreed with the Planning Authority in 2007.

In addition to the construction of a proposed new link road, it is proposed to implement mitigation measures to control dust and debris and to improve the receiving road environment of Mullagh Road, Hilltown Little where quarry traffic crosses. This Chapter identifies a suite of road improvement works that includes carriageway strengthening and widening together with road re-surfacing and bridge strengthening works at Beaumont Bridge. This suite of roadworks will be done separately to this process and Kilsaran will contribute financially to them or they will carry out the road improvement and bridge works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides. The suite of works to the public road is identified in Section 12.3.12 of this Chapter. The suite of works involves the improvement of a 1 km section of L1615 between the proposed new link road and the R150 and strengthening works to Beaumont Bridge near the R150 junction.

The total volume of recoverable reserves within the proposed scheme has been assessed at between 11.0 to 11.5 million tonnes. The anticipated level of extraction will be 450,000 tonnes per annum giving a production life for the identified extraction area of 25 years allowing for fluctuations in demand. A further 1 year is being sought to complete the final reinstatement of the quarry to a sustainable after use. The anticipated production level is equivalent to an average 81 daily truck loads.

12.1.2 Competency of Chapter Author

This Chapter has been prepared by Julian Keenan an Engineer in practice and a director of Trafficwise Limited holding the degree of Bachelor of Engineering (Hons.) in civil engineering conferred by University College, Galway, in 1990. Mr Keenan is a member of the Institution of Engineers of Ireland and a member of the Chartered Institution of Highways and Transportation. Mr Keenan has over 30 years engineering experience, including

approximately seven years in local government in the United Kingdom and over 23 years of private engineering consultancy services in Ireland, of which 18 years are with Trafficwise Limited. He has specialised in roads design and traffic and transportation planning for approximately 25 years. Consultancy experience includes advising clients in relation to road schemes, residential, commercial, industrial and leisure developments for which the key work involves provision of professional services in the design and appraisal of schemes, including the preparation of planning applications and appeals. Mr Keenan has represented clients at An Bord Pleanála oral hearings for commercial development, strategic infrastructure development and represented landowners and stakeholders in relation to various road schemes and infrastructural works. He has given sworn evidence before the Property Arbitrator, including in relation to road schemes, and has provided expert witness testimony to the High Court.

12.1.3 The Existing Quarry

The existing quarry at Bellewstown was permitted by way of substitute consent previously by An Bord Pleanála (Ref. No. PL17.SU0101). The continued extraction at the quarry and its expansion to the north and west of the existing void area was permitted by An Bord Pleanála under Ref. No. PL17.QD0013 (in accordance with section 37L of the *Planning and Development Acts, 2000* (as amended)) (hereafter referred to the 37L development).

Planning permission received under the 37L development was granted for a period of 10 years (Condition No. 3) by An Bord Pleanála on 24th October 2018. Furthermore, Condition No. 4 limited the number of Heavy Goods Vehicle (HGVs) movements per day to 32 no. loads (64 no. two-way) (versus 81 no. loads (162 no. two-way) proposed).

Extracted material is processed using mobile crushing and screening plant and stockpiled in advance of haulage. Landscaped overburden and topsoil storage/screening berms are included, together with a landscaping and rehabilitation plan to be fully implemented upon completion of quarrying. Ancillary site works permitted included a new wheelwash, a new septic tank and two bunded fuel tanks.

The total volume of recoverable reserves within the permitted quarry area is estimated at between 11.0 to 11.5 million tonnes. The 37L development proposed a level of extraction of c. 450,000 tonnes per annum, giving the production life for the extraction area of 25 years, allowing for fluctuations in demand. This anticipated production level was equivalent to an average of 81 no. daily truck loads.

In restricting the life of the permission to 10 years (Condition No. 3), and limiting the maximum number of HGV movements to 32 no. loads (Condition No. 4), the Board's *Order* effectively limited the extractable reserve to c. 1.8million tonnes over the 10 year period. An Bord Pleanála stated that such a timeframe was reasonable given the history of the facility and would allow for the ongoing review of the environmental impacts of the operation of the facility.

12.1.4 Overview of Proposed Development

The proposed development seeks to extend the life of the current permitted quarry from 10 years to 25 years (as originally proposed 37L development) and proposes to develop a new

dedicated quarry access road to facilitate an increase in the permitted number of HGV loads to and from the quarry from a maximum of 32 No. per day to an average of 81 No. per day (with +/-15% fluctuations in the number of loads to and from the quarry proposed to address certain demands on the quarry as and when required, equating to a maximum of 93 No. loads per day).

Access to the quarry is currently provided from the L56172 Mullagh Road that runs in a north-south direction and bounds the eastern portion of the site. In order overcome the Board's concerns regarding impacts on the local community, the subject development proposes the provision of a new private road, as well as new entry/exit points onto this new road, to serve the quarry. In addition, to facilitate the development, it is proposed to provide a double weighbridge and new wheelwash aligned to the new entrance to the quarry, as well as providing a new shipping office alongside the new weighbridges. A new powerhouse is proposed to facilitate a mains electric supply for use by pumps, plant and machinery in the future.

The proposed new private road will reduce the impacts on the local community by redirecting the HGVs away from Bellewstown Village and reducing the linear mileage on the receiving road to approximately 1 km. The new road will cross the L56172 Mullagh Road and continue northwest through to the fields opposite the quarry. The new private road is approximately 1.7 km long and has an average width of 6m not including 250mm hard strips. Road widening is provided at bends to accommodate the easy opposed passage of trucks. This road has the capacity to service the proposed average of 81 No. daily loads from the quarry to facilitate an extraction level of approximately 450,000 tonnes per annum. Quarry vehicles transporting materials will be required to use L1615 from the junction of the proposed new road northward to R150 at Annagor/Beaumont which is a distance of approximately 1 km.

12.1.5 The Subject Development Relationship with the 37L Development and 2008 Traffic Study

The subject application seeks permission to extract the quarry for a period of 25 years, whilst seeking permission for the provision of a road, which will alter the access and egress route to and from the quarry to address the Board's concerns regarding traffic impacts on the local community. The provision of the new road will allow an average of 81 no. loads per day to facilitate an extraction level of approximately 450,000 tonnes per annum, as originally sought in the Section 37L development. Extending the life of the quarry to 25 years, plus an additional year to allow for restoration, will ensure that the full resource of the quarry is utilised.

12.2 Methodology and Scope

12.2.1 Methodology

This study examines the operation of the existing road network and the potential traffic impacts of the proposed development and proposes measures to mitigate identified development related impacts.

This Chapter has been prepared taking into account the following policy documents:

- The requirements of EU Directives and national legislation (primary and secondary) concerning Environmental Impact Assessment (especially having due regard to the revised provisions of Directive 2014/52/EU);
- EPA (2002) *Guidelines on the Information to be Contained in Environmental Impact Statements*;
- EPA (2003) *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*;
- EPA (September 2015) *Advice Notes for Preparing Strategic Environmental Assessments*;
- EPA (August 2017) *Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*;
- DHPCLG (15/05/17) *Circular Letter PL 1/2017 Implementation of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive): Advice on Administrative Provisions in Advance of Transposition*;
- DHPCLG (May 2017) *Transposition of 2014 EIA Directive (2014/52/EU) in the Land Use Planning and EPA Licencing Systems: Key Issues Consultation Paper*;
- *Meath County Development Plan 2013-2019*;
- Department of Transport, Tourism and Sport (2019) *Traffic Signs Manual;*
- Transport Infrastructure Ireland (TII) (2014) *Traffic and Transport Assessment Guidelines*, referred to hereafter as the *TTA Guidelines*;
- TII (2016) *Project Appraisal Guidelines for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts*;
- TII (2019) *Unit 5.3 Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections*;
- TII (2017) *Rural Road Link Design DN-GEO-03031*;
- TII (2017) *Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions) DN-GEO-03060-02*; and
- Other relevant TII Publications (Standards).

12.2.2 Scope

This Chapter provides an appraisal of the receiving road network which includes a detailed roads geometry survey together with records and estimates of network traffic flows and traffic arising at Bellewstown Quarry. The assessments focus on those local routes leading to the regional and national road network which are known to have been most heavily trafficked by quarry vehicles. Other roads outside the scope of the study would ordinarily have been trafficked by quarry vehicles in relation to satisfying local demand. Such delivery of building materials locally would occur and would have occurred regardless of the existence of the Bellewstown Quarry.

The scope and methodology of this assessment mirrors that of the 2008 and 2015 roads and traffic assessments since same had been agreed as satisfactory with the Local Authority in the pre-planning stages. The purpose of the scoping study had been to ensure that work was not

undertaken unnecessarily and that resources were directed to the areas needing most attention.

12.3 Receiving Environment

12.3.1 Site Location

The existing site is located on L56172 Mullagh Road in the townlands of Hilltown Little and Bellewstown. The east-west running local road that connects to the southern end of Mullagh Road at Hilltown Little is Local Road L5618 Carnes Road, this road runs through Bellewstown Cross to the east connecting to Julianstown, to the west is Duleek. The Mullagh Road runs in a north-south direction and forms the eastern boundary to the subject quarry site. Measured along the Mullagh Road, the existing site access is located approximately 550m northwest of the L5618 Carnes Road. Carnes Road forms a short portion of the southern site boundary. The site is highlighted red in Figure 12.1.

Figure 12.1: Local Site Location.

12.3.2 Historic Haul Routes

Historically traffic generated at the quarry site was not restricted in any way by planning conditions. The number of vehicle movements cited in the original Section 261 Registration Submission of John Gallagher in 2004 (presented as an average; not a maximum) was 81 No. HGV associated with the haulage of product and 30 No. cars entering and leaving the site together with 1 No. sales representative vehicle and 4 no. other delivery HGV where 'other' refers to vehicles not associated with export of extracted materials, examples include fuel delivery vehicles or HGV delivering materials for use in the manufacture of value-added product. This equates to a total daily traffic generation of 85 No. no. HGV and 31 No. cars.

It is noteworthy that under Section 261 Registration, ancillary manufacturing at quarries did not require registration therefore the traffic numbers cited in the 2004 registration excluded

HGV movements associated with the concrete batching plant and the concrete block plant that operated at that time. It is estimated that concrete and concrete block production potentially elevated the pre-registration total traffic generation of the site to an average daily flow of in excess of 100 No. HGV trips per day.

Historically there were no designated haul routes associated with the quarry site and effectively HGV traffic has been free to avail of the entire public road network. The same scenario applies to practically all other local commercial operations. The routes most commonly used by HGV serving the Bellewstown Quarry site in the past are highlighted red in Figure 12.2 below.

Figure 12.2: Historic Haul Routes to Regional Road Network.

The principal routes to and from the site over the past twenty five years are understood to have been the L5618 Carnes Road which connects Hilltown Little to the R152 to the west and the R132 to the east and L1615 Hilltown Great Road connecting Bellewstown Crossroad with the R150 to the north. Up until 2008 L56172 Mullagh Road had been used to access the R150 (Duleek and Julianstown) located to the north of the site. It is understood that ordinarily a comparatively small number of HGV had used this route. In 2008 Kilsaran Concrete voluntarily ceased using the section of the Mullagh Road to the north of the site access. A ban on the use of this road was later formally agreed in 2009 under a settled High Court action.

12.3.3 Local Road Network

L56172 Mullagh Road

The subject site currently enjoys direct vehicular access onto the Mullagh Road via a simple priority arrangement. Measured along Mullagh Road the site access is located approximately 550m north of L5618 Carnes Road. Between Carnes Road and the site access Mullagh Road varies in width from 4.0-6.0m.

Overall Mullagh Road is in relatively good state of repair but shows signs of past distresses and frequent maintenance. Planning permission received under the 37L development was granted for a period of 10 years by An Bord Pleanála on 24th October 2018. As part of the compliance with the 37L permission Kilsaran as an authorised agent of Meath County Council resurfaced large sections of the Mullagh Road and resurfaced the junction with Carnes Road in agreement with the Roads Section of Meath County Council. The Mullagh road has an undulating vertical profile and there are narrow sections between the application site and Carnes Road. There is no posted speed limit on the Mullagh Road; as such, by default an 80km/h speed limit is considered to apply, this is based upon the fact that as one approaches the site from the south the last speed limit sign on the Carnes Road indicates that an 80km/h speed limit applies. In any case vehicular speeds on this road are restricted by geometry. Results of an automatic traffic counter survey conducted on Mullagh Road between Friday 21-May-2021 and Thursday 27-May-2021 show the 85th percentile speed to be less than 50km/h in both directions and shows the average speed in the vicinity of the existing site access to be in the order of 38km/h. The formal counter data confirms the findings of previous speed assessments carried out using a hand-held radar in 2008 and again in 2015 from which it had been estimated that the design speed of the road was no greater than 50km/h.

To the north of the existing site access Mullagh Road narrows to 3.5-5.0m and the horizontal alignment is characterised by sharp bends and poor forward visibility. The northern section measures 1.8 km between the site access and the R150 and is considered unsuitable for the opposed passage of HGV. This road has not been used by Bellewstown Quarry HGV traffic since mid-2008. The road surface over this northern section is in a relatively good condition with no significant potholes, subsidence or distress.

The southern section of the Mullagh Road is undulating and is wider than the northern section. Owing to the continued passage of HGV along the southern section some elements of informal road widening into the verges had developed and were used as passing bays. The provision and strengthening of passing bays on Mullagh Road was included as part of the works Kilsaran carried out by agreement with Meath County Council under compliance with the 37L permission. Overall, the southern section of the Mullagh Road is in fair structural condition.

Under previous applications visibility at the existing site access had been improved through boundary treatment and hedgerow maintenance. Under the current proposal there is potential to improve visibility at the site access through access re-design and relocation as is proposed in connection with the provision of the new private road link to L1615 Hilltown Great Road.

Mullagh Road includes 4-5 No. passing areas between the site access and the junction with the L5618 Carnes Road to the south. These passing areas facilitate opposed HGV flow when the need arises.

<u>L5618 Carnes Road (Hilltown Little to R132)</u>

This section of L5618 Carnes Road is approximately 8km in length and is broadly defined by the following three sub-sections:

- Hilltown Little to Race Course Crossroads
- Race Course Crossroad Junction to R108
- Road Link between R108 and R132 (via. Claristown)

The section from Hilltown Little to the Race Course Crossroad Junction is approximately 1.3km long and varies in width from 5.2 to 6.1m. A stone wall runs along the northern roadside boundary from the Hilltown Little Junction for approximately 150m eastward. There are a number of individual private dwellings and intermittent clusters of dwellings located on both sides of this road. Approximately 270m east of the Hilltown Little Junction the speed limit of the road reduces from 80km/h to 60km/h, reducing again to 50km/h at a further distance of 200m east. The latter change in the speed limit is associated with Bellewstown Village where there is a school and a post office on the southern side of the road whilst Bellewstown Race Course is located on the northern side. The surface condition of the road along this section is relatively good with only some minor potholes along the road edge.

L5618 Carnes Road from the Race Course Crossroad Junction to the R108 measures approximately 2.6km in length. This section of the road is locally known as 'The Avenue (L-5618-0). Given the receiving topography 'The Avenue' has a relatively straight alignment and flat gradient. The road surface is generally in good condition although there are some localised areas where the surface is showing structural distress and there is evidence of maintenance works having been carried out to address surface defects.

Some sections of this road narrow to below 5.5m. At 1.9 km east of L56172 Mullagh Road junction at Hilltown Little the speed limit changes from 60km/h to 80km/h. At this point the road width is restricted to 4.5m albeit that there is an informal passing area which locally increases the effective road width to 6.2m. There is another narrow section of road between 2.1 and 2.2km east of Hilltown Little where the road width is measured to be an average of 4.6m. Apart from these identified narrower sections, The Avenue has a width ranging from 5.5-6.0m and is generally flanked by grass verges of variable widths and intermittent private dwellings mainly accessed from the southern side of the road.

There are 2 No. crossroad junctions and 1 No. T-junction along The Avenue. L1615 Hilltown Great Road is the northern arm of the Race Course Crossroad Junction. Visibility at the Race Course Crossroad Junction is excellent save looking east from the northbound approach, in which case the public house reduces the effective visibility distance. Footway works along the perimeter of the public house in late 2008 have improved visibility criteria from the southern arm. The second crossroad on The Avenue is formed with the R108 Regional Road. This junction is located approximately 2.6 km to the east of the Race Course Crossroad Junction. The R108 Crossroad is formed by The Avenue and the R108 Regional Road, where the R108 has priority. Stop signs and road markings were observed to be in place on both of The Avenue approach roads.

L5618 Carnes Road eastward from the R108 crossroads to the R132 was upgraded in 2008 to a carriageway width varying from 6.0-7.0m over its length. This section is still in excellent condition with a flat gradient throughout. It is generally bounded on both sides by 2-3m high hedgerows and agricultural land. We understand from our discussions with the Local Authority that this section of road has been designed to cater for locally generated HGV.

<u>L5618 Carnes Road (From Hilltown Little to R152)</u>

This section of the L5618 Carnes Road measures approximately 5.5km in length sub-divided for reference into the following two sections:

- The Hilltown Little Junction to the Carnes West T-Junction

- The Carnes West Junction to the R152

The former section runs from the Hilltown Little westward for approximately 3km to the Carnes West T-junction. This section follows a downhill gradient along what is considered a relatively bendy alignment. This is the narrowest section of the L5618 Carnes Road, it is also the section of Carnes Road understood to historically be the least trafficked by Bellewstown Quarry traffic, which verifiably the case since 2006 when the site was purchased by Kilsaran Concrete. The road width is less than 5.5m along the majority of this section and at some points it narrows to below 5.0m. The verge area along this section is generally narrow accordingly the hedgerow is close to the road edge. This type of verge arrangement generally restricts forward visibility. There are several informal passing bays along this section of road. During previous site visits with the Local Authority Roads Department Senior Executive Engineer, two HGV (Keegan Quarry vehicles unrelated to the Bellewstown Quarry) were observed to pass opposed on this section of road; both drivers were required to pass with caution. It was highlighted and agreed with the Local Authority officer in 2008 that the condition of the road surface was significantly degraded at the Carnes West Junction although it was acknowledged that this was unlikely to be caused solely by Bellewstown Quarry traffic.

The Trafficwise Ltd. re-inspection surveys of 2015 and more recently confirm that the approaches to the Carnes West Junction have been overlaid and the surface is currently in excellent condition.

The latter section of the road from Carnes West junction to R152 runs in a southerly direction from the junction continuing for approximately 1 km to the Johnstown Crossroad Junction in the townland of Fennor before running in a westerly direction for approximately 1.5 km to the R152. This section of road is in relatively good condition and road width varies from 5.5-6.0m.

L1615 Hilltown Great Road

Measured between the Bellewstown Crossroad and the R150 Regional Road, L1615 Hilltown Great Road is 2.5 km in length. The first 270m section of L1615 Hilltown Great Road starting at Bellewstown Crossroad is that part of the road which is bounded on both sides by the Race Course/Pitch and Putt Club. This part of the road has a straight and flat alignment and is within the 50km/h speed limit. Road width varies from 5.1m to 5.3m along this section. The road is generally flanked by wide grass verges.

The second section of the L1615 Hilltown Great Road between 270m and 1,400m from Bellewstown Crossroad runs on a downhill gradient for the most part. This section is considered of a relatively high quality locally. It is sufficiently wide to accommodate opposed HGV and is provided with grass verges generally on both sides. Very few surface defects were observed along this section of the road which has average width of 5.8m. The narrowest road width over this section is measured locally at 5.3m.

The northern section of L1615 Hilltown Great Road between 1,400m and 2,518m from Bellewstown Crossroad was in 2008 the narrowest section of the road where along the section between 1,400m and 1,700m the road had originally followed a significantly bendy and torturous alignment flanked by steep embankments on both sides. A re-inspection survey in December 2015 confirmed that remedial works had been undertaken over this section of the road. These works include a reduction in the steepness of the verge from sheer to a more gently sloped earthwork. The effective width of the road over that section has increased

whilst the impression of constraint and road bendiness is significantly reduced. Forward visibility along this section has also improved significantly as a result of the works.

From a point between 1,700m and 2,518m north of Bellewstown Crossroad the L1615 road passes a number of private dwellings on both sides as it continues northwards to meet the R150. The road has an average width of 5.2m along this section. The road is generally in relatively poor condition.

12.3.4 Traffic Survey Data Collection

Traffinomics Transportation Surveys Ltd. carried out classified turning count surveys on the public road network in the vicinity of the site using CCTV on Wednesday 26 May 2021 between 07:00 and 19:00 hrs together with Automatic Traffic Counter (ATC) data collection on L56172 Mullagh Road and L1615 Hilltown Great Road. A copy of the survey data is provided in Appendix 12.1. The traffic data collected in the turning count surveys is a snapshot of traffic volumes and characteristics on the local road network. Wednesday data was collected to reflect typical weekday traffic patterns and includes the commuter peak periods. The weekday commuter peak periods typically tend to have the heaviest hourly network flows.

Traffic data was collected for the following locations where the prefix 'J' signifies a classified junction turning count and 'S' signifies a speed survey location (ATC Site):

- Site 1: Bellewstown Quarry Access
- Site 2: L56172 Mullagh Road/L5618 Carnes Road Junction
- Site 3: Bellewstown Crossroads
- Site 4: L1615 Hilltown Great Road/R150 Junction

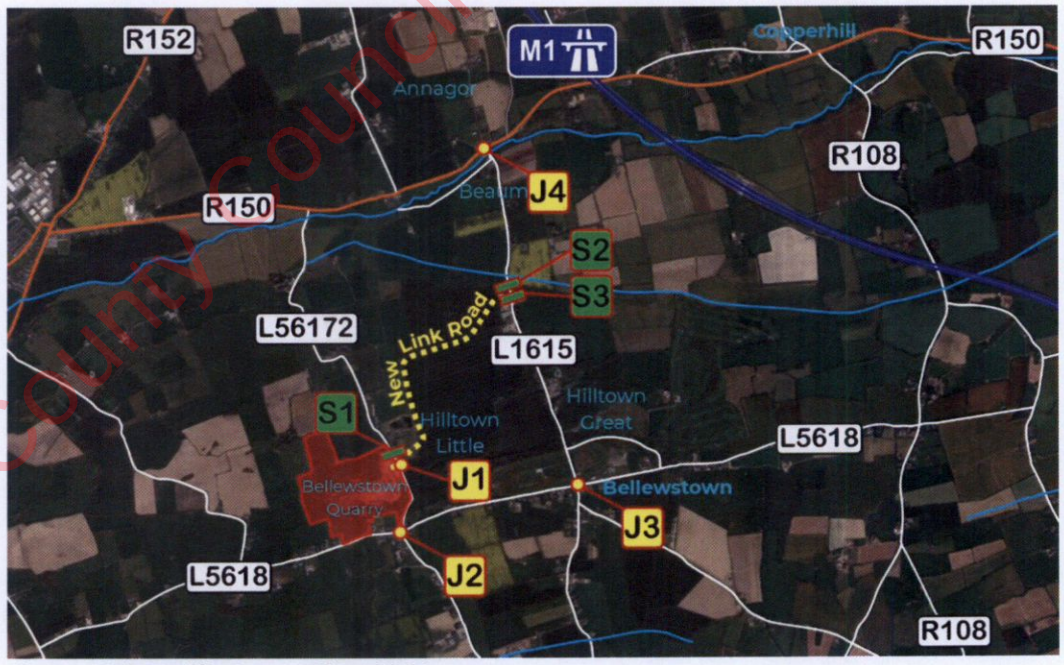

Figure 12.3: Traffic Survey Sites 2021.

The surveys show that the development site generated 28 No. outbound HGV movements and 29 No. inbound HGV movements over the course of the survey. Condition No. 4 of the current

permission limits the number of Heavy Goods Vehicle (HGVs) movements per day to 32 No. loads (64 No. two-way) (versus 81 No. loads (162 No. two-way) proposed). The 2021 traffic surveys are considered to be representative of near maximum HGV traffic generation at the existing site and thus valid for the purposes of assessing traffic impact arising.

The traffic flow data from the May 2021 surveys forms the basis of this assessment of road network capacity and the assessment of the likely impact of the proposed development on the operation and capacity of the receiving road network defined by the study scope.

Automatic Traffic Counter Surveys

To assess the current traffic conditions on the immediate receiving Local Road L56172 at Hilltown Little and the future connection to Local Road L1615 at Hilltown Great and to assess speed characteristics in accordance with the standard measurement methodology as set out in the Design Manual for Roads and Bridges automatic traffic counter (ATC) surveys were carried out by Traffinomics.

The ATC equipment was installed along the road frontage of the existing development access and on the approaches to the proposed new junction on L1615 at the locations noted with the prefix 'S' in Figure 12.3 (Base data provided in Appendix 12.1 together with survey location mapping). The ATC recorded traffic flows and speeds continuously for a 7-day period commencing on Friday 21-May-2021 on Mullagh Road and on Tuesday 23 November 2021 on L1615 near Laburnum Farms.

Vehicle speed statistics for the two survey locations are based upon individual vehicles by direction with a minimum separation distance between vehicles of 4 seconds (headway). This is to capture lead vehicle speeds since it is only the lead driver in a platoon of vehicles that chooses their speed. The speed survey sample on L56172 Mullagh Road includes 533 no. two-way vehicle observations (264 no. northbound and 269 no. southbound) for L1615 Hilltown Great Road the sample includes 6,404 no. two-way vehicle observations (3,182 no. northbound and 3,222 no. southbound recorded at the 'S3' the more southernly of the 2 no. survey locations on L1615).

Speed	L56172 Mullagh Road				L1615 Hilltown Great Road							
	Counter 'S1'				Counter 'S2'				Counter 'S3'			
	N'bound		S'bound		N'bound		S'bound		N'bound		S'bound	
km/h	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-10	0	0.0	2	0.7	2	0.0	1	0.0	1	0.0	3	0.1
10-20	12	4.5	24	8.9	5	0.2	2	0.1	2	0.1	9	0.3
20-30	63	23.9	42	15.6	20	0.7	3	0.1	23	0.8	23	0.8
30-40	75	28.4	73	27.1	106	3.6	25	0.8	68	2.3	77	2.6
40-50	88	33.3	99	36.8	494	16.8	123	4.1	270	9.1	391	13.0
50-60	25	9.5	26	9.7	993	33.7	724	22.5	671	22.6	931	31.0
60-70	1	0.4	3	1.1	868	29.5	1228	40.8	927	31.3	938	31.2
70-80	0	0	0	0	368	12.5	678	24.1	636	21.5	428	14.2
80-90	0	0	0	0	77	2.6	178	5.9	280	9.4	153	5.1
90-100	0	0	0	0	9	0.3	38	1.3	68	2.3	38	1.3
100-110	0	0	0	0	3	0.1	9	0.2	11	0.4	11	0.4
110-120	0	0	0	0	0	0.0	1	0.1	5	0.2	2	0.1
120-130	0	0	0	0	0	0.0	0	0.0	2	0.1	3	0.1
130-140	0	0	0	0	0	0.0	0	0.0	1	0.0	0	0.0
140-150	0	0	0	0	0	0.0	0	0.0	0	0.0	0	0.0
Average	**36.8km/h**		**37.5km/h**		**61.7km/h**		**63.4km/h**		**64.7km/h**		**60.6km/h**	
85th Percentile	**48.3km/h**		**48.6km/h**		**72.3km/h**		**73.3km/h**		**76.4km/h**		**73.2km/h**	

Table 12.1: ATC Traffic Survey Speed Statistics.

The records of vehicle speeds using automatic traffic counter has been gathered in accordance with the advice set out in the DMRB. Appendix 12.1 provides a full breakdown of vehicle speed statistics recorded over the course of the survey. Table 12.1 provides a summary of those speed statistics relating to northbound and southbound traffic on L56172 and L1615 over the course of the survey. Vehicle speeds were recorded by direction. The average speed on L56172 Mullagh Road near the existing site access is approximately 38km/h whilst the recorded 85th percentile speed is in the order of 48km/h. The Design Speed of the receiving road is estimated to be less than 50km/h.

The average speed on L1615 Hilltown Great Road at the location of the proposed new junction with the new link road to the development site is approximately 64km/h whilst the recorded 85th percentile speed is in the order of 73km/h for vehicles approaching from the north and 76km/h for vehicles approaching from the south.

A summary of the classified ATC traffic survey results is presented in the following Table 12.2 for Mullagh Road and Table 12.3 for Hilltown Great Road. Each table shows the total daily volume of each type pf vehicle recorded travelling northbound and southbound at the

respective sites. LV includes all light vehicles (cars/vans), OGV1 generally comprises rigid body commercial vehicles and OGV2 generally comprises articulated commercial vehicles.

The recorded average weekday daily two-way traffic flow on L56172 to the north of the existing Bellewstown Quarry site comprises 75 no. light vehicles and 5 no. HGV. By condition of planning quarry HGV traffic does not use this section of L56172 and travels only south along Mullagh Road. This is confirmed by the classified junction turning count that shows no quarry HGV to/from the north and a total of 8 no. trips to/from the north by light vehicles.

Direction	Northbound					Southbound				
Day	LV	HGV		Bus	TOT	LV	HGV		Bus	TOT
		OGV1	OGV2				OGV1	OGV2		
Mon-24-May	52	4	1	0	60	38	2	0	0	42
Tue-25-May	34	2	0	0	37	38	0	1	0	44
Wed-26-May	34	3	3	0	42	35	1	2	0	43
Thurs-27-May	37	0	0	0	37	36	0	0	0	40
Fri-21-May	32	1	0	0	34	36	1	0	0	39
Sat-22-May	26	0	2	0	30	30	2	1	0	40
Sun-23-May	27	1	0	0	28	27	0	0	0	29
W/day Average	**38**	**2**	**1**	**0**	**42**	**37**	**1**	**1**	**0**	**42**

Table 12.2: ATC Traffic Volume Statistics (L56172 Mullagh Road – North of Site Access).

Direction	Northbound					Southbound				
Day	LV	HGV		Bus	TOT	LV	HGV		Bus	TOT
		OGV1	OGV2				OGV1	OGV2		
Tue-23-Nov	455	5	23	0	483	464	1	26	0	491
Wed-24-Nov	464	0	12	0	476	471	0	20	0	491
Thurs-25-Nov	477	1	16	0	494	465	3	19	0	487
Fri-26-Nov	459	6	18	0	483	463	4	22	0	489
Sat-27-Nov	436	0	2	0	438	440	2	1	0	443
Sun-28-Nov	367	1	0	0	368	379	0	0	0	379
Mon-29-Nov	414	3	15	0	432	414	3	15	0	432
W/day Average	**439**	**2**	**12**	**0**	**453**	**442**	**2**	**15**	**0**	**459**

Table 12.3: ATC Traffic Volume Statistics (L1615 Hilltown Great Road).

The recorded average weekday daily two-way traffic flow on L1615 to the north of the proposed new link road junction comprises 912 No. light vehicles and 31 No. HGV of which 4 No. are rigid body and 27 No. are articulated HGV.

For ease of reference the daily traffic flows and morning and evening peak hour traffic flows recorded in the classified junction turning count surveys undertaken on Wednesday 26 May 2021 are set out in network flow diagram format in Figures 1, 2 and 3 of Appendix 12.2. These network traffic flow diagrams include for the current traffic generated by the operation of the existing quarry site. The turning count at Site 1 confirms that the site generated 8 No. light vehicle trips to/from the north along Mullagh Road and 4 No. light vehicle trips to/from south. 30 No. HGV arrived and 28 No. HGV departed over the course of the survey (1 No. OGV1 and 29 No. OGV2). Weighbridge data for the same date as the traffic survey confirms that 28 No. HGV attended the site and hauled materials. 2 No. HGV accessed the site in connection with support services (delivery of parts, delivery of fuels). The distribution of existing quarry traffic by vehicle numbers is highlighted in Appendix 12.2, Figure 1 which is based upon the turning count survey whilst Appendix 12.2, Figure 4 shows the current percentage distribution of haulage vehicles and is based upon weighbridge records.

The following Figure 12.4 shows the generation profile of HGV traffic over the course of the working day and is based upon weighbridge records for outbound laden vehicles.

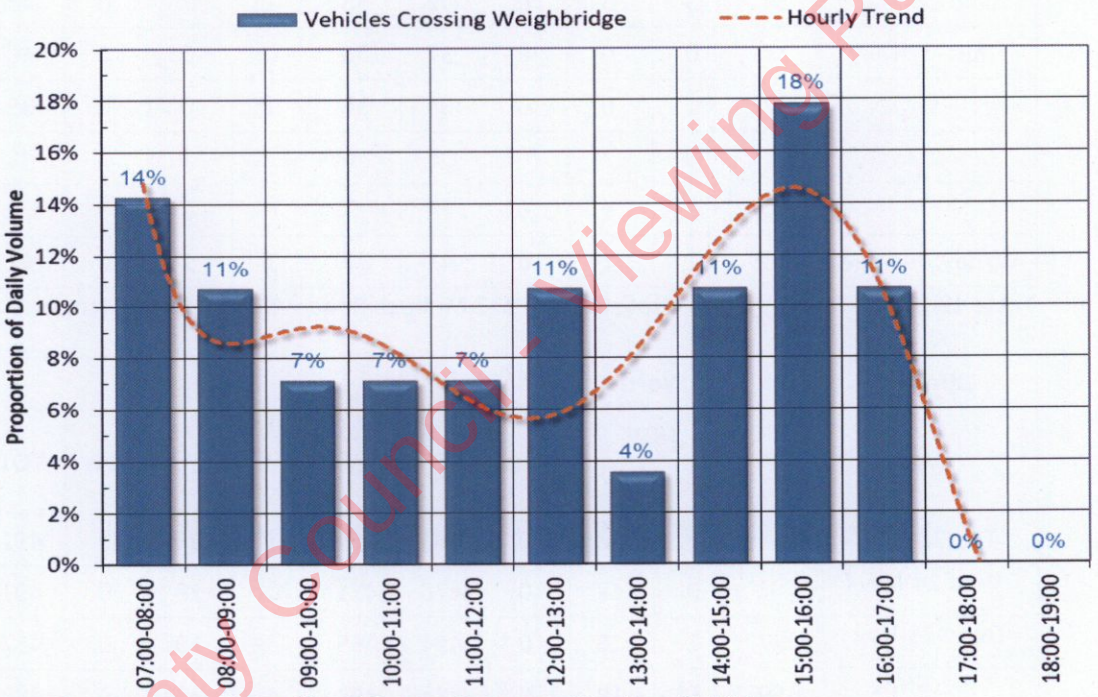

Figure 12.4: Daily Profile of Quarry Generated Haulage Vehicles.

Appendix 12.2, Figure 7 shows the traffic flows recorded on the various link roads between the junctions turning count survey sites. The traffic arising from the current operation of Bellewstown Quarry are set out separately. In addition to the more recent 2021 traffic survey data, Figure 7 shows the corresponding link traffic flows recorded in previous traffic counts undertaken for earlier traffic assessments related to the application site. The additional historic data is from Thur-21-Aug-2008 and Tue-06-Oct-2015. Locally a total of 299 No. vehicles were recorded on the Mullagh Road during the 2008 survey. These vehicles were made up of 76 No. cars and 223 No. HGV. The high percentage of HGV (75%) is due to the operation of the two quarries which were located on the Mullagh Road, namely the subject Bellewstown Quarry and a Keegan Quarry development opposite. In terms of total HGV movements, the Bellewstown Quarry generated 45% (or 107 No. HGV); the Keegan Quarry 47% (or 112 No. HGV); and others 8% (or 20 No. HGV). A total of 61 No. vehicles were recorded

on the Mullagh Road during the 2015 traffic surveys. These vehicles were made up of 54 No. cars and 7 No. HGV. The majority of traffic on the southern section of Hilltown Little has historically been generated by the local quarry sites and it follows that the volume of traffic had reduced considerably from the 2008 figures given the permanent closure of the Keegan Quarry site (removing the majority of HGV traffic) and the temporary closure of the Bellewstown Quarry at the end of May 2013. The 2015 surveys include no quarry traffic and are therefore a good indicator of baseline network flows on the Mullagh Road.

12.3.5 Road Collision Data Analysis

The collision statistics on the Road Safety Authority (RSA) website includes records of road traffic collisions for the period 2005 to 2016 inclusive and provides basic information on all reported collisions. This is the extent of the data in the online database and reports for 2017, 2018 and 2019 are not yet available. The RSA records include only those collisions officially recorded and where a Garda was present to formally record details of the incident.

The following Figure 12.5 shows a plot of the recorded collisions over the 11-year period for which data is available. It is noted that this period includes ongoing operations of the quarry. The RSA database contains information on all reported collisions by severity of injury and year of collision. No collisions are recorded at the site access or at the junction of L56172 Mullagh Road with L5618 Carnes Road to the south.

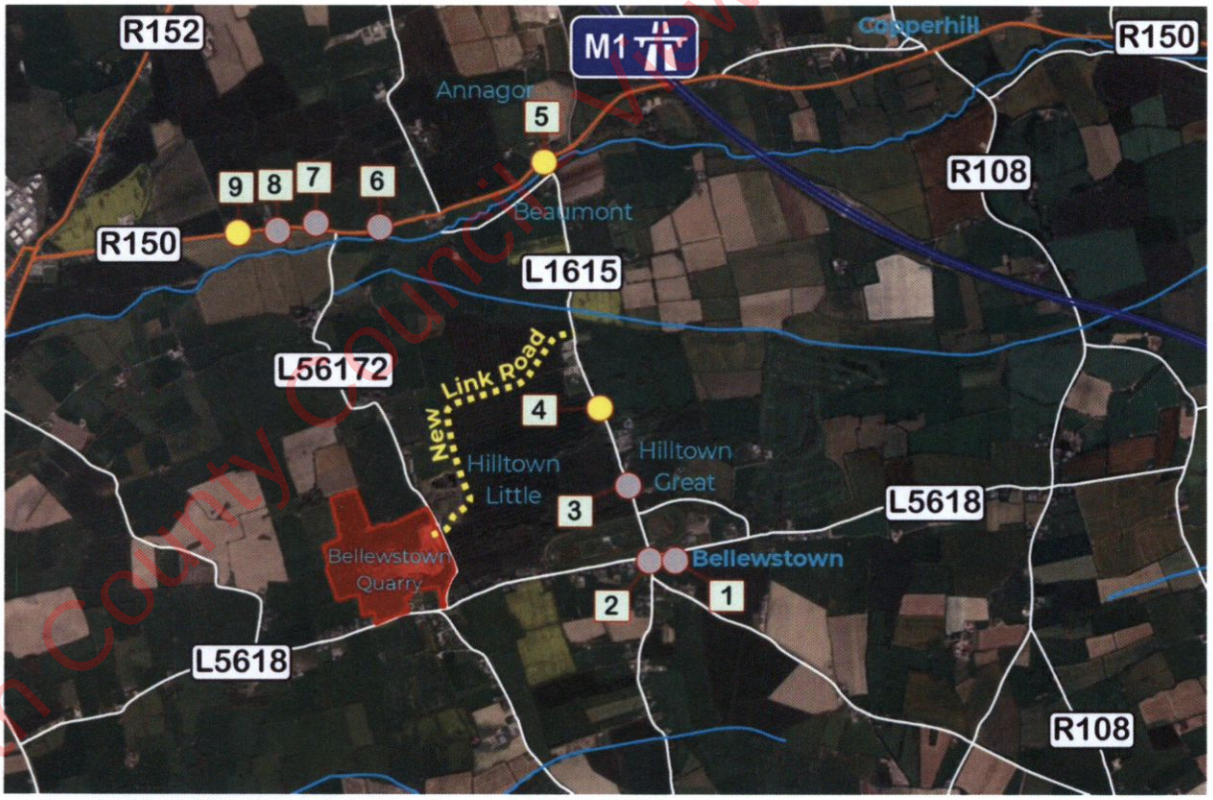

Figure 12.5: RSA Road Collision Records 2005-2016.

Figure 12.5 shows a total of 9 No. collisions on the network serving the general location of the proposed development site and these are numbered. There are three categories of collision which include 'minor' (highlighted grey), 'serious' (highlighted yellow) and 'fatal' (highlighted red). 3 No. 'serious' collisions on Figure 12.5 are highlighted yellow, one midway along L1615 Hilltown Great Road, one further north at the junction of L1615 and R150 and another on the

R150 closer to New Lanes Cross at Duleek. Table 12.4 provides the basic data relevant to each of the numbered collisions shown. Table 12.4 is sorted into data order and shows an average of 1 No. collision per year. There have been three serious collisions in the past 10 years two on the R150 and one on Local Road L1615 all of which involved only cars and a motorcycle. One collision (No.1) is recorded as having involved a HGV with the level of casualty classified as minor. That collision occurred at Bellewstown Crossroad in 2010 and involved a pedestrian. The collision occurred on a Saturday and the time recorded was in the period 16:00-19:00 hrs outside of the working hours of Bellewstown Quarry.

Ref	Year	Vehicle	Circumstances	Day	Time	Severity	Casualty
6	2009	Car	Single Vehicle Only	Mon	16:00-19:00	Minor	1 Minor
7	2009	NA	Rear End, Right Turn	Mon	16:00-19:00	Minor	1 Minor
9	2009	Car	Other	Sun	16:00-19:00	Serious	4 Serious 2 Minor
1	2010	HGV	Pedestrian	Sat	16:00-19:00	Minor	1 Minor
4	2010	Car	Head-on Conflict	Mon	16:00-19:00	Serious	1 Serious
3	2011	Bus	Single Vehicle Only	Wed	19:00-23:00	Minor	1 Minor
8	2012	Car	Other	Tue	03:00-07:00	Minor	1 Minor
5	2015	M/Cycle	Angle, Both Straight	Sat	19:00-23:00	Serious	1 Serious
2	2016	Car	Angle, Both Straight	Fri	16:00-19:00	Minor	1 Minor

Table 12.4: RSA Traffic Collision Details.

The RSA collision records suggest that on the receiving road network serving the proposed development there is no significant clustering of collisions and no significant trends in the type of traffic collisions. The data suggests that the immediate receiving local road network traversed by quarry traffic at present has a relatively good safety record. Based on the available data, there are no location specific adverse road safety performance issues of direct relevance to the proposed development.

12.3.6 Traffic Characteristics of Proposed Development

The proposed development seeks to extend the life of the current permitted quarry from 10 years to 25 years. The proposed development will continue to generate traffic which will continue to primarily consist of HGVs associated with the transportation of materials extracted from the site, and staff (and occasional visitor) trips.

Access to the quarry is currently provided from the local road (L56172 Mullagh Road) that runs in a north-south direction and bounds the eastern portion of the site. It is not proposed to retain the existing haul routes currently used and highlighted in Figure 12.2, instead the proposed development includes for the relocation of the existing site access on L56172 Mullagh Road and the construction of a new dedicated quarry access road northwest from

Mullagh Road through existing fields opposite the quarry to a new junction proposed on L1615 approximately 1 km south of the R150.

This Chapter identifies a suite of road improvement works that includes carriageway strengthening and widening together with road re-surfacing and bridge strengthening works at Beaumont Bridge. This suite of roadworks will be done separately to this process and Kilsaran will contribute financially to them or they will carry out the road improvement and bridge works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides. The suite of works to the public road is identified in Section 12.3.12 of this Chapter. The suite of works involves the improvement of a 1 km section of L1615 between the proposed new link road and the R150 and strengthening works to Beaumont Bridge near the R150 junction.

It is proposed that the new quarry access road infrastructure, which effectively allows quarry haul traffic to bypass most of the existing receiving local road network and existing haul routes will reasonably facilitate an increase in the permitted number of HGV loads to and from the quarry from the current maximum of 32 no. per day (max 20 No. HGV movements in any given hour) to an average of 81 no. per day (with +/-15% fluctuations in the number of loads to and from the quarry proposed to address certain demands on the quarry as and when required, equating to a maximum of 93 no. loads per day).

The proposed new road infrastructure and improvement to existing infrastructure to the existing L1615 are reasonably is expected to overcome the Board's previous concerns regarding impacts on the local community. The proposed new private road will reduce the impacts on the local community by redirecting the HGVs away from Bellewstown Village and reducing the linear mileage on the receiving road to approximate 1 km. Quarry vehicles transporting materials will be required to cross Mullagh Road and will use only L1615 from the junction of the proposed new road northward to R150 at Annagor/Beaumont which is a distance of approximately 1 km.

12.3.7 Haul Routes

For the purposes of this assessment it is considered likely that light vans and car traffic generated by the site will continue to use the same routes for access as established from the junction turning count surveys.

All HGV traffic will be required to access the site from the R150, L1615 and the proposed new private link road infrastructure between L1615 and the Mullagh Road. Occasionally there may be smaller deliveries arising from specific local demands relating to finite activities or simply arising on smaller jobs or works such as local house building or extensions and the like. Ordinarily the demand for local supply of materials is very low and this is reflected in the site records nevertheless where such occasional local demand arises it is reasonable that materials can be provided by the proposed quarry. The primary haul route is shown in the following Figure 12.6.

Figure 12.6: Proposed Primary Haul Route to Regional Road Network.

12.3.8 Proposed Private Link Road L56172 Mullagh Road to L1615 Hilltown Great

The proposed development includes for the relocation and improvement of the existing Bellewstown Quarry priority junction access on L56172 Mullagh Road. Measured from centreline to centreline it is proposed to relocate the existing access approximately 25 m south. Mullagh Road undulates, and the revised location is at the apex of a crest. The proposed new location is selected to optimise the available sightlines and stopping sight distances. The calculation of the required sight distances is informed by week-long speed surveys undertaken on Mullagh Road close to the existing access.

The proposed new private access road forms a crossroad with L56172 Mullagh Road at the proposed new access location and extends northwest through existing fields, generally following natural contours and field boundaries and emerging onto the L1615 to the north of Laburnum Farms where it will terminate at a new priority controlled junction which is included as part of the current application.

The proposed new private link road and the junctions with the public roads at either end have been designed in accordance with Transport Infrastructure Ireland's Design Geometry publications formerly the National Roads Authority's Design Manual for Roads and Bridges. The proposed link road design and the suite of identified road improvement works and bridge strengthening works to L1615 have been subject of an independent Road Safety Audit (Stage 1) prepared by Traffico Road Safety Engineering Consultants in October 2021. A copy of the Road Safety Audit (RSA) including Designer Feedback Form is included at Appendix 12.3. The recommendations of the RSA and responses of the Designer should be read in conjunction with this Chapter. In accordance with Table 1.2 of TII-DN-GEO-03031 the Design Speed for the proposed new private link road is 60km/h which is the maximum design speed for the proposed speed limit of 50km/h to which the private road will be subject. The vertical alignment parameters accord with the requirements set out in Table 1.3 of TII-DN-GEO-03031. The horizontal alignment includes curves that are more than four steps below the desirable minimum set out in TII-DN-GEO-03031. Where low radii curves have been used the design

employs appropriate carriageway widening to accommodate the opposed passage of HGV. As per the recommendations of TII-DN-GEO-03060 all horizontal geometry has been assessed for swept path using the proprietary swept path assessment tool Autotrack. The drawings accompanying the EIAR include vehicle track assessments using a design vehicle with the specification, dimensions and steering characteristics of articulated tipper vehicles that will be used to service the proposed development.

Details of the proposed cross-section of the new road are set out in the application drawings. In brief, the new private road alignment will consist of a carriageway of 6m minimum width consisting of 3m lanes in both directions widened at curves. The proposed new roadway will not be adjoined by cycleways or footways but will be provided with a 1 m level verge area on both sides. Vehicle restrain barriers will be provided in the verge area where required. The type of vehicles restraint system and the configuration of the barrier will be developed and agreed as part of the Detailed Design. It is not proposed to provide street lighting over the length of the proposed new road. In total the section of new road construction extends for approximately 1.7 km from L56172 Mullagh Road to the L1615 close to Laburnum Farms. The details of the horizontal and vertical alignment of the road are provided in scheme drawing 03138-KC2N.

The proposed scheme also includes for the relocation of the existing Bellewstown Quarry access on the Mullagh Road. From Mullagh Road the horizontal alignment of the proposed private access road follows a circular radius of 71m between Chainage +70.000 and +125.000. The new road crosses Mullagh Road at chainage +70.000 as per the requirements of TII-DN-GEO-03060 Section 5.6.4 the maximum gradient on the approaches to the Mullagh Road is 2.5% over a distance of 30m. Between Chainage +130.000 and +164.000 the road is straight. From +164.000 to +205.000 the horizontal radius is 54m followed by a straight section up to chainage +300.000. Between chainage +300.000 and +490.000 the curve radius starts at 66m transitioning to 73m and 243m. The new road is straight and on a 5.7% uphill gradient between chainage +490.000 and +790.000 at which point there is a right angled bend varying in radius from 38m transitioning to 30m and 50m before entering a straight section on a 7% downhill gradient between chainage +850.000 and +1320.000. A 108 m radius curve joins to another straight on a 10% downhill gradient between chainages +1390.000 and +1660.000. A 63m radius curve between joins the chainage +1660.000 to a straight section commencing at chainage +1710.00 and connecting directly to L1615. The approach gradient to L1615 is a maximum of 2.5% as set out in TII-DN-GEO-03060 Section 5.6.4.

The geometry of the proposed access on L56172 Mullagh Road is not required to accommodate the turning of HGV traffic accordingly the turning radii have been reduced to 6.0m. This turning radius is satisfactory to accommodate the turning of occasional trucks delivering parts or fuel. The junction on L1615 is required to accommodate the left turn to L1615 and the right turn from L1615. The layout of the turning radii appropriately accords with TII-DN-GEO-03060 Section 5.6.5. and incorporates a compound radius curve. TII-DN-GEO-03060 Section 4.3. sets out that the use of computer software to predict the swept path of large vehicles is mandatory in the design of all junction types accordingly the junction has been assessed using Autotrack for the vehicle type used in the haulage of aggregates. The assessments confirm that the junction design can accommodate an articulated HGV negotiating the junction at a minimum speed of 5km/h.

Also included as part of the planning application are gated field accesses and crossings along the route of the proposed new access road. These crossings serve to connect the agricultural lands on both side of the proposed road.

The earthworks outline adopted for the proposed access road generally consists of 1 in 2 side slopes to embankments. There are sections of both cut and fill. Varying heights of embankment works will be required to construct road and other associated works. The vertical alignment of the proposed new road is more particularly shown on the accompanying scheme drawing numbered 03138-KC2N.

Accompanying this EIAR is a series of drawings showing the proposed new private road from Bellewstown Quarry access, crossing L56172 Mullagh Road and proceeding northwest to link with L1615 to the north of Laburnum Farms. The relevant drawings are as follows:

- 03138-KC2D Location Plan
- 03138-KC2E Proposed New Access Road – Chainage (Start) 0.000-460.000
- 03138-KC2F Proposed New Access Road – Chainage 460.000-900.000
- 03138-KC2G Proposed New Access Road – Chainage 900.000-1280.000
- 03138-KC2H Proposed New Access Road – Chainage 1280.000-1540.000
- 03138-KC2J Proposed New Access Road – Chainage 1540.000-1812.000 (End)

12.3.9 Identified Suite of Road and Bridge Works at L1615

The proposed development will have the potential to generate approximately three times the current maximum volume of HGV traffic which will have similar characteristics in terms of vehicle type and payload, nevertheless it is proposed to alter the haul route, shortening the linear distance of the local road over which development traffic will travel in hauling materials from the quarry. The proposed primary haul route uses a proposed new private road and a 1km section of L1615 as highlighted in Figure 12.5. Save for the 1 km section of L1615 which will see an intensification in HGV use the proposed new haul route will remove all development generated HGV traffic from the surrounding local road network serving Bellewstown. The proposed new private road linking the L56172 and L1615 will be purpose built on greenfield land. The total number of HGV movements along the L1615 will increase from 20 trips per day to 100 trips. Detailed road surveys and bridge strength assessments on L1615 show that the existing road and bridge require improvement to accommodate existing traffic volumes. Based upon these assessments this EIAR identifies a suite of road and bridge strengthening works. The haul route along L1615 is required to accommodate the opposed two-way flow of HGV. Additional HGV traffic arising at the development will increase the frequency of HGV meeting opposed, so in addition to the identified strengthening works to accommodate both existing and proposed HGV traffic, carriageway widening works are identified. In accordance with Meath County Council requirements widening to 6.0m has been identified which accommodates two-way opposed HGV passage.

The suite of suggested proposals and suggested improvements put forward in this application are informed by a walkover survey of L1615 and L56172 and examination of detailed surveys of the geometry and structure of the receiving road network, together with traffic flow and speed surveys. The proposed bridge works and road works have been reviewed by the Local Authority and have been agreed in principle. Road widening identified along L1615 is based upon a detailed topographical survey undertaken by Techsol in April 2021 along the northern 1 km section of L1615 and along L56172 Mullagh Road in the vicinity of the existing and proposed development access. The topographical survey includes all boundary features along the public road, together with all infrastructure between the boundaries. The survey scope extends over approximately 1.5km of L1615 between the junction with Regional Road R150

and beyond the location of the proposed new junction with the new private site access road. The topographical survey also includes 0.5km of L56172 Mullagh Road centred on the existing site access.

Trafficwise has prepared road widening drawings for L1615 for the consideration of the Planning Authority. These drawings and proposals have already been presented for inspection to Meath County Council and are understood to be agreeable in principle. It I acknowledged that the proposals will benefit the local roads network by removing HGV traffic whilst making suitable provision for same on a short length (1 km) of haul route along the public road. The roads improvement works and bridge strengthening works are presented in this Chapter for information and it is understood that the detailed design will be subject to more complex specifications and so are ordinarily left over for agreement. It's important to distinguish that these do not form part of the subject application but they are assessed cumulatively as part of the EIAR for the subject proposal. The initial objective of the exercise has been to identify those sections of road requiring strengthening (as identified from the walkover survey) and to widen the road to a consistent width of 6.0m carriageway between the junction of the new private access road and Regional Road R150. From the measurements on the L1615 Hilltown Great Road the average width was estimated to be in the region of 5.0m. The traffic survey data shows a current two-way flow of 40 HGV per day. The current average width is not considered sufficient to accommodate HGV opposed passage and there is evidence of HGV encroachment into the verge. The additional development HGV would increase the regularity of opposed passage of HGV.

Subject to agreement with Meath County Council and subject to the appropriate licences the application identifies a suite of roadworks in the public road that aim to achieve a consistent carriageway width of 6.0m over the L1615 between the proposed new site access road and Regional Road R150. As set out above these roads and bridge strengthening works are presented for the consideration of the Planning Authority as road improvements and essential bridge strengthening work to accommodate the passage of existing opposed HGV traffic. These works do not form part of the proposed development but are appropriate road improvements, the detailed design of which will be agreed prior to commencement of the proposed development. The assessments confirm that widening of the carriageway to 6.0m is achievable over the northernmost 1 km of the L1615. In addition to carriageway widening, it was clear from the road condition surveys that a comprehensive road improvement should incorporate road strengthening. It is considered reasonable that upon resolution and confirmation of a satisfactory scheme of road widening, the scope and extent of road strengthening works could be agreed by way of planning condition. Accompanying the EIAR is a series of drawings showing the suggested road strengthening, widening and improvement works to the L1615 between the proposed new access road near Laburnum Farms and Regional Road R150 and includes the following drawings:

- 03138-KC2J Road Improvements – L1615 Widening Chainage 0.00-180.00
- 03138-KC2K Road Improvements – L1615 Widening Chainage 180.00-520.00
- 03138-KC2L Road Improvements – L1615 Widening Chainage 520.00-760.00
- 03138-KC2M Road Improvements – L1615 Widening Chainage 760.00-1060.00
- 03138-KC2R Road Improvements – L1615 Cross Sections

Each of the 4 No. plan drawings show a consistent 6.0m wide carriage along L1615 achieved principally through edge strengthening. Where widening of the existing carriageway is required to achieve the 6.0m width these areas are highlighted and dimensioned. The works

identified to widen the carriageway to a consistent 6.0m width are achievable within the constraints of the existing public road. The design of the identified widening works consider local constraints and existing access points along the L1615. The overall haul route length uses a total of 1 km of public road together with 1.8 km of new private access road. The assessments confirm that widening to 6.0m is achievable over the northernmost 1km of L1615 carriageway. Where road strengthening is required, subject to agreement with the Roads Authority strengthening will generally involve digging out the existing carriageway and reinstatement with new materials to the specification for roads construction used by Meath County Council. Most of the sections that require strengthening have identified failures of the carriageway edges which would ordinarily be restructured as part of the road widening proposals in any case. It follows that at all locations where strengthening is identified, there will be scope for road edge strengthening along with the elements of road widening. The initial objective is to provide a minimum carriageway cross-sectional width of 6.0m which, from the walkover assessment and the detailed topographical survey, is assessed as being achievable over the full 1km section of L1615 and all sections requiring strengthening.

In addition to the road assessments the Applicant has also commissioned detailed assessment of Beaumont Bridge. A series of assessments has been prepared by WS Atkins Ireland Limited. A Stage 1 Structural Assessment found the structure to have a low load capacity of <3t which indicates that the structure is not of satisfactory strength to carry existing traffic to which it is subject. A Stage 2 Assessment was undertaken to confirm the load capacity of the structure.

The Stage 2 Structural Assessment was undertaken in accordance with TII Publication AM-STR-06057 *'Stage 2 Structural Assessment of Road Structures'*. The structural assessment found the existing structure to have a reduced load capacity of less than 3t due to the shallow depth of fill above the structure and the reduced arch thicknesses of certain arch barrels. The report found that despite the assessed low load capacity of the structure Beaumont Bridge is behaving satisfactorily under current loading with no load restriction currently in place. The Stage 2 Structural Assessment Report puts forward a suite of recommended repair and strengthening works for the consideration of Meath County Council. The recommend suite of measures includes:

- Masonry repointing to the arch barrels, piers and abutments
- Installation of low strength concrete backing to the arch barrels
- Resurfacing of the carriageway over the structure
- Repairs to areas of undermining to the north abutment and northern piers
- Infilling of scour holes at the west elevation
- Removal of debris trapped at the west elevation of arch barrel 7
- Replacement of the grass verges with new concrete verges or extension of the carriageway pavement
- Vegetation removal and repointing to the parapets, spandrel walls and wing walls
- Vegetation clearance to the embankments

The WS Atkins Stage 1 and Stage 2 Structural Assessment Reports are provided in Appendix 12.4. This EIAR is accompanied by a suite of drawings setting out the recommended strengthening and repair works to Beaumont Bridge as follows:

- Dwg. No. 5210920-ATK-ZZ-ZZ-DR-ST-900200 *'Site Location Map'*

- Dwg. No. 5210920-ATK-ZZ-ZZ-DR-ST-900201 *'Bridge Deck Layout Plan'*
- Dwg. No. 5210920-ATK-ZZ-ZZ-DR-ST-900202 *'Elevation and Longitudinal Section'*
- Dwg. No. 5210920-ATK-ZZ-ZZ-DR-ST-900203 *'Bridge Cross Section'*
- Dwg. No. 5210920-ATK-ZZ-ZZ-DR-ST-900204 *'Carriageway Layout Plan'*

Subject to a favourable decision this suite of bridge strengthening and repair works will be done separately to this process and Kilsaran will contribute financially to them or they will carry out the bridge works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides.

In addition to the identified road widening and bridge strengthening works it is suggested that Meath County Council consider an overlay of the entire L1615 from the R150 up to and including the proposed new junction to the access road near Laburnum Farms. In lieu of agreed detailed road condition surveying the identified works envisage the provision of a 50mm overlay to Local Road L1615 between the new site access road junction and Regional Road R150. The identified road improvements incorporating strengthening, widening and overlay (and bridge strengthening) are comprehensive and would significantly improve the L1615 and would satisfactorily accommodate existing traffic and the traffic generated by the proposed continuance and intensification of extractive operations at Bellewstown Quarry.

The suggested suite of road improvement and bridge strengthening and repair measures outlined above essentially constitute road maintenance and road safety improvement works including road strengthening, localised pavement widening and pavement edge strengthening. The identified road improvement works will not impact any existing trees or hedgerows or field boundaries. All works shown on the accompanying drawings are confirmed as achievable within the bounds of the public road as defined in the Roads Act 1993. Road widening works can be achieved principally in the existing verges. The identified road improvement works to L1615 do not require the use of third party lands or consent from third party landowners. All agreed works to the public road and bridge would be carried out by Meath County Council or an appointed and authorised agent of Meath County Council subject to the appropriate licences.

Close examination of the submitted suite of drawings accompanying this EIAR confirms that the identified L1615 road improvement works chiefly involve a road repair/reconstruction and strengthening scheme together with localised widening and these works should not significantly alter the character of the existing road. The works in the public road are those of road improvement and maintenance. If implemented, it is considered likely that the identified works will take approximately six weeks to complete.

Transport of materials from the proposed development will be undertaken by Kilsaran fleet vehicles or by pre-approved haulage operators only. Any individual driver associated with the haulage of materials who fails to adhere to the designated haul route along L1615 will be banned sanctioned and temporality/permanently restricted from hauling materials, depending on the frequency on any transgressions. This approach has proved very effective in controlling hauliers at other similar developments operated by Kilsaran.

There are a number of details that will require the agreement of Meath County Council prior to the commencement of the roadworks as follows:

- A 50mm binder course overlay of the entire 1 km L1615 roadway followed by a surface dressing with a 6-10mm chipping;
- The construction detail for the road widening will be in accordance with TII Specifications and will be agreed with Meath County Council prior to works commencing;
- The construction detail for the road strengthening works will be in accordance with TII specifications and will be agreed with Meath County Council prior to works commencing;
- The roadway will be marked over the entire 1 km length with edge of carriageway markings in both directions in accordance with the Traffic Signs Manual – Chapter 7;
- Since the road width is 6.0m and/or above the improved section of roadway should be marked with a centreline in accordance with the Traffic Signs Manual – Ch. 7;
- Line marking should be carried out at the junctions at either end of the proposed new private access road at L1615 and L56172 to the satisfaction of Meath County Council and in accordance with the Traffic Signs Manual – Chapter 7.

Should Meath County Council be minded to grant planning permission for the proposed development at Bellewstown Quarry, the Applicant respectfully invites that an appropriate condition of planning is applied to ensure that the suggested suite of identified road improvement and bridge strengthening works are undertaken to the satisfaction of Meath County Council and to the appropriate standards, as set out above.

12.4 Impacts

12.4.1 Introduction

This section sets out the likely traffic impact of the proposed development and includes details of likely impacts envisaged for both the construction and operational stages of the development. In Ireland, a Traffic and Transport Statement (TTS) should generally accompany all planning applications for developments that could potentially act as traffic generators. A TTS is a brief outline of the transport requirements for the development and is used as a first step to identify the likely impact of any development. A TTS can also be used to determine if further, more detailed traffic analysis is required to evaluate potential impact upon the capacity of links and junctions on the receiving road network.

An in-depth analysis of the impact of a development in terms of traffic is carried out through the preparation of a Traffic and Transport Assessment (TTA). Table 2.1 of the *NRA Traffic and Transport Assessment Guidelines* (May 2014) sets out threshold limits above which a Transport Assessment is automatically required. The relevant thresholds are reproduced below:

- 100 trips (in/out combined) in the peak hour
- Development traffic exceeds 10% of two-way traffic flow on adjoining road
- Development traffic exceeds 5% of two-way traffic flow on adjoining road if congestive or sensitive
- 100 on-site parking spaces.

The threshold approach is used to establish the area of influence of the development. In general, the study area should include all road links and associated junctions where traffic to and from the development may be expected to exceed 10% of the existing traffic movements, or 5% in congested or other sensitive locations, including junctions with national roads.

The application site currently enjoys a planning permission under Planning File Ref. 17.QD.0013 by An Bord Pleanála Order dated 24-Oct-2018 for a period of 10 years which expires in 2028. The current permission restricts by condition the total number of HGV to 32 no. trips each day. All HGV traffic must turn right onto the Mullagh Road but other than that there are no other restrictions to the movement or haul routes across the receiving road network. The current proposed development will generate an average of 81 No. HGV (with +/-15% fluctuations in the number of loads to and from the quarry proposed to address certain demands on the quarry as and when required, equating to a maximum of 93 No. loads per day). The characteristics of the haulage vehicles deployed will be essentially the same however the current application seeks to use only 1km of the existing road network and proposes to construct new private roads infrastructure which will allow quarry generated HGV to bypass the majority of the local receiving road network. It follows that as a direct result of the proposed new infrastructure and the revisions to the primary haul route, when compared against the current permitted scenario, there will be an elimination of all[1] permitted HGV traffic trips generated by activities at Bellewstown Quarry from the L56172 Mullagh Road and local roads network to the south of the site. There will be an intensification in the HGV use of the northernmost 1 km section of the L1615 and this will be improved by a significant package of mitigation works. These works are set out in the earlier section entitled 'Proposed Road Strengthening and Widening' and detailed in the various drawings included at Appendix 12.3. The works involve a significant road improvement including carriageway widening, road strengthening, overlay and road markings.

The NRA Traffic and Transport Assessment Guidelines (May 2014) advise that there may be some cases where the impact of traffic volumes may not be significant and where the thresholds requiring a TTA may not be exceeded, but where the type and volume of traffic may be of a nature to raise concerns about potential effects.

In view of the current grant of permission under Planning Ref. 17.QD.0013, it is reasonable to conclude that the Planning Authority has, through suitably rigorous and objective assessment of the traffic arising from the permitted quarry development, already considered the traffic effects arising from the current development and has determined that the existing receiving roads are suitable to accommodate 64 No. daily HGV movements and up to 20 No. HGV movements in any given hour. The rationale for the proposed re-routing of traffic comes about through a desire to intensify operations and to reduce overall traffic impact on the greater receiving road network of Bellewstown.

In the case of sub-threshold scenarios, the NRA guidelines advise that the Planning Authority should consult evaluation criteria set out in Table 2.3 of the guidelines and recommends that if the proposed development meets two or more of the following criteria, then a Transport Assessment should be requested.

- The character and total number of trips in / out combined per day are such that as to cause concern;

[1] With the exception of occasional local supply as may arise from time to time.

- The site is not consistent with national guidance or local plan policy or accessibility criteria contained in the Development Plan;
- The development is part of incremental development that will have significant transport implications;
- The development may generate traffic at peak times in a heavily trafficked / congested area or near a junction with a main traffic route;
- The development may generate traffic, particularly heavy vehicles in a residential area;
- There are concerns over the development's potential effects on road safety;
- The development is in a tourist area with potential to cause congestion;
- The planning authority considers that the proposal will result in a material change in trips patterns or raises other significant transport implications.

Under the current development proposals and corresponding to the above bullet points,

- the character and total number of trips in and out of the site per day will increase from 32 No. to 81 No. HGV trips;
- the site is permitted and is consistent with the Development Plan;
- the proposed development is not part of an incremental development;
- by reference to the Figure 12.4 the network peak hour (08:00-09:00hrs) traffic generation of the site is estimated to be in the order of 9 no. HGV trips which is not considered significant by the standard metrics set out in the guidelines. The development peak hour is estimate to generate in the order of 11-14 no. HGV trips. The receiving road network is neither heavily trafficked nor congested and the volume of traffic is unlikely to give rise to concern at the junctions with the main traffic route;
- notwithstanding the residences adjoining Local Road L1615, the proposed development does not generate traffic in a residential area;
- existing permitted development did not / does not give rise to congestion on the receiving road network and it is therefore considered reasonable to conclude that the proposed development will similarly not give rise to traffic congestion;
- the proposed development will result in a material change in established trip patterns. The changes are proposed in mitigation of the proposed intensification of use and in response to existing local traffic characteristics on the L1615 Hilltown Great Road.

The record of collision statistics for the period 2005 to 2016 set out in Figure 12.5 and Table 12.5 show that the receiving road network and the haul route has a good safety record. No collisions involving HGVs have been recorded in the Road Safety Authority records. In light of the above and notwithstanding the elimination of development HGV traffic generally from the receiving local roads it is considered that in the case of the proposed haul route along the L1615, both the threshold and sub-threshold criteria for TTA are met and that there is a requirement for an assessment of traffic.

Regional Road R150 junction with L1615 is lightly trafficked and from observation alone can be seen to operate well within capacity. Given the forecast peak hour generation of 9 no. HGV trips, the proposed development will not give rise to capacity problems at this junction.

The other junctions on the haul route are the new crossroad junction of the development access with the Mullagh Road L56172 and the new junction of the access road with L1615 near Laburnum Farms. The geometry of these junctions accords with current best practice, sightlines are satisfactory and the volume of traffic throughput at these junctions will not be significant. In light of these considerations, the evaluation of traffic and traffic levels on the receiving road is not required under the TII guidelines to include detailed computer modelling of the capacity of these junctions since it is clear to an experienced practitioner that the volumes of traffic generation are not such as to be of concern with respect to capacity.

12.4.2 Traffic Impact Assessment – Construction Stage

The proposed development includes for the removal of existing weighbridge and construction of two new weighbridges, removal of existing wheelwash and provision of new wheelwash, provision of a new powerhouse, a new weighbridge office, demolition of existing weighbridge office, demolition of workshop, and relocated entrance will be part of construction stage. The proposed development does not involve significant or large-scale construction save for the private access road and junctions. It is acknowledged that there will also be site preparatory works which include the movement of earth and transport of road construction materials. Notwithstanding that these activities will require a greater number of personnel on site, it is considered highly unlikely that the daily HGV traffic arising during construction will exceed the 81 No. HGV trips applied for in the operational phase. It is acknowledged that the construction of the new link road and the identified improvement works to the L1615 will need to be carefully phased and co-ordinated with the Roads Authority to ensure that the impact, principally delays to exiting traffic on L1615, arising from the construction and site preparation works for the proposed development is controlled. Although not directly associated with the proposed development works there would be some short-term in-direct impact to traffic on L1615 arising from the road widening, road strengthening and bridge strengthening works to be undertaken by Meath County Council. These works to L1615 are not part of the proposed development but will be carried out prior to the commencement of the proposed development. Since the Meath County Council road improvement and bridge strengthening works would accommodate construction traffic it is considered reasonable that Meath County Council would prioritise these works to be carried out in advance of the proposed development works. Undertaking the identified road and bridge works would serve to provide access to the construction site for the construction of the new private access/link road and would thus avoid development construction traffic being required to use the receiving local roads around Bellewstown save for the northernmost 1 km section of L1615. No specific analysis of general network operation and impact upon capacity is considered necessary for the short-term impacts arising from the L1615 improvement works or for the private link road construction which is specifically included as part of the proposed development. The identified package of bridge strengthening, road strengthening and road widening works to the L1615 are put forward for the consideration of the Planning Authority as they are considered appropriate improvements to accommodate existing HGV traffic, these works are considered appropriate to the opposed passage of large vehicles, it is reasonable to expect that these road improvement works should be substantially complete prior to commencement of construction works for the proposed development including the proposed new access link road.

Much of the required site infrastructure, including vehicle washing systems, is already in place for maintaining the adjoining public roadway in a clean state, free from mud and other debris arising from haulage of extracted materials. As the site is currently operational, and the

proposed development is for continuation of quarry operations on-site there will no construction phase impacts arising directly from the site of Bellewstown Quarry save for such minor and short-term works required for the redevelopment of internal infrastructure such as the weighbridges.

12.4.3 Operational Stage

Assessment Years and Scenarios

Three assessment years are considered and these include the year of opening, year of opening + 5 years, and year of opening + 15 years have been considered for the operational phase impact assessment. Based on an assumed year of opening is 2023 and the assessment years are therefore 2023, 2028 and 2038. In each assessment year, two scenarios are assessed and include a 'baseline' scenario without proposed development, and the 'do-something' scenario with the proposed development. It should be noted that the current permission does not expire until 2028 accordingly the 'do-nothing' or baseline scenario for 2023 and 2028 includes the traffic generated to the receiving local road network by the operation of the existing permitted quarry.

Baseline Traffic Forecasting: '*Baseline*' Scenario

Background future traffic on the local road network has been determined using growth factors from TII's *Project Appraisal Guidelines (PAG) for National Roads Unit 5.3 – Travel Demand Projections*, May 2019. The guidelines provide for low, central and high sensitivity growth scenarios for County Meath with factors provided for the periods 2016-2030, 2030-2040 and from 2040-2050. Growth factors are provided for cars and vans (Light Vehicles LV) and heavy commercial vehicles (HV) and have been applied to the traffic survey data from Appendix 12.1 to forecast future baseline network traffic flows in accordance with current practice. The growth rates have been applied to the network traffic and exclude the traffic currently generated by the existing development traffic since this element is limited by condition of planning and therefore not subject to growth. Appendix 12.2 Figure 1 shows the total volume of traffic on the receiving road network together with existing development traffic which is annotated. Central growth factors have been used in the assessment and these are set out in Table 12.5.

Period	PAG Annual Growth Factor	
	LV	HV
2016-2030	1.0173	1.0365
2030-2040	1.0070	1.0186
2040-2050	1.0059	1.0207

Table 12.5: TII PAG Growth Factors (Central) – County Meath.

Forecast background traffic levels has been derived in accordance with TII's *TTA Guidelines* (2014) for:

- Year of Opening 2023
- Year of Opening +5 yrs

- Year of Opening +15 yrs

Annual Average Daily Traffic

The traffic survey data provided in Appendix 12.1 and summarised in the network flow diagrams of Appendix 12.2 (excluding traffic generated by the existing development) has been factored or expanded in accordance with Transport Infrastructure Ireland's *Project Appraisal Guidance for National Roads Unit 16.1 – Expansion Factors for Short Period Traffic Counts*, October 2016. Table 12.6 summarises the expansion factors derived from the PAG guidelines.

Variable	Period	Day	Month
Survey Data	07:00hrs 19:00hrs	Wednesday	May
PAG Factor	0.811	0.95	0.98

Table 12.6: AADT Expansion Factors – Region: Mid-East (incl. Meath).

Based on the short-period traffic survey data provided in Appendix 12.1 and summarised in Appendix 12.2, annual average daily traffic (AADT) values were calculated for the existing 2021 surveyed data together with the forecast assessment years. A baseline AADT is first established to which existing quarry traffic flows have been added (since quarry flows are static they are therefore neither subject to growth nor do they require factoring/expansion). The existing AADT and future forecast baseline AADT values are derived from Appendix 12.2 Figures 7 and 8 and are set out in Table 12.7.

Link Road	AADT Base	Existing Quarry Traffic	Baseline AADT – Without Proposed Dev.			
			2021 LV(HV)	2023 LV(HV)	2028 LV(HV)	2038 LV(HV)
L56172 (North)[2]	30(6)	16(0)	56(8)	57(8)	60(10)	49(12)
L56172 (South)	28(5)	8(59)	45(66)	46(66)	49(68)	45(10)
L5618 (West)[3]	386(24)	4(32)	515(64)	516(65)	571(73)	627(50)
L5618 (Central)[4]	458(29)	4(27)	611(65)	612(67)	676(76)	744(60)
L5618 (East)[5]	564(45)	0(12)	747(72)	748(74)	828(89)	916(94)
Stamullen Road	633(45)	2(11)	840(71)	841(73)	931(88)	1028(94)
L1615 (South)[6]	843(39)	2(4)	118(56)	1120(58)	1240(70)	1369(81)
L1615 (North)[7]	900(37)	2(4)	1194(53)	1195(55)	1323(67)	1461(77)
R150 (West)[8]	3194(320)	2(4)	4232(428)	4233(443)	4691(549)	5185(666)
R150 (East)	2893(323)	0(0)	3832(428)	3833(443)	4247(550)	4697(672)

Table 12.7: 'Baseline' Scenario – Local Road Network AADT Calculation (Two-Way Link Flows).

[2] The Mullagh Road L56172 North of Existing Bellewstown Quarry Access
[3] L5618 Carnes Road to West of L56172 Mullagh Road
[4] L5618 Between L56172 (Mullagh Road) and L1615 (Hilltown Great Road)
[5] L5618 East of L1615 Bellewstown Cross
[6] Section of L1615 South of Laburnum Farms
[7] Section of L1615 North of Laburnum Farms
[8] Regional Road R150 to West of L1615

The calculated baseline figures for 2023 and 2028 include the current permitted development whilst the figures for 2038 shown in Table 12.7 assume that no further activity takes place at the quarry when the current permission expires in 2028.

Committed Developments

A review of committed developments (developments with planning permission, but not yet delivered) in the vicinity of the development site has not identified any of sufficient proximity/ scale to be considered relevant to this assessment.

Development Traffic Generation

The proposed development seeks to extend the life of the current permitted quarry from 10 years to 25 years (as originally proposed 37L development) and proposes to develop a new dedicated quarry access road to facilitate an increase in the permitted number of HGV loads to and from the quarry from a maximum of 32 no. per day to an average of 81 no. per day (with +/-15% fluctuations in the number of loads to and from the quarry proposed to address certain demands on the quarry as and when required, equating to a maximum of 93 no. loads per day).

Access to the quarry is currently provided from the L56172 Mullagh Road that runs in a north-south direction and bounds the eastern portion of the site. The subject development proposes the provision of a new private road, as well as new entry/exit points onto this new road, to serve the quarry.

The proposed new private road will reduce the impacts on the local community by redirecting the HGVs away from Bellewstown Village and reducing the linear mileage on the receiving road to approximately 1 km. The proposed haul route is shown in Figure 12.6.

Trip Distribution

The existing distribution of development traffic to the receiving road network is shown in Appendix 12.2 Figure 4. The proposed haul route will result in a substantially revised distribution of HGV traffic. The revised distribution is shown in Appendix 12.2 Figure 5. For the purposes of this assessment, it is assumed that the volume of light vehicle traffic generated by the existing site will not alter either in volume or in distribution.

'Do-Something' Scenario

The 'do-something' scenario includes for the HGV traffic associated with the proposed output of material which comprises an average of 81 No. HGV trips using the proposed new haul route, it includes the cessation of the use of the existing receiving road network for 32 No. HGV trips (max. 20 No. HGV movements in any given per hour) as currently permitted. The 'do-something' scenario also includes for the addition of forecast network traffic growth arising from future economic growth and development.

Table 12.8 summarises the forecast 'do-something' traffic volumes on the receiving road network which is shown as and AADT value.

Given that the composition of traffic generated by the development is chiefly HGV, Table 12.8 shows the forecast AADT values split into 'light vehicles (LV)' and 'heavy vehicles (HV)' rather than the traditional presentation of AADT which typically shows the total volume of traffic and the corresponding % HGV content. The selected methodology for the presentation of the traffic data is considered more informative and is more easily followed.

Link Road	AADT Base	Proposed Quarry Traffic	AADT – With Proposed Development		
			2023 LV(HV)	2028 LV(HV)	2038 LV(HV)
L56172 (North)	30(6)	16(0)	57(8)	60(10)	65(12)
L56172 (South)	28(5)	8(0)	46(8)	49(10)	53(12)
L5618 (West)	386(24)	4(0)	516(33)	571(41)	631(50)
L5618 (Central)	458(29)	4(0)	612(40)	676(49)	748(60)
L5618 (East)	564(45)	0(0)	748(62)	828(77)	916(94)
Stamullen Road	633(45)	2(0)	841(62)	931(77)	1030(94)
L1615 (South)	843(39)	2(0)	1120(54)	1240(66)	1371(81)
L1615 (North)	900(37)	2(162)	1195(213)	1323(225)	1463(239)
R150 (West)	3194(320)	2(162)	4233(601)	4691(707)	5187(828)
R150 (East)	2893(323)	0(0)	3833(443)	4247(550)	4697(672)

Table 12.8: 'Do-Something' Scenario – Forecast Future Year Two-Way Traffic (AADT).

Traffic Impact

The traffic impact arising from the proposed development is the difference between the baseline 'do-nothing' scenarios and the 'do-something' scenarios for the Year of Opening and subsequent assessment years. Table 12.9 summarises the numerical changes in the link light vehicle and heavy vehicle traffic flows on the receiving road network. Table 2.10 summarises the same data presented as the percentage change in both light and heavy streams of traffic.

Link Road	AADT Base	Proposed Quarry Traffic	AADT – Numerical Difference		
			2023 LV(HV)	2028 LV(HV)	2038 LV(HV)
L56172 (North)	30(6)	16(0)	+0(0)	+0(0)	+16(0)
L56172 (South)	28(5)	8(0)	+0(-58)	+0(-58)	+8(2)
L5618 (West)	386(24)	4(0)	+0(-32)	+0(-32)	+4(0)
L5618 (Central)	458(29)	4(0)	+0(-27)	+0(-27)	+4(0)
L5618 (East)	564(45)	0(0)	+0(-12)	+0(-12)	+0(0)
Stamullen Road	633(45)	2(0)	+0(-11)	+0(-11)	+2(0)
L1615 (South)	843(39)	2(0)	+0(-4)	+0(-4)	+2(0)
L1615 (North)	900(37)	2(162)	+0(+158)	+0(+158)	+2(+162)
R150 (West)	3194(320)	2(162)	+0(+158)	+0(+158)	+2(+162)
R150 (East)	2893(323)	0(0)	+0(0)	+0(0)	+0(0)

Table 12.9: Forecast Network Traffic Impact (Two-Way Traffic Flows) – Numerical.

Under the 'do-something' scenario much of the receiving road network will benefit from a reduction in HGV traffic. Traffic on L56172 Mullagh Road (South) will decrease by 58 No. HGV movements[9] per day, traffic on L5618 to the west of the Mullagh Road will see a reduction of 32 No. HGV movements per day whilst to the east the reduction is 27 No. HGV movements per day. There are also reductions in HGV traffic on the Stamullen Road south from Bellewstown Crossroad and east toward Julianstown both in the order of 10 No. HGV movements per day. The forecast increase in traffic will be manifest along the proposed new site access road, over the 1 km northern section of L1615 and on Regional Road R150. The forecast increase in HGV traffic on L1615 is +158 No. HGV movements in the 2023 and 2028 scenarios and +162 No. HGV in the 2038 scenario when the existing permission would have expired. The current HGV traffic flow on L1615 recorded in the traffic surveys was 37 No. HGV movements. As set out in Table 12.10 the increase ranges from 300% to 200% over the course of the future year scenarios.

Link Road	2023		2028		2038	
	LV	HV	LV	HV	LV	HV
L56172 (North)	0%	0%	0%	0%	+26%	0%
L56172 (South)	-51%	-87%	-49%	-85%	+18%	0%
L5618 (West)	-6%	-49%	-5%	-44%	+1%	0%
L5618 (Central)	-4%	-40%	-4%	-35%	0%	0%
L5618 (East)	-1%	-16%	-1%	-14%	0%	0%
Stamullen Road	-1%	-15%	-1%	-13%	0%	0%
L1615 (South)	0%	-7%	0%	-6%	0%	0%
L1615 (North)	+13%	+288%	+11%	+236%	+11%	+210%
R150 (West)	+3%	+36%	+3%	+29%	+3%	+24%
R150 (East)	0%	0%	0%	0%	0%	0%

Table 12.11: Forecast Network Traffic Impact (Two-Way Traffic Flow) – Statistical.

The impact of the proposed development traffic on the R150 is of the order of an increase of between 24-36% in the HGV content of flows between Annagor/Beaumont and Duleek. Development traffic using the R150 will travel toward Duleek, turning left onto Regional Road R152 to travel south. The R152 currently accommodates approximately half of the existing HGV traffic arising from the quarry so the relative increase experienced by the proposed development equates to approximately 66 No. HGV trips per day.

12.4.4 Proposed Development Access

Site Access Arrangements and Access Road Junctions

The proposed development includes for the relocation and improvement of the existing Bellewstown Quarry priority junction on L56172 Mullagh Road. Measured from centreline to centreline it is proposed to relocate the existing access approximately 25m south. Mullagh Road undulates, and the revised location is at the apex of a crest. The proposed new location is selected to optimise the available sightlines and stopping sight distances. The calculation of the required sight distance is informed by week-long speed surveys undertaken on Mullagh Road close to the existing access.

[9] 1 no. Movement to and 1 no. Movement from the development constitutes 1 no. Trip

The proposed new private access road forms a crossroad with L56172 Mullagh Road at the proposed new access location and extends northwest through existing fields and emerges onto the L1615 to the north of Laburnum Farms where it will terminate at a new priority controlled junction which is included as part of the current application.

The proposed new private link road and the junctions with the public roads at either end have been designed in accordance with Transport Infrastructure Ireland's Design Geometry publications formerly the National Roads Authority's *Design Manual for Roads and Bridges*. The approach gradients to the public road at both ends of the proposed new link road are ±2.5% over 30m and provide the required dwell area as per the recommendations of TII-DN-GEO-03060.

The geometry of the proposed access on L56172 Mullagh Road is not required to accommodate the turning of HGV traffic accordingly the turning radii have been reduced to 6.0m. This turning radius is satisfactory to accommodate the turning of occasional trucks delivering parts or fuel.

The junction on L1615 near Laburnum Farms is required to accommodate the left turn to L1615 and the right turn from L1615. The layout of the turning radii appropriately accords with TII-DN-GEO-03060 Section 5.6.5. and incorporates the compound radius curve recommended where HGV access is frequent. TII-DN-GEO-03060 Section 4.3. sets out that the use of computer software to predict the swept path of large vehicles is mandatory in the design of all junction types accordingly the junction has been assessed using Autotrack for the vehicle type used in the haulage of aggregates. The assessments confirm that the junction design can accommodate a HGV negotiating the junction at a minimum speed of 5km/h.

Visibility Sightline Assessment

New entrances or direct accesses should generally be designed having regard to the function and traffic volumes on the adjoining public road as well as pedestrians, cyclists and other road users. Typically, clear sightlines are required to be available or provided at new or improved junctions and entrances. The sight distance required is normally calculated using the applicable road design manual whilst having regard to the following criteria:

- the designation of the road, its function in the road hierarchy and existing/projected volumes of traffic;
- the typical speed or Design Speed **(not the speed limit)** of the road;
- the vertical and horizontal alignment of the road;
- and any other such factors that may be pertinent to the specific location or as may be set out in road design manuals.

When locating new entrances or proposing increases in traffic movements at existing entrances, it should be demonstrated that vehicles turning right into the entrance do not obstruct or cause a hazard to other road users. Sufficient forward sight distance must be available to (a) vehicles approaching an entrance in case a vehicle is waiting on the road carriageway to turn right, (b) for vehicles waiting to turn right at an entrance.

The relevant Transport Infrastructure Ireland (TII) standard is DN-GEO-03060 (October 2019), *"Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade-*

separated and compact grade separated junctions)". This document supersedes the NRA document Design Manual for Roads and Bridges Section TD 41-42/09 referenced in the *Meath County Development Plan 2021-2027.*

DN-GEO-03060 Section 5.6.3 relates to 'Visibility' and sets out the standard method of measurement for the provision of visibility splays for junctions and direct accesses. DN-GEO-03060 Figure 5.15a shows the standard method of measurement on a single carriageway where the road is straight and DN-GEO-03060 Figure 5.16b shows the method of measurement of visibility splays for single carriageways where the road is curved.

The principal parameters are the 'x' distance and 'y' distance. The distance back along the access road from which the full visibility is measured is known as the 'x' distance. It is measured back along the centreline of the minor road or direct access from the continuation of the line of the nearside edge of the paved surface of the major road. DN-GEO-03060, Table 5.4 advises that in all cases of access to National Roads under "Stop" control, the desirable minimum 'x' distance shall be 3.0 metres.

From the point 'x' metres back from the edge of the major road, a driver entering the major road from the development or from the proposed new access road is required to be able to see clearly points to the left and to the right on the nearer edge of the major road running carriageway at a distance given in TII DN-GEO-03060 which is referred to as the 'y' distance. The 'y' distance is also the Stopping Sight Distance which is the distance drivers should be able to see ahead when driving along the major road in the vicinity of the proposed new access junction.

DN-GEO-03060, Table 5.5 shows the required visibility criteria for national roads for various set 'Design Speed' steps (not the speed limit). The lowest Design Speed step cited in Table 5.5 is 42km/h for which the corresponding sightline, Stopping Sight Distance (SSD) or 'y' distance along the major road is 50m. For a Design Speed of 50km/h the 'y' distance is 70m.

Where the calculated or recorded Design Speed falls between the tabulated values set out in DN-GEO-03060 Table 5.5, in difficult circumstances it is worthwhile considering a refined calculation of 'y' distance by reference to the underlying formula from which the tabulated values are derived. The tabulated values for 'y' distance provided in DN-GEO-03060, Table 5.5 are based upon the following formula:

$$\text{'y' distance} = (vt) + (v^2/2d)$$

Where:

v = vehicle speed (m/s)
t = driver perception-reaction time (s)
d = deceleration rate (m/s^2)

<u>Visibility Sightlines – Site Access Junction Mullagh Road</u>

The proposed development access is located on Local Road L56172 which shares few of the characteristics of national roads or motorways to which DN-GEO-03060 applies. While the requirements in the TII standards (Design Manual for Roads and Bridges) may be the best guidance available to Planning Authorities the manual advises that where these standards are to be applied to local roads, engineering judgement should ensure their appropriate application.

Appendix 12.1 provides a full breakdown of vehicle speed statistics recorded over the course of weeklong surveys on the Mullagh Road near the existing site entrance and this is set out in Section 12.3.4. The average speed recorded on L56172 Mullagh Road near the existing site access is approximately 38km/h whilst the recorded 85th percentile speed is in the order of 48km/h. The Design Speed calculated for L56172 is 50km/h or less so the provision of 70m sightlines at the site access is in accordance with the appropriate standard and will result in a safe access.

The 'y' distance figures listed in DN-GEO-03060, Table 5.5 use the following parameters for reaction time (t = 2 sec) and deceleration rate (d = 2.45m/s^2). In the case of lower speed environments these parameters are acknowledged by the Transport Research Laboratory (TRL) to be conservative. The reasons for these parameters being considered 'overly conservative', most especially for speeds under 60km/h are set out in the *Design Manual for Urban Roads and Streets* (DMURS), Section 4.4.4. In brief DMURS states that TRL found these SSD values to be overly conservative as they underestimated driver reaction times and deceleration rates. Based on this TRL research, DMURS adopts a driver perception/reaction time of t = 1.5 sec, and a deceleration rate of 4.41m/s^2, and advises that these parameters should be applied with design speeds of 60km/hr and below.

Notwithstanding the above and using the conservative DN-GEO-03060 values for 't' and 'd' in the low-speed environment of L56172 Mullagh Road the SSD and 'y' distance for a Design Speed of 48km/h is as follows:

$$SSD = (vt) + (v^2/2d)$$
$$SSD = [(13.33 \text{ m/sec})(2 \text{ sec})] + [(13.33 \text{ m/s})^2/2(2.45 \text{ m/s})]$$
$$SSD = 26.6 \text{ m} + 36.3 \text{ m}$$
$$SSD = 63\text{m}$$

The Design Speed has been calculated for approaching traffic as 48km/h and the corresponding standard SSD and 'y' distance value appropriate to the receiving road environment is 63m.

Visibility sightline criteria for the proposed relocated development access junction are set out in the following drawing which shows sightlines and forward stopping sight distance measurements of 70m corresponding to a Design Speed of 50km/h (sightlines are approximately 10% greater than required when calculated in accordance with DN-GEO-03060).

- 03138-KC2P Proposed Site Access Junction Visibility Sight Distance Assessment

Visibility Sightlines – New Site Access Road Junction L1615

ATC surveys have been carried out at the locations identified in Figure 12.3. The survey results for counter site S2 show the average speed on L1615 Hilltown Great Road for southbound vehicles approaching the location of the proposed new junction with the new private link road to the development site is approximately 64km/h whilst the recorded 85th percentile speed is 73km/h. For northbound traffic approaching the site access the data recorded at counter site S3 shows the average speed is 65km/h and the 85th percentile speed is 76km/h. The Design Speed of the L1615 receiving road is less than the 80km/h default speed limit.

DN-GEO-03060, Table 5.5 shows the required visibility criteria for national roads for various set 'Design Speeds'. The recorded 85th percentile speeds are less than 80km/h and the next highest closest Design Speed listed in Table 5.5 is 85km/h for which the corresponding sightline, Stopping Sight Distance (SSD) or 'y' distance along the major road should be 160 m.

There is no design speed step in DN-GEO-03060 corresponding to the rural default speed limit of 80km/h. In the absence of site-specific speed data many road authorities acknowledge that on local roads subject to 80km/h a 'y' distance of 145m is satisfactory and in line with the principles of the standards for national roads. This reduction is applied having regard to the underlying formula.

The Design Speed calculated for L1615 is 80km/h or less. Using the underlying formula as before the required sight distance for 80km/h is as follows:

$$SSD = (vt) + (v^2/2d)$$
$$SSD = [(22.22 \text{ m/sec})(2 \text{ sec})] + [(22.22 \text{ m/s})^2/2(2.45 \text{ m/s})]$$
$$SSD = 44.44 \text{ m} + 100.8 \text{ m}$$
$$SSD = 145\text{m}$$

Visibility sightline criteria for the proposed new development access road junction is shown on the following drawing:

- 03138-KC2Q Proposed L1615 Junction Visibility Sight Distance Assessment

The above drawing shows sightlines distance envelope of visibility measurements of 145m corresponding to a Design Speed of 80km/h which is also the speed limit of the road. Given that the recorded 85th percentile approach speeds are less than 80km/h from both directions the sight distances achieved from the proposed new link road access junction are satisfactory for safe operation in accordance with the requirements of TII DN-GEO-03060.

It is noted from the drawing that forward visibility or stopping sight distance of 145m is not achievable for southbound traffic approaching the new access junction location. As a point of reference the recorded 85th percentile speed of traffic approaching from the north is 73km/h which is close to the 70km/h design step which requires 120m stopping sight distance. Applying the DN-GEO-03060 formula the required visibility sight distance corresponding to 73km/h is 124m. The measured forward visibility for southbound vehicles is 126m and is achievable entirely within the metalled road surface.

The calculations show that the available forward visibility criteria on the approach to the new junction accord with the design standard for national roads and is satisfactory for the proposed access junction to operate safely.

In the interest of increased safety and subject to agreement with Meath County Council it is nonetheless proposed to provide advance warning signs and high friction wearing course along the southbound approach to the proposed new junction. It is proposed that a high friction wearing course will be applied to the north of the proposed junction for a distance of 145m. The following Figure 12.7 shows an example of the advance warning signs proposed for the site access on L1615. These signs will be used with distance plates of 50m, 100m, 150m or 200m and can be used in combination with yellow horizontal bar markings or rumble strips to enhance driver awareness should this be considered appropriate in contributing to the safe operation of the proposed new junction. The above measures are confirmed in Sections 2.4

and 2.5 of the Road Safety Audit prepared by Traffico Ltd. and referenced in the Audit Feedback Form.

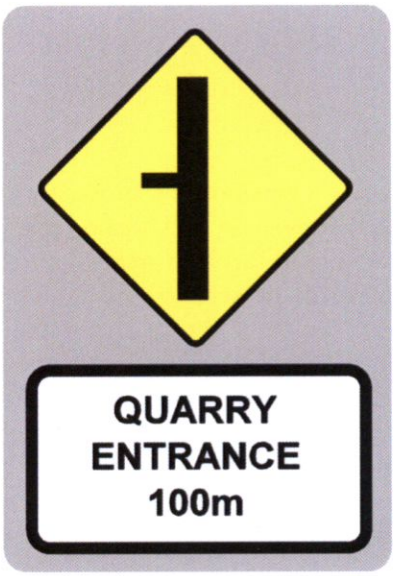

Figure 12.7: Advance Warning Sign Example.

12.5 Baseline Scenario

If the proposed development does not proceed the existing operations will cease from 2028, and the quarry will no longer operate. Traffic volumes will be as per the future year 'baseline' scenario set out in Table 12.8.

12.6 Prevention and Mitigation Measures

The proposed development is forecast to be beneficial to the greater receiving road network serving Bellewstown and will reduce the volume of HGV traffic traversing the network. The development proposes a revised haul route regime that will see a significant proportional impact upon the northernmost 1km section of L1615 which connects to the R150 at a priority controlled junction.

Mitigation measures are set out in this Chapter and include.

- Construction of 1.7 km private access road bypassing local road network
- Relocation of development access to optimise sightlines
- This Chapter includes at Section 12.3.12 a comprehensive assessment of the receiving road infrastructure and identifies for the consideration of Meath County Council a suite of road strengthening and widening works together with bridge strengthening recommendations appropriate to the maintenance of the existing road for the opposed passage of both existing and forecast HGV traffic. This suite of works is not part of the proposed development but will be done separately and Kilsaran will contribute financially to them or they will carry out the road improvement and bridge strengthening works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides.

- Subject to agreement with Meath County Council advance warning signing and high friction surfacing will be provided at the new junction on L1615.

12.7 Assessment of Impacts

Construction Phase

As the site is currently operational, and the proposed development is for continuation of quarry operations on-site there will no construction phase impacts arising directly from the site of Bellewstown Quarry save for such minor and short-term works required for the construction of internal infrastructure such as the new weighbridges.

The proposed development includes the construction of a private access road and junctions with Mullagh Road and L1615. There will also be site preparatory works which include the movement to earth and transport of road construction materials. Notwithstanding that these activities will require a greater number of personnel on site, it is considered highly unlikely that the daily HGV traffic arising during construction will exceed the 81 no. HGV trips applied for in the operational phase.

Cumulative Effects (Construction Phase)

The road improvement and bridge strengthening works identified in this Chapter are presented for the consideration of Meath County Council as works appropriate to the maintenance of the existing roads infrastructure to satisfactorily and safely accommodate opposed HGV traffic volumes both existing and forecast under the proposed scenario. The road improvement and bridge strengthening works would be carried out by Meath County Council under the appropriate licence and would be completed prior to commencement of the proposed development. It follows that no traffic arising from the road works and bridge strengthening works would be coincident with development construction traffic.

Prior to the commencement of the proposed development there will be some short-term direct impact arising on L1615 arising from the Meath County Council road widening and strengthening works and these impacts will be commensurate with general road maintenance type works. These works will be prioritised to provide access to the construction site for the new private access/link road and to avoid construction traffic being required to use the receiving local roads around Bellewstown.

Operational Phase

The likely impact of HGV traffic movements on the local road network is considered beneficial for the most part. Direct impact is limited to a 1km section of L1615 where the forecast increases in HGV traffic are as set out in Table 12.10 and Table 12.11 and are considered significant. Overall the two-way traffic flows on the northern section of L1615 will increase from 900 No. light vehicles and 37 no. HGV per day at present to 1,195 no. light vehicles and 53 no. HGV in 2023 (Year of Opening). The opening of the development in 2023 is forecast to generate an additional 158 no. HGV movements on this section of road.

It is not envisaged that there will be a significant increase in traffic throughput or impact upon capacity at any junction in the vicinity of the site or on the proposed haul route.

In terms of the *spatial extent* of the impact of HGV traffic, it will be limited to the proposed haul routes along L1615 as outlined in Figure 12.6. The impact of HGV traffic on L1615 is expected up to *medium-term* (i.e. 25 years), occurring 5.5 days a week, between the hours of 07:00hrs and 19:00 hrs (to 13:00hrs on Saturdays) and are expected to continue as long as the proposed development has license to operate with the proposed extraction rate.

Cumulative Effects (Operational Phase)

The road network assessments include for no specific development other than the proposed development. Future development that may give rise to the generation of new traffic on the receiving roads network is included for by the application of TII published growth rates to all traffic on all routes within the study area. The cumulative traffic arising from future economic growth and development resulting in traffic growth on the receiving Regional Road network are included for in both the 'do nothing' and 'do something' road network assessment scenarios. It is reasonable to expect that traffic arising from the proposed development would by definition be included, or at least included in part in the TII growth rates. This factor is disregarded in the traffic assessments that all traffic to the proposed development is considered totally new to the road network for the proposed period of operation.

12.8 Residual Impacts

Construction Phase

There will be no residual impact arising.

Operational Phase

The residual effects on traffic conditions on the receiving road network will be positive on the immediate road network serving Bellewstown Quarry where, save for local demand that might arise from time to time, development traffic will be restricted to a 1 km section of the local road network serving Bellewstown and environs. Any residual impacts on traffic capacity on the receiving road network can be categorised as imperceptible.

12.9 Monitoring

Construction Phase

None required.

Operational Phase

The implementation and performance of traffic management and haul route management measures and initiatives including any ongoing revisions or new initiatives will be monitored and evaluated throughout the Operational Phase.

12.10 Interactions

Human Health

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KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 01 DATE: 26th May 2021

LOCATION: Kilsaran Quarry Access DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	2	0	2	5	0	0	0	3	0	3	7	0	0	0	0	0	0	0
07:15	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0
07:45	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
H/TOT	0	0	0	4	0	4	9	0	0	0	5	0	5	12	0	0	0	0	0	0	0
08:00	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
08:30	0	0	0	1	0	1	2	0	0	0	2	0	2	5	0	0	0	0	0	0	0
08:45	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	1	0	0	0	1	1
H/TOT	0	0	0	3	0	3	7	0	0	0	2	0	2	5	0	1	0	1	0	2	3
09:00	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0
09:30	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	1	0	1	2	0	0	1	2	0	3	6	0	0	0	0	0	0	0
10:00	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	1	0	0	0	1	1	0	0	0	1	0	1	2	0	0	0	0	0	0	0
10:30	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
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H/TOT	0	1	0	2	0	3	6	0	0	0	2	0	2	5	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	0	0	1	1
11:15	1	0	0	1	0	2	3	0	0	0	2	0	2	5	0	0	0	0	0	0	0
11:30	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	3	0	4	8	0	0	0	3	0	3	7	1	0	0	0	0	1	1
12:00	0	0	0	0	0	0	0	0	0	0	2	0	2	5	1	0	0	0	0	1	1
12:15	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	2	0	2	5	0	0	0	3	0	3	7	1	0	0	0	0	1	1

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 01 DATE: 26th May 2021

LOCATION: Kilsaran Quarry Access DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
14:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	1	0	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	1	0	0	3	4	0	0	0	0	0	0	0	0	1	0	0	0	1	1
15:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1
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15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	1	1	0	0	4	5	0	0	0	0	0	0	0	0	1	0	0	0	1	1
16:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
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16:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	4	0	0	0	0	4	4	1	0	0	0	0	1	1	1	0	0	0	0	1	1
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17:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	2	0	0	0	3	3
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	3	0	0	0	0	3	3	0	0	0	0	0	0	0	2	2	0	0	0	4	4
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18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	16	1	2	0	0	19	20	2	5	0	0	0	7	7	3	5	0	0	0	8	8

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 01

DATE: 26th May 2021

LOCATION: Kilsaran Quarry Access

DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3
13:30	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0
H/TOT	0	0	0	2	0	2	5	0	0	0	2	0	2	5	1	0	0	0	1	2	3
14:00	0	0	0	2	0	2	5	0	0	0	1	0	1	2	0	0	1	0	0	1	2
14:15	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	1	0	0	0	1	1
14:30	0	0	0	1	0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
14:45	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	1	1
H/TOT	0	0	0	3	0	3	7	0	1	0	2	0	3	6	2	1	1	0	0	4	5
15:00	0	0	0	2	0	2	5	0	0	0	3	0	3	7	0	0	0	0	0	0	0
15:15	0	0	0	2	0	2	5	0	0	0	1	0	1	2	0	0	0	0	0	0	0
15:30	0	0	0	1	0	1	2	0	0	0	1	0	1	2	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	3	0	3	7	0	0	0	0	0	0	0
H/TOT	0	0	0	5	0	5	12	0	0	0	8	0	8	18	0	0	0	0	0	0	0
16:00	0	0	0	3	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	3	0	4	8	0	0	0	0	0	0	0	2	0	0	0	0	2	2
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3	4
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	3	0	1	0	0	4	5
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
P/TOT	3	1	0	28	0	32	68	0	1	1	29	0	31	69	12	2	2	1	1	18	21

Traffic Survey Data – Site 2

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 02

DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road

DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	5
07:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	2
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	0	4	9
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	7
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
10:15	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	2	5
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	1	0	0	1	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	2
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
H/TOT	2	0	0	1	0	3	4	0	0	0	0	0	0	0	0	0	0	2	0	2	5
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
H/TOT	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	1	0	1	2

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 02

DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road

DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	5	0	0	0	0	5	5	2	0	0	0	0	2	2
H/TOT	0	0	0	0	0	0	0	10	1	0	0	0	11	11	2	0	0	0	0	2	2
08:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	1	0	0	0	0	1	1
08:15	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0
08:30	0	0	0	2	0	2	5	5	1	0	1	0	7	8	0	0	0	0	0	0	0
08:45	0	1	0	0	0	1	1	15	0	0	0	0	15	15	1	0	0	0	0	1	1
H/TOT	0	1	0	2	0	3	6	23	2	0	1	0	26	27	2	0	0	0	0	2	2
09:00	0	0	1	0	0	1	2	5	0	0	0	0	5	5	0	0	0	0	0	0	0
09:15	0	0	0	1	0	1	2	0	2	0	0	0	2	2	1	0	0	0	0	1	1
09:30	0	0	0	1	0	1	2	2	0	0	0	0	2	2	1	0	0	0	0	1	1
09:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
H/TOT	0	0	1	2	0	3	6	8	2	0	0	0	10	10	2	0	0	0	0	2	2
10:00	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	1	0	0	0	1	1
10:15	0	0	0	1	0	1	2	2	0	0	0	0	2	2	0	0	1	0	0	1	2
10:30	0	0	0	1	0	1	2	3	1	0	0	0	4	4	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
H/TOT	0	0	0	2	0	2	5	7	2	0	0	0	9	9	0	1	1	0	0	2	3
11:00	1	0	0	1	0	2	3	2	0	1	0	0	3	4	1	0	0	0	0	1	1
11:15	0	0	0	2	0	2	5	2	0	0	0	0	2	2	1	0	0	0	0	1	1
11:30	0	0	0	0	0	0	0	1	1	1	0	0	3	4	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	2	1	0	0	0	3	3	1	0	0	0	0	1	1
H/TOT	1	0	0	3	0	4	8	7	2	2	0	0	11	12	3	0	0	0	0	3	3
12:00	1	0	0	2	0	3	6	4	1	0	0	0	5	5	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	2	1	0	0	0	3	3	1	0	0	0	0	1	1
12:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	5	1	1	0	0	7	8	0	0	0	0	0	0	0
H/TOT	1	0	0	2	0	3	6	12	3	1	0	0	16	17	1	0	0	0	0	1	1

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 02

DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road

DAY: Wednesday

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
07:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	2	2
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	4	0	0	0	0	4	4
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	1	0	1	0	0	2	3	0	0	0	1	0	1	2	1	0	0	0	0	1	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	4	5
08:45	1	1	0	0	0	2	2	0	0	0	0	0	0	0	3	0	0	0	0	3	3
H/TOT	2	1	1	0	0	4	5	0	0	0	1	0	1	2	7	0	1	0	0	8	9
09:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	3	0	0	0	0	3	3
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
09:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	2	2
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	2	0	0	0	0	2	2	0	0	0	0	0	0	0	7	0	0	0	0	7	7
10:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:45	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	1	0	0	2	3	0	0	0	0	0	0	0	2	0	0	0	0	2	2
11:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	2	0	0	4	5
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
11:45	0	0	1	0	0	1	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	1	0	1	0	0	2	3	0	0	0	0	0	0	0	4	2	2	0	0	8	9
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
12:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	3	0	0	0	0	3	3	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	4	0	0	0	0	4	4	0	0	0	0	0	0	0	3	0	0	0	0	3	3

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 02 DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road DAY: Wednesday

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	7
07:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
07:30	1	0	0	0	0	1	1	3	1	0	0	0	4	4	0	0	0	1	0	1	2
07:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	1	2
H/TOT	1	0	0	0	0	1	1	5	1	0	0	0	6	6	0	0	0	5	0	5	12
08:00	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0
08:15	1	0	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
08:45	2	0	0	0	0	2	2	8	1	0	0	0	9	9	0	0	0	0	0	0	0
H/TOT	3	0	0	0	0	3	3	11	3	0	0	0	14	14	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	5	2	0	0	0	7	7	0	0	0	0	0	0	0
09:15	2	0	0	0	0	2	2	3	2	0	0	0	5	5	0	0	0	0	0	0	0
09:30	1	0	0	0	0	1	1	3	2	0	0	0	5	5	0	0	0	0	0	0	0
09:45	1	0	0	0	0	1	1	1	2	0	0	0	3	3	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	4	4	12	8	0	0	0	20	20	0	0	0	0	0	0	0
10:00	0	0	1	0	0	1	2	1	0	0	0	0	1	1	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	2	0	0	0	0	2	2	3	0	0	0	0	3	3	0	0	0	0	0	0	0
10:45	0	2	1	0	0	3	4	1	1	0	0	0	2	2	0	0	0	0	0	0	0
H/TOT	2	2	2	0	0	6	7	5	1	0	0	0	6	6	0	0	0	0	0	0	0
11:00	0	1	2	0	0	3	4	4	0	2	0	0	6	7	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	2	0	0	1	0	3	4	0	0	0	0	0	0	0
11:30	1	0	0	0	0	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	3	0	0	3	5	0	0	0	0	0	0	0
H/TOT	1	1	2	0	0	4	5	7	0	5	1	0	13	17	0	0	0	0	0	0	0
12:00	2	0	0	0	0	2	2	5	1	0	0	0	6	6	0	0	0	0	0	0	0
12:15	1	0	0	0	0	1	1	3	0	0	0	0	3	3	0	0	0	1	0	1	2
12:30	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0
12:45	1	0	0	0	0	1	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	4	4	9	3	0	0	0	12	12	0	0	0	1	0	1	2

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 02 DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	1	0	0	1	0	2	3	1	0	0	0	0	1	1	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	1	0	2	3	1	0	0	0	0	1	1	0	0	0	1	0	1	2
14:00	0	0	0	2	0	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
14:45	1	0	0	0	0	1	1	0	0	1	0	0	1	2	0	0	0	0	0	0	0
H/TOT	2	0	0	2	0	4	7	0	0	1	0	0	1	2	0	0	0	1	0	1	2
15:00	1	0	0	2	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	2	0	2	5	0	0	0	0	0	0	0	1	0	0	0	0	1	1
15:30	0	1	1	1	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	1	1	5	0	8	15	0	0	0	0	0	0	0	1	0	0	0	0	1	1
16:00	0	0	0	3	0	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
16:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	2	0	0	0	0	2	2	1	0	0	0	0	1	1	0	0	0	0	0	0	0
H/TOT	3	0	0	3	0	6	10	2	0	0	0	0	2	2	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
17:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	2	1	0	0	0	0	1	1	1	0	0	0	0	1	1
18:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P/TOT	13	2	1	13	0	29	46	4	0	1	0	0	5	6	2	0	0	15	0	17	37

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 02

DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road

DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	1	1	1	0	0	3	4	0	0	0	0	0	0	0
13:15	1	0	0	0	1	2	3	2	1	0	0	0	3	3	1	0	0	0	0	1	1
13:30	0	0	0	1	0	1	2	5	0	0	0	0	5	5	0	0	0	0	0	0	0
13:45	0	0	0	1	0	1	2	2	0	0	0	0	2	2	1	0	0	0	0	1	1
H/TOT	1	0	0	2	1	4	8	10	2	1	0	0	13	14	2	0	0	0	0	2	2
14:00	0	0	0	0	0	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0
14:15	0	0	0	1	0	1	2	2	0	0	0	0	2	2	1	0	0	0	0	1	1
14:30	0	0	0	0	0	0	0	9	0	0	0	0	9	9	1	0	0	0	0	1	1
14:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	1	0	0	0	0	1	1
H/TOT	1	0	0	1	0	2	3	17	0	0	0	0	17	17	3	0	0	0	0	3	3
15:00	0	0	0	1	0	1	2	4	0	0	0	0	4	4	0	0	0	0	0	0	0
15:15	0	0	0	1	0	1	2	3	0	0	0	0	3	3	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	6	0	0	0	0	6	6	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	3	0	1	0	0	4	5	0	0	0	0	0	0	0
H/TOT	0	0	0	2	0	2	5	16	0	1	0	0	17	18	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	3	0	0	0	0	3	3	1	1	0	0	0	2	2
16:15	0	0	0	0	0	0	0	3	1	0	0	0	4	4	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	9	0	0	0	1	10	11	1	0	0	0	0	1	1
16:45	0	0	0	0	0	0	0	5	0	0	0	0	5	5	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	20	1	0	0	1	22	23	2	1	0	0	0	3	3
17:00	0	0	0	0	0	0	0	3	0	0	1	0	4	5	1	0	0	0	0	1	1
17:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	6	1	1	0	0	8	9	1	0	0	0	0	1	1
17:45	0	0	0	0	0	0	0	3	1	0	0	0	4	4	1	0	0	0	0	1	1
H/TOT	0	0	0	0	0	0	0	13	2	1	1	0	17	19	3	0	0	0	0	3	3
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	4	2	0	0	0	6	6	1	0	0	0	0	1	1
18:30	1	0	0	0	0	1	1	1	1	0	0	0	2	2	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	8	0	0	0	0	8	8	1	0	0	0	0	1	1
H/TOT	1	0	0	0	0	1	1	13	3	0	0	0	16	16	2	0	0	0	0	2	2
P/TOT	5	1	1	16	1	24	46	156	20	6	2	1	185	192	22	2	1	0	0	25	26

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 02 DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road DAY: Wednesday

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1
13:30	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	1	2
13:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	3	0	0	0	0	3	3
H/TOT	2	1	0	0	0	3	3	0	0	0	0	0	0	0	3	1	1	0	0	5	6
14:00	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0
14:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
14:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	2	0	1	1	0	0	2	3	1	0	0	0	0	1	1
15:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
15:45	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	1	0	1	2	2	0	0	0	0	2	2
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	0	0	2	2
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	6	0	0	0	0	6	6
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
17:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	0	0	1	2	0	0	0	0	0	0	0	2	0	0	0	0	2	2
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	2
H/TOT	2	0	1	0	0	3	4	0	0	0	0	0	0	0	4	1	0	0	0	5	5
18:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3	3
18:30	2	0	0	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	4	0	0	0	0	4	4	0	0	0	0	0	0	0	4	1	0	0	0	5	5
P/TOT	23	2	4	0	0	29	31	0	1	1	2	0	4	7	47	5	4	0	0	56	58

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 02

DATE: 26th May 2021

LOCATION: The Mullagh Road/Duleek Road/Ongenstown Road

DAY: Wednesday

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	1	1	0	0	0	2	2	2	1	1	0	0	4	5	0	0	0	0	0	0	0
13:15	0	0	1	0	0	1	2	5	0	0	0	0	5	5	0	0	0	0	0	0	0
13:30	1	0	0	0	0	1	1	5	0	0	0	0	5	5	0	0	0	0	0	0	0
13:45	3	0	0	0	0	3	3	8	0	0	0	0	8	8	0	0	0	0	0	0	0
H/TOT	5	1	1	0	0	7	8	20	1	1	0	0	22	23	0	0	0	0	0	0	0
14:00	2	0	0	0	0	2	2	2	0	0	0	0	2	2	0	0	0	1	0	1	2
14:15	0	0	0	0	0	0	0	1	0	1	0	0	2	3	0	0	0	0	0	0	0
14:30	1	0	0	0	0	1	1	2	0	0	0	0	2	2	1	0	0	0	0	1	1
14:45	2	0	0	0	0	2	2	9	0	0	0	0	9	9	0	1	0	0	0	1	1
H/TOT	5	0	0	0	0	5	5	14	0	1	0	0	15	16	1	1	0	1	0	3	4
15:00	0	0	0	0	0	0	0	2	1	0	0	0	3	3	0	0	0	2	0	2	5
15:15	3	0	0	0	0	3	3	3	1	0	0	0	4	4	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	6	0	0	0	0	6	6	0	0	0	1	0	1	2
15:45	0	0	0	0	0	0	0	3	2	0	0	0	5	5	0	0	0	2	0	2	5
H/TOT	3	0	0	0	0	3	3	14	4	0	0	0	18	18	0	0	0	5	0	5	12
16:00	2	0	1	0	0	3	4	4	0	0	0	0	4	4	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	4	0	0	0	0	4	4	2	0	0	0	0	2	2
16:30	2	0	0	0	0	2	2	3	0	0	0	0	3	3	0	0	0	0	0	0	0
16:45	1	0	0	0	0	1	1	3	1	0	0	0	4	4	0	0	0	0	0	0	0
H/TOT	5	0	1	0	0	6	7	14	1	0	0	0	15	15	2	0	0	0	0	2	2
17:00	2	1	0	0	0	3	3	4	0	0	0	0	4	4	1	0	0	0	0	1	1
17:15	2	2	0	0	0	4	4	3	1	0	0	0	4	4	0	0	0	0	0	0	0
17:30	4	1	0	0	0	5	5	5	0	0	0	0	5	5	0	0	0	0	0	0	0
17:45	2	0	0	0	0	2	2	1	0	0	0	0	1	1	2	0	1	0	0	3	4
H/TOT	10	4	0	0	0	14	14	13	1	0	0	0	14	14	3	0	1	0	0	4	5
18:00	0	0	0	0	0	0	0	1	1	0	0	0	2	2	0	0	0	0	0	0	0
18:15	2	0	1	0	0	3	4	3	0	0	0	0	3	3	1	0	0	0	0	1	1
18:30	0	0	0	0	0	0	0	3	0	0	0	0	3	3	0	0	0	0	0	0	0
18:45	0	1	0	0	0	1	1	2	0	1	0	0	3	4	0	0	0	0	0	0	0
H/TOT	2	1	1	0	0	4	5	9	1	1	0	0	11	12	1	0	0	0	0	1	1
P/TOT	45	9	7	0	0	61	65	133	24	8	1	0	166	171	7	1	1	12	0	21	37

Traffic Survey Data – Site 3

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 03

DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction)

DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	0	3	7
07:15	0	0	0	0	0	0	0	1	3	0	0	0	4	4	1	0	0	0	0	1	1
07:30	1	0	0	0	0	1	1	2	1	0	1	1	5	7	1	0	0	1	0	2	3
07:45	2	0	0	0	0	2	2	1	0	0	0	0	1	1	0	0	0	1	0	1	2
H/TOT	4	0	0	0	0	4	4	4	4	0	1	1	10	12	2	0	0	5	0	7	14
08:00	2	0	0	0	0	2	2	0	1	0	0	0	1	1	0	0	0	0	0	0	0
08:15	3	1	0	0	0	4	4	2	0	0	0	0	2	2	2	0	0	0	0	2	2
08:30	2	1	0	0	0	3	3	0	1	0	0	0	1	1	5	0	0	0	0	5	5
08:45	1	1	1	0	0	3	4	4	1	0	0	0	5	5	4	1	0	0	0	5	5
H/TOT	8	3	1	0	0	12	13	6	3	0	0	0	9	9	11	1	0	0	0	12	12
09:00	1	0	0	0	0	1	1	4	0	1	0	0	5	6	6	0	0	0	0	6	6
09:15	2	2	0	0	0	4	4	2	0	0	0	0	2	2	1	0	0	0	0	1	1
09:30	0	0	0	0	0	0	0	3	2	0	0	0	5	5	1	1	0	0	0	2	2
09:45	1	0	0	0	0	1	1	3	1	0	0	0	4	4	3	2	0	0	0	5	5
H/TOT	4	2	0	0	0	6	6	12	3	1	0	0	16	17	11	3	0	0	0	14	14
10:00	1	0	0	0	0	1	1	3	1	0	0	0	4	4	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	4	0	0	0	0	4	4	0	0	0	0	0	0	0
10:30	2	0	0	0	0	2	2	6	0	0	1	0	7	8	0	0	0	0	0	0	0
10:45	2	0	0	0	0	2	2	3	1	1	0	0	5	6	2	2	0	0	0	4	4
H/TOT	5	0	0	0	0	5	5	16	2	1	1	0	20	22	2	2	0	0	0	4	4
11:00	1	0	0	0	0	1	1	2	0	0	0	0	2	2	6	0	0	0	0	6	6
11:15	3	0	0	0	0	3	3	4	0	0	0	0	4	4	2	0	0	0	0	2	2
11:30	4	0	0	0	0	4	4	1	0	1	0	0	2	3	0	0	0	0	0	0	0
11:45	3	0	0	0	0	3	3	3	0	0	0	0	3	3	3	0	0	0	0	3	3
H/TOT	11	0	0	0	0	11	11	10	0	1	0	0	11	12	11	0	0	0	0	11	11
12:00	0	3	0	0	0	3	3	1	1	0	0	0	2	2	5	0	0	0	0	5	5
12:15	3	0	0	0	0	3	3	3	0	0	0	0	3	3	2	0	0	0	0	2	2
12:30	2	0	0	0	0	2	2	3	0	0	0	0	3	3	2	0	0	0	0	2	2
12:45	1	1	0	0	0	2	2	1	0	0	0	0	1	1	3	0	0	0	0	3	3
H/TOT	6	4	0	0	0	10	10	8	1	0	0	0	9	9	12	0	0	0	0	12	12

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 03 DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction) DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	0	0	0	2	2	3	1	0	0	0	4	4	1	0	0	0	0	1	1
07:30	0	0	0	0	0	0	0	3	0	0	0	0	3	3	1	1	0	0	0	2	2
07:45	0	0	0	0	0	0	0	3	2	0	0	0	5	5	0	0	0	0	0	0	0
H/TOT	3	0	0	0	0	3	3	9	3	0	0	0	12	12	2	1	0	0	0	3	3
08:00	0	0	0	0	0	0	0	3	0	0	0	0	3	3	1	1	0	0	0	2	2
08:15	0	1	0	0	0	1	1	2	0	2	0	0	4	5	2	0	0	0	0	2	2
08:30	2	0	1	1	0	4	6	2	1	1	0	0	4	5	2	0	0	0	0	2	2
08:45	12	0	0	0	0	12	12	14	0	0	0	0	14	14	9	1	2	0	0	12	13
H/TOT	14	1	1	1	0	17	19	21	1	3	0	0	25	27	14	2	2	0	0	18	19
09:00	3	0	0	0	0	3	3	9	0	0	0	0	9	9	4	0	0	0	0	4	4
09:15	1	1	0	0	0	2	2	2	0	0	0	0	2	2	4	0	0	0	0	4	4
09:30	3	1	0	0	0	4	4	4	0	0	0	0	4	4	0	0	0	0	0	0	0
09:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	9	2	0	0	0	11	11	15	0	0	0	0	15	15	10	0	0	0	0	10	10
10:00	3	0	0	0	0	3	3	3	0	0	0	0	3	3	0	0	0	0	0	0	0
10:15	5	2	0	0	0	7	7	0	1	0	0	0	1	1	2	0	0	0	0	2	2
10:30	2	0	0	0	0	2	2	2	0	0	0	0	2	2	0	1	0	0	0	1	1
10:45	2	0	0	0	0	2	2	0	1	0	0	0	1	1	1	0	0	0	0	1	1
H/TOT	12	2	0	0	0	14	14	5	2	0	0	0	7	7	3	1	0	0	0	4	4
11:00	3	1	1	0	0	5	6	2	0	0	0	0	2	2	1	2	1	0	0	4	5
11:15	2	0	0	1	0	3	4	1	0	0	0	0	1	1	1	0	0	0	0	1	1
11:30	2	1	0	0	0	3	3	3	0	1	0	0	4	5	1	1	0	0	0	2	2
11:45	3	0	0	0	0	3	3	2	1	0	0	0	3	3	1	0	0	0	0	1	1
H/TOT	10	2	1	1	0	14	16	8	1	1	0	0	10	11	4	3	1	0	0	8	9
12:00	4	1	0	0	0	5	5	1	0	0	0	0	1	1	0	0	0	0	0	0	0
12:15	0	0	0	1	0	1	2	2	0	0	0	0	2	2	0	0	0	0	0	0	0
12:30	0	1	0	0	0	1	1	1	0	0	0	0	1	1	2	1	0	0	0	3	3
12:45	0	0	0	0	0	0	0	5	0	1	0	0	6	7	0	0	0	0	0	0	0
H/TOT	4	2	0	1	0	7	8	9	0	1	0	0	10	11	2	1	0	0	0	3	3

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 03

DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction)

DAY: Wednesday

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	2	0	0	0	0	2	2	2	0	0	0	0	2	2
07:15	0	0	0	0	0	0	0	4	0	0	1	0	5	6	0	0	0	0	0	0	0
07:30	2	2	1	0	0	5	6	4	1	0	0	0	5	5	2	0	0	0	0	2	2
07:45	0	0	0	0	0	0	0	5	1	1	1	0	8	10	2	0	0	0	0	2	2
H/TOT	2	2	1	0	0	5	6	15	2	1	2	0	20	23	6	0	0	0	0	6	6
08:00	0	0	1	0	0	1	2	1	0	0	0	0	1	1	1	1	0	0	0	2	2
08:15	2	0	0	0	0	2	2	5	1	0	0	0	6	6	0	0	0	0	0	0	0
08:30	1	1	0	0	0	2	2	4	0	1	0	0	5	6	1	0	0	0	0	1	1
08:45	16	0	0	0	0	16	16	5	0	1	0	0	6	7	0	0	0	0	0	0	0
H/TOT	19	1	1	0	0	21	22	15	1	2	0	0	18	19	2	1	0	0	0	3	3
09:00	3	0	0	0	0	3	3	7	0	0	0	0	7	7	0	0	0	0	0	0	0
09:15	1	0	0	0	0	1	1	4	2	0	0	0	6	6	0	0	0	0	0	0	0
09:30	1	0	0	0	0	1	1	4	1	0	0	0	5	5	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0
H/TOT	5	0	0	0	0	5	5	17	3	0	0	0	20	20	0	0	0	0	0	0	0
10:00	0	2	0	0	0	2	2	2	0	0	0	0	2	2	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	2	1	0	0	0	3	3	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	7	0	0	0	0	7	7	1	0	0	0	0	1	1
10:45	1	2	0	0	0	3	3	2	1	1	0	0	4	5	2	1	1	0	0	4	5
H/TOT	1	4	0	0	0	5	5	13	2	1	0	0	16	17	3	1	1	0	0	5	6
11:00	1	1	0	0	0	2	2	4	1	0	0	0	5	5	0	0	1	0	0	1	2
11:15	1	0	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	0	0	0
11:30	1	0	0	0	0	1	1	0	1	1	1	0	3	5	0	0	0	0	0	0	0
11:45	1	0	0	0	0	1	1	3	0	0	0	0	3	3	0	0	0	0	0	0	0
H/TOT	4	1	0	0	0	5	5	9	2	1	1	0	13	15	0	0	1	0	0	1	2
12:00	1	0	0	0	0	1	1	2	0	0	0	0	2	2	0	0	0	0	0	0	0
12:15	1	0	0	0	0	1	1	3	2	1	0	0	6	7	2	0	0	0	0	2	2
12:30	0	0	0	0	0	0	0	5	0	0	0	0	5	5	3	0	0	0	0	3	3
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	2	0	0	0	0	2	2	10	2	1	0	0	13	14	5	0	0	0	0	5	5

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 03 DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction) DAY: Wednesday

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	2	0	0	3	4	0	1	0	0	0	1	1	2	0	0	0	0	2	2
H/TOT	1	0	2	0	0	3	4	2	1	1	0	0	4	5	2	0	0	0	0	2	2
08:00	1	0	0	0	0	1	1	2	1	0	0	0	3	3	1	0	0	0	0	1	1
08:15	1	0	1	0	0	2	3	2	0	0	0	0	2	2	4	0	0	0	0	4	4
08:30	0	0	0	0	0	0	0	1	0	0	0	0	1	1	3	0	0	0	0	3	3
08:45	1	0	0	0	0	1	1	11	1	0	0	0	12	12	2	1	0	0	0	3	3
H/TOT	3	0	1	0	0	4	5	16	2	0	0	0	18	18	10	1	0	0	0	11	11
09:00	1	0	0	0	0	1	1	4	1	0	0	0	5	5	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	3	1	0	0	0	4	4	3	0	1	0	0	4	5
09:30	0	0	0	0	0	0	0	2	0	0	0	0	2	2	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	1	1	0	0	2	3	5	0	0	0	0	5	5
H/TOT	1	0	0	0	0	1	1	9	3	1	0	0	13	14	8	0	1	0	0	9	10
10:00	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
10:30	0	1	0	0	0	1	1	3	0	0	0	0	3	3	0	0	0	0	0	0	0
10:45	2	0	0	0	0	2	2	1	0	1	0	0	2	3	5	0	0	0	0	5	5
H/TOT	2	1	0	0	0	3	3	5	0	1	0	0	6	7	7	0	0	0	0	7	7
11:00	0	0	0	0	0	0	0	0	0	1	0	0	1	2	4	0	0	0	0	4	4
11:15	0	0	0	0	0	0	0	3	0	0	0	0	3	3	1	1	0	0	0	2	2
11:30	3	0	0	0	0	3	3	0	0	1	0	0	1	2	2	0	0	0	0	2	2
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	3	0	0	0	0	3	3	3	0	2	0	0	5	6	7	1	0	0	0	8	8
12:00	1	1	0	0	0	2	2	2	1	0	0	0	3	3	0	0	0	0	0	0	0
12:15	0	0	1	0	0	1	2	2	0	0	1	0	3	4	2	0	0	0	0	2	2
12:30	3	0	1	0	0	4	5	1	1	0	0	0	2	2	5	1	0	0	0	6	6
12:45	1	0	0	0	0	1	1	0	1	0	0	0	1	1	2	0	0	0	0	2	2
H/TOT	5	1	2	0	0	8	9	5	3	0	1	0	9	10	9	1	0	0	0	10	10

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 03

DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction)

DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	2	0	0	0	0	2	2	3	1	1	0	0	5	6	1	0	0	0	0	1	1
13:15	2	0	0	0	0	2	2	1	1	0	0	0	2	2	1	0	1	0	0	2	3
13:30	2	0	0	0	0	2	2	1	0	0	0	0	1	1	5	1	0	0	0	6	6
13:45	2	0	0	0	0	2	2	4	0	0	0	0	4	4	2	1	0	0	0	3	3
H/TOT	8	0	0	0	0	8	8	9	2	1	0	0	12	13	9	2	1	0	0	12	13
14:00	0	0	0	0	0	0	0	4	0	0	0	0	4	4	3	0	0	0	0	3	3
14:15	1	0	0	0	0	1	1	6	2	0	0	0	8	8	2	0	0	0	0	2	2
14:30	1	0	0	0	0	1	1	1	0	2	0	0	3	4	5	0	0	0	0	5	5
14:45	1	0	0	0	0	1	1	6	0	1	0	0	7	8	2	1	0	0	0	3	3
H/TOT	3	0	0	0	0	3	3	17	2	3	0	0	22	24	12	1	0	0	0	13	13
15:00	1	0	0	0	0	1	1	4	1	0	0	0	5	5	0	0	0	0	0	0	0
15:15	0	1	0	0	0	1	1	1	0	0	0	0	1	1	4	0	0	0	0	4	4
15:30	0	1	0	0	0	1	1	6	1	0	0	0	7	7	5	1	0	1	0	7	8
15:45	4	1	0	0	0	5	5	2	2	0	0	0	4	4	1	0	0	0	0	1	1
H/TOT	5	3	0	0	0	8	8	13	4	0	0	0	17	17	10	1	0	1	0	12	13
16:00	1	0	0	0	0	1	1	3	1	0	0	1	5	6	2	0	0	0	0	2	2
16:15	0	0	0	0	0	0	0	3	1	0	0	0	4	4	2	1	0	0	0	3	3
16:30	1	0	1	0	0	2	3	6	0	0	0	0	6	6	0	0	0	0	0	0	0
16:45	2	0	0	0	0	2	2	6	0	0	0	0	6	6	1	1	0	0	0	2	2
H/TOT	4	0	1	0	0	5	6	18	2	0	0	1	21	22	5	2	0	0	0	7	7
17:00	0	0	0	0	0	0	0	2	1	0	0	0	3	3	2	1	0	0	0	3	3
17:15	3	0	0	0	0	3	3	8	0	0	0	0	8	8	4	0	0	0	0	4	4
17:30	3	0	0	0	0	3	3	7	0	0	0	0	7	7	10	0	0	0	0	10	10
17:45	2	1	0	0	0	3	3	3	0	0	0	0	3	3	4	0	1	0	0	5	6
H/TOT	8	1	0	0	0	9	9	20	1	0	0	0	21	21	20	1	1	0	0	22	23
18:00	1	0	0	0	0	1	1	5	3	0	0	0	8	8	3	0	0	0	0	3	3
18:15	4	0	0	0	0	4	4	11	3	0	0	0	14	14	2	0	0	0	0	2	2
18:30	3	0	0	0	0	3	3	1	0	0	0	0	1	1	1	0	0	0	0	1	1
18:45	2	0	0	0	0	2	2	2	1	0	0	0	3	3	2	0	0	0	0	2	2
H/TOT	10	0	0	0	0	10	10	19	7	0	0	0	26	26	8	0	0	0	0	8	8
P/TOT	76	13	2	0	0	91	92	152	31	7	2	2	194	202	113	13	2	6	0	134	143

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 03 DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction) DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	1	0	0	0	0	1	1	2	0	0	1	0	3	4	0	2	0	0	0	2	2
13:15	1	1	0	0	0	2	2	1	0	1	0	0	2	3	1	0	0	0	0	1	1
13:30	5	0	0	0	0	5	5	2	0	0	0	0	2	2	0	0	1	0	0	1	2
13:45	9	0	0	0	0	9	9	5	0	0	0	0	5	5	6	1	0	0	0	7	7
H/TOT	16	1	0	0	0	17	17	10	0	1	1	0	12	14	7	3	1	0	0	11	12
14:00	2	0	0	0	0	2	2	0	2	0	1	0	3	4	1	0	0	0	0	1	1
14:15	1	1	0	0	0	2	2	2	0	0	1	0	3	4	0	0	0	0	0	0	0
14:30	5	0	0	0	0	5	5	2	0	0	0	0	2	2	1	0	0	0	0	1	1
14:45	2	0	0	0	0	2	2	8	0	0	0	0	8	8	8	0	0	0	0	8	8
H/TOT	10	1	0	0	0	11	11	12	2	0	2	0	16	19	10	0	0	0	0	10	10
15:00	2	0	0	0	0	2	2	1	0	0	0	0	1	1	2	0	0	0	0	2	2
15:15	1	0	0	0	0	1	1	6	0	1	3	0	10	14	2	0	0	0	0	2	2
15:30	6	0	0	0	0	6	6	1	1	0	1	0	3	4	0	0	0	0	0	0	0
15:45	4	1	0	1	0	6	7	5	0	2	0	0	7	8	1	0	0	0	0	1	1
H/TOT	13	1	0	1	0	15	16	13	1	3	4	0	21	28	5	0	0	0	0	5	5
16:00	4	0	0	0	0	4	4	2	0	0	1	0	3	4	2	0	1	1	0	4	6
16:15	2	1	0	0	0	3	3	2	0	0	0	0	2	2	2	1	0	1	0	4	5
16:30	5	0	0	0	0	5	5	2	1	0	0	1	4	5	3	0	0	0	0	3	3
16:45	4	0	0	0	0	4	4	2	0	0	0	0	2	2	1	0	0	0	0	1	1
H/TOT	15	1	0	0	0	16	16	8	1	0	1	1	11	13	8	1	1	2	0	12	15
17:00	4	0	0	0	0	4	4	2	0	0	1	0	3	4	1	0	0	0	0	1	1
17:15	1	0	0	0	0	1	1	1	0	0	0	0	1	1	2	0	0	0	0	2	2
17:30	2	0	0	0	0	2	2	4	0	0	0	0	4	4	1	0	1	0	0	2	3
17:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	9	0	0	0	0	9	9	7	0	0	1	0	8	9	6	0	1	0	0	7	8
18:00	2	1	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	4	2	0	0	0	6	6	2	0	0	0	0	2	2	0	0	0	0	0	0	0
18:30	3	2	0	0	0	5	5	2	0	0	0	0	2	2	0	0	0	0	0	0	0
18:45	4	1	0	0	0	5	5	2	0	0	0	0	2	2	2	0	0	0	0	2	2
H/TOT	13	6	0	0	0	19	19	6	0	0	0	0	6	6	2	0	0	0	0	2	2
P/TOT	128	19	2	4	0	153	159	123	11	9	9	1	153	170	73	12	6	2	0	93	99

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 03

DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction)

DAY: Wednesday

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	2	1	0	0	0	3	3	1	0	0	0	0	1	1	0	0	0	0	0	0	0
13:15	3	0	0	0	0	3	3	4	0	0	0	0	4	4	0	0	0	0	0	0	0
13:30	6	1	0	0	0	7	7	1	1	0	0	0	2	2	1	0	0	0	0	1	1
13:45	2	0	0	0	0	2	2	2	0	0	0	0	2	2	1	0	1	0	0	2	3
H/TOT	13	2	0	0	0	15	15	8	1	0	0	0	9	9	2	0	1	0	0	3	4
14:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0
14:15	1	0	0	0	0	1	1	3	2	0	0	0	5	5	0	1	0	0	0	1	1
14:30	6	0	0	0	0	6	6	6	0	0	0	0	6	6	1	0	0	0	0	1	1
14:45	1	1	0	0	0	2	2	2	0	0	1	0	3	4	0	0	0	0	0	0	0
H/TOT	9	1	0	0	0	10	10	12	2	0	1	0	15	16	1	1	0	0	0	2	2
15:00	1	0	0	0	0	1	1	3	0	0	0	0	3	3	2	0	0	0	0	2	2
15:15	1	1	0	0	0	2	2	1	1	1	0	0	3	4	2	0	0	0	0	2	2
15:30	0	0	0	0	0	0	0	1	1	0	0	0	2	2	2	0	0	0	0	2	2
15:45	2	2	0	2	0	6	9	2	2	0	0	0	4	4	1	0	1	0	0	2	3
H/TOT	4	3	0	2	0	9	12	7	4	1	0	0	12	13	7	0	1	0	0	8	9
16:00	0	0	1	0	0	1	2	4	0	0	0	0	4	4	0	0	0	0	0	0	0
16:15	2	0	0	0	0	2	2	6	0	0	0	0	6	6	6	0	0	0	0	6	6
16:30	0	0	0	0	0	0	0	6	0	0	0	0	6	6	1	0	0	0	0	1	1
16:45	0	0	0	0	0	0	0	1	3	1	0	0	5	6	1	0	1	0	0	2	3
H/TOT	2	0	1	0	0	3	4	17	3	1	0	0	21	22	8	0	1	0	0	9	10
17:00	3	0	0	0	0	3	3	1	0	0	0	0	1	1	1	0	0	0	0	1	1
17:15	0	1	0	0	0	1	1	7	1	0	0	0	8	8	0	0	0	0	0	0	0
17:30	2	1	0	0	0	3	3	4	1	0	0	0	5	5	0	0	2	0	0	2	3
17:45	0	0	0	0	0	0	0	6	1	1	0	0	8	9	2	1	0	0	0	3	3
H/TOT	5	2	0	0	0	7	7	18	3	1	0	0	22	23	3	1	2	0	0	6	7
18:00	0	0	0	0	0	0	0	4	1	0	0	0	5	5	2	0	0	0	0	2	2
18:15	0	1	0	0	0	1	1	7	0	0	0	0	7	7	0	2	0	0	0	2	2
18:30	1	0	0	0	0	1	1	5	0	0	0	0	5	5	0	1	1	0	0	2	3
18:45	0	0	0	0	0	0	0	4	1	0	0	0	5	5	2	0	0	0	0	2	2
H/TOT	1	1	0	0	0	2	2	20	2	0	0	0	22	22	4	3	1	0	0	8	9
P/TOT	67	17	3	2	0	89	93	161	27	9	4	0	201	211	41	7	8	0	0	56	60

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 03 DATE: 26th May 2021

LOCATION: Stamullen Road/Julianstown Road (Racecourse Junction) DAY: Wednesday

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	1	1	1	0	0	3	4	2	1	0	0	0	3	3
13:15	0	0	0	0	0	0	0	7	0	0	0	0	7	7	1	0	0	0	0	1	1
13:30	1	0	0	0	0	1	1	5	0	0	0	0	5	5	1	1	1	0	0	3	4
13:45	0	0	0	0	0	0	0	3	0	0	1	0	4	5	0	1	0	0	0	1	1
H/TOT	1	0	0	0	0	1	1	16	1	1	1	0	19	21	4	3	1	0	0	8	9
14:00	0	0	0	0	0	0	0	3	0	0	1	0	4	5	0	1	0	0	0	1	1
14:15	0	0	0	0	0	0	0	3	0	1	0	0	4	5	3	0	0	0	0	3	3
14:30	3	0	1	0	0	4	5	6	1	0	0	0	7	7	3	0	0	0	0	3	3
14:45	2	1	0	0	0	3	3	4	0	0	0	0	4	4	0	0	0	0	0	0	0
H/TOT	5	1	1	0	0	7	8	16	1	1	1	0	19	21	6	1	0	0	0	7	7
15:00	1	1	0	0	0	2	2	3	0	0	2	0	5	8	0	1	0	0	0	1	1
15:15	0	1	0	0	0	1	1	3	0	0	0	0	3	3	2	1	0	0	0	3	3
15:30	1	0	1	0	0	2	3	8	0	0	0	0	8	8	1	0	0	0	0	1	1
15:45	0	0	0	0	0	0	0	1	1	1	0	0	3	4	1	1	0	0	0	2	2
H/TOT	2	2	1	0	0	5	6	15	1	1	2	0	19	22	4	3	0	0	0	7	7
16:00	1	1	0	0	0	2	2	6	0	0	0	0	6	6	4	0	0	0	0	4	4
16:15	2	1	0	0	0	3	3	2	0	0	0	0	2	2	7	0	0	0	0	7	7
16:30	0	0	0	0	0	0	0	4	0	0	0	0	4	4	4	1	0	0	0	5	5
16:45	2	0	0	0	0	2	2	4	1	0	0	0	5	5	0	0	0	0	0	0	0
H/TOT	5	2	0	0	0	7	7	16	1	0	0	0	17	17	15	1	0	0	0	16	16
17:00	2	0	0	0	0	2	2	4	0	0	0	0	4	4	4	1	0	0	0	5	5
17:15	0	0	1	0	0	1	2	1	1	0	0	0	2	2	3	1	0	0	0	4	4
17:30	2	0	0	0	0	2	2	2	2	0	0	0	4	4	3	0	0	0	0	3	3
17:45	1	0	0	0	0	1	1	1	0	0	0	0	1	1	3	0	0	0	0	3	3
H/TOT	5	0	1	0	0	6	7	8	3	0	0	0	11	11	13	2	0	0	0	15	15
18:00	2	1	0	0	0	3	3	2	0	0	0	0	2	2	4	0	0	0	0	4	4
18:15	0	1	0	0	0	1	1	2	0	0	0	0	2	2	5	0	0	0	0	5	5
18:30	1	0	0	0	0	1	1	1	0	0	0	0	1	1	2	0	0	0	0	2	2
18:45	1	1	3	0	0	5	7	2	0	1	0	0	3	4	3	0	1	0	0	4	5
H/TOT	4	3	3	0	0	10	12	7	0	1	0	0	8	9	14	0	1	0	0	15	16
P/TOT	37	10	11	0	0	58	64	118	16	9	5	0	148	159	99	13	3	0	0	115	117

Traffic Survey Data – Site 4

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 04 DATE: 26th May 2021

LOCATION: R150/Bellewstown Road DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	2	0	0	0	0	2	2	0	0	0	0	0	0	0	2	0	0	0	0	2	2
09:00	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS
MANUAL CLASSIFIED JUNCTION TURNING COUNTS

MAY 2021
TRA/21/081

SITE: 04

DATE: 26th May 2021

LOCATION: R150/Bellewstown Road

DAY: Wednesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	0	0	0	0	0	17	11	1	2	0	31	34	0	1	0	0	0	1	1
07:15	0	0	0	0	0	0	0	18	7	0	0	0	25	25	2	2	0	1	1	6	8
07:30	0	0	0	0	0	0	0	34	7	1	1	1	44	47	1	0	0	0	0	1	1
07:45	0	0	0	0	0	0	0	21	6	0	2	1	30	34	3	1	0	1	0	5	6
H/TOT	0	0	0	0	0	0	0	90	31	2	5	2	130	140	6	4	0	2	1	13	17
08:00	0	0	0	0	0	0	0	32	3	2	1	1	39	42	2	1	0	0	0	3	3
08:15	0	0	0	0	0	0	0	29	7	2	3	0	41	46	5	0	0	0	0	5	5
08:30	0	0	0	0	0	0	0	31	4	2	2	0	39	43	8	2	0	0	0	10	10
08:45	2	1	0	0	0	3	3	23	2	1	4	0	30	36	7	2	2	0	0	11	12
H/TOT	2	1	0	0	0	3	3	115	16	7	10	1	149	167	22	5	2	0	0	29	30
09:00	0	0	0	0	0	0	0	20	0	2	0	1	23	25	7	0	1	0	0	8	9
09:15	0	0	0	0	0	0	0	21	2	1	0	0	24	25	6	1	0	0	0	7	7
09:30	0	0	0	0	0	0	0	25	5	1	1	0	32	34	2	2	0	0	0	4	4
09:45	0	0	0	0	0	0	0	23	5	2	2	0	32	36	3	1	0	0	0	4	4
H/TOT	0	0	0	0	0	0	0	89	12	6	3	1	111	119	18	4	1	0	0	23	24
10:00	1	0	0	0	0	1	1	11	4	3	3	0	21	26	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	19	2	2	1	0	24	26	3	0	1	0	0	4	5
10:30	0	0	0	0	0	0	0	21	5	0	2	1	29	33	3	0	0	1	0	4	5
10:45	1	0	0	0	0	1	1	22	0	2	5	0	29	37	9	2	0	0	0	11	11
H/TOT	2	0	0	0	0	2	2	73	11	7	11	1	103	122	15	2	1	1	0	19	21
11:00	0	0	0	0	0	0	0	23	4	2	1	0	30	32	2	0	0	0	0	2	2
11:15	0	0	0	0	0	0	0	19	4	2	2	0	27	31	7	0	1	0	0	8	9
11:30	0	0	0	0	0	0	0	21	3	0	1	0	25	26	1	0	0	0	0	1	1
11:45	0	0	0	0	0	0	0	14	0	1	0	0	15	16	4	4	0	0	0	8	8
H/TOT	0	0	0	0	0	0	0	77	11	5	4	0	97	105	14	4	1	0	0	19	20
12:00	0	0	0	0	0	0	0	23	2	1	1	0	27	29	2	0	0	0	0	2	2
12:15	0	0	0	0	0	0	0	15	3	2	3	0	23	28	11	0	0	0	0	11	11
12:30	0	0	0	0	0	0	0	21	1	1	3	1	27	32	7	1	1	0	0	9	10
12:45	0	0	0	0	0	0	0	16	2	0	3	0	21	25	4	1	0	0	0	5	5
H/TOT	0	0	0	0	0	0	0	75	8	4	10	1	98	114	24	2	1	0	0	27	28

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 04 DATE: 26th May 2021

LOCATION: R150/Bellewstown Road DAY: Wednesday

	MOVEMENT 7							MOVEMENT 8							MOVEMENT 9						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	0	0	0	2	2	0	0	0	0	0	0	0	3	0	0	1	0	4	5
07:30	1	1	0	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
07:45	6	1	0	1	0	8	9	0	0	0	0	0	0	0	1	1	0	1	0	3	4
H/TOT	11	2	0	1	0	14	15	0	0	0	0	0	0	0	5	1	0	2	0	8	11
08:00	3	0	0	0	0	3	3	0	0	0	0	0	0	0	1	0	0	0	0	1	1
08:15	4	2	0	0	0	6	6	0	0	0	0	0	0	0	5	0	0	0	0	5	5
08:30	8	0	0	0	0	8	8	0	0	0	0	0	0	0	4	0	1	0	0	5	6
08:45	13	0	0	0	0	13	13	0	0	0	0	0	0	0	8	0	2	0	0	10	11
H/TOT	28	2	0	0	0	30	30	0	0	0	0	0	0	0	18	0	3	0	0	21	23
09:00	7	0	0	0	0	7	7	0	0	0	0	0	0	0	3	0	0	0	0	3	3
09:15	2	1	0	0	0	3	3	0	0	0	0	0	0	0	2	1	0	0	0	3	3
09:30	3	2	2	0	0	7	8	0	0	0	0	0	0	0	2	0	0	0	0	2	2
09:45	8	0	0	0	0	8	8	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	20	3	2	0	0	25	26	0	0	0	0	0	0	0	8	1	0	0	0	9	9
10:00	1	1	0	0	0	2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1
10:15	6	0	1	0	0	7	8	0	0	0	0	0	0	0	2	2	0	0	0	4	4
10:30	4	0	0	0	0	4	4	0	0	0	0	0	0	0	1	1	0	0	0	2	2
10:45	4	1	1	0	0	6	7	0	0	0	0	0	0	0	3	0	0	0	0	3	3
H/TOT	15	2	2	0	0	19	20	0	0	0	0	0	0	0	7	3	0	0	0	10	10
11:00	8	2	0	0	0	10	10	0	0	0	0	0	0	0	5	0	1	0	0	6	7
11:15	9	2	0	0	0	11	11	0	0	0	0	0	0	0	3	0	0	0	0	3	3
11:30	2	1	0	0	0	3	3	0	0	0	0	0	0	0	1	1	0	1	0	3	4
11:45	4	0	1	0	0	5	6	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	23	5	1	0	0	29	30	0	0	0	0	0	0	0	11	1	1	1	0	14	16
12:00	2	1	0	0	0	3	3	0	0	0	0	0	0	0	2	0	0	0	0	2	2
12:15	2	1	1	0	0	4	5	0	0	0	0	0	0	0	3	2	0	0	0	5	5
12:30	8	3	0	0	0	11	11	0	0	0	0	0	0	0	3	0	0	0	0	3	3
12:45	2	0	0	0	0	2	2	0	0	0	0	0	0	0	5	0	0	0	0	5	5
H/TOT	14	5	1	0	0	20	21	0	0	0	0	0	0	0	13	2	0	0	0	15	15

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 04 DATE: 26th May 2021

LOCATION: R150/Bellewstown Road DAY: Wednesday

	MOVEMENT 10							MOVEMENT 11							MOVEMENT 12						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	1	0	0	0	1	1	18	2	2	1	0	23	25	0	0	0	0	0	0	0
07:15	1	0	0	0	0	1	1	19	4	1	6	0	30	38	0	0	0	0	0	0	0
07:30	0	0	0	1	0	1	2	15	4	0	4	0	23	28	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	22	3	1	1	1	28	31	0	0	0	0	0	0	0
H/TOT	1	1	0	1	0	3	4	74	13	4	12	1	104	123	0	0	0	0	0	0	0
08:00	2	0	0	0	0	2	2	12	6	2	2	1	23	28	0	0	0	0	0	0	0
08:15	1	1	0	0	0	2	2	25	1	0	0	0	26	26	0	0	0	0	0	0	0
08:30	2	2	0	0	0	4	4	13	1	1	1	2	18	22	1	0	0	0	0	1	1
08:45	2	0	0	0	0	2	2	28	1	1	2	2	34	39	0	0	0	0	0	0	0
H/TOT	7	3	0	0	0	10	10	78	9	4	5	5	101	115	1	0	0	0	0	1	1
09:00	3	1	0	0	0	4	4	28	0	1	2	0	31	34	0	0	0	0	0	0	0
09:15	1	0	0	0	0	1	1	23	3	0	6	0	32	40	0	0	0	0	0	0	0
09:30	1	0	0	0	0	1	1	19	1	1	3	0	24	28	0	0	0	0	0	0	0
09:45	3	1	0	0	0	4	4	10	2	2	1	0	15	17	0	0	0	0	0	0	0
H/TOT	8	2	0	0	0	10	10	80	6	4	12	0	102	120	0	0	0	0	0	0	0
10:00	3	0	0	0	0	3	3	10	2	3	3	0	18	23	0	0	0	0	0	0	0
10:15	3	0	0	0	0	3	3	10	1	0	2	0	13	16	0	0	0	0	0	0	0
10:30	3	0	1	0	0	4	5	11	6	2	2	0	21	25	0	0	0	0	0	0	0
10:45	4	0	1	0	0	5	6	16	3	1	1	0	21	23	0	0	0	0	0	0	0
H/TOT	13	0	2	0	0	15	16	47	12	6	8	0	73	86	0	0	0	0	0	0	0
11:00	2	0	1	0	0	3	4	10	3	1	0	0	14	15	0	0	0	0	0	0	0
11:15	2	0	0	0	0	2	2	16	5	2	4	0	27	33	0	0	0	0	0	0	0
11:30	1	0	0	0	0	1	1	24	7	5	3	0	39	45	0	0	0	0	0	0	0
11:45	2	0	0	0	0	2	2	24	3	0	5	0	32	39	0	0	0	0	0	0	0
H/TOT	7	0	1	0	0	8	9	74	18	8	12	0	112	132	0	0	0	0	0	0	0
12:00	2	0	0	0	0	2	2	16	1	0	3	0	20	24	0	0	0	0	0	0	0
12:15	1	0	0	0	0	1	1	25	4	3	2	0	34	38	0	0	0	0	0	0	0
12:30	8	0	0	0	0	8	8	20	2	0	2	0	24	27	0	0	0	0	0	0	0
12:45	2	0	0	0	0	2	2	15	7	2	1	0	25	27	0	0	0	0	0	0	0
H/TOT	13	0	0	0	0	13	13	76	14	5	8	0	103	116	0	0	0	0	0	0	0

TRAFFINOMICS LIMITED

KILSARAN BELLEWSTOWN TRAFFIC COUNTS **MAY 2021**
MANUAL CLASSIFIED JUNCTION TURNING COUNTS **TRA/21/081**

SITE: 04 DATE: 26th May 2021

LOCATION: R150/Bellewstown Road DAY: Wednesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	2
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	3
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	1	1	1	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
P/TOT	5	2	1	0	0	8	9	0	0	0	0	0	0	0	9	0	0	0	0	9	9